

CURRENT EXPERIMENTS IN ELEMENTARY PARTICLE PHYSICS

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Abstract - This report contains summaries of 736 current and recent experiments in elementary particle physics (experiments that finished taking data before 1982 are excluded). Included are experiments at Brookhaven, CERN, CESR, DESY, Fermilab, Tokyo Institute of Nuclear Studies, Moscow Institute of Theoretical and Experimental Physics, Joint Institute for Nuclear Research (Dubna), KEK, LAMPF, Novosibirsk, PSI/SIN, Saclay, Serpukhov, SLAC, and TRIUMF, and also several underground experiments. Also given are instructions for searching online the computer database (maintained under the SLAC/SPIRES system) that contains the summaries. Properties of the fixed-target beams at most of the laboratories are summarized.

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MASTER

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INTRODUCTION

This report contains summaries of 736 approved current and recent experiments in elementary particle physics. A glance at the summaries in the body of the report will show the kind of information given. Experiments at the following laboratories are included:

Brookhaven (BNL)	KEK
CERN	Los Alamos (LAMPF)
CESR	Novosibirsk
DESY	Paul Scherrer Institute – formerly SIN (PSI/SIN)
Fermilab (FNAL)	Saclay
Institute for Nuclear Studies, Tokyo (INS)	Serpukhov
Institute for Theoretical and Experimental Physics, Moscow (ITEP)	SLAC
Joint Institute for Nuclear Research, Dubna (JINR)	TRIUMF
	Underground experiments (UNDERGROUND)

We exclude experiments that finished taking data before 1982. The rationale for thus including many rather old experiments is that many of them are still producing papers; note that the summaries include lists of journal papers.

Sources of information — Our first information about an experiment usually comes from the proposal for the experiment. Then we follow the progress of the experiment as best we can in laboratory reports such as “Experiments at CERN in 1988.” Finally, a few months before an edition of this report is to appear, we send copies of the summaries of the experiments to the spokespersons for checking and updating. If a reply is received — as was the case for more than one-half of the experiments — there is a “✓” next to the spokesperson on the summary. Since current experiments are often in flux, we rely heavily on these replies to be up to date: no ✓ by the spokesperson means the summary may be inaccurate or incomplete. (For a handful of experiments, we verified our information with a local member of the experiment, not the spokesperson, but for simplicity put a ✓ by the spokesperson. Also, for experiments with more than one spokesperson, a request for verification was sent to only one of them, but all the spokespersons are checked if the one replied.)

Computer database — This report is produced from a computer database maintained at SLAC under the SPIRES database management system. The database, named EXPERIMENTS, also contains information from earlier editions of this report about many experiments completed before 1982 (going back to about 1975, and including experiments at Argonne and Rutherford). See page 3 for a guide to using the EXPERIMENTS database online.

Abbreviations — To keep the summaries brief, abbreviations are used to indicate journals, kinematic variables, accelerators, and detectors. The abbreviations are usually obvious but are defined near the beginning of the report. The abbreviated forms are needed for searching the EXPERIMENTS database online.

Properties of particle beams — Tables at the back of the report summarize the properties of beams for fixed-target experiments at Brookhaven, CERN, Fermilab, KEK, LAMPF, Saclay, Serpukhov, SLAC, and TRIUMF.

Supplement on detectors — This report has a supplement entitled “Major Detectors in Elementary Particle Physics.” The second edition, describing 49 detectors, appeared in May 1985. For each detector, there is a 2-page summary giving properties and performance characteristics and a diagram. We hope to produce a third edition in 1990.

Acknowledgments — We thank L. Addis (SLAC) and A. Konrad (LBL) for help with the SPIRES database system, and the hundreds of spokespersons who took the time to reply to our inquiries.

Comments and requests — We invite comments pointing out omissions, obscurities, out-of-date information, and errors. Comments should be sent to:

EXPERIMENTS

Particle Data Group (50-308)

Lawrence Berkeley Laboratory

Berkeley, CA 94720

USA

Requests for copies from the Americas, Australasia, and the Far East should go to the above address, while those from other areas should go to:

CERN Scientific Information Service

CH-1211 Geneva 23

Switzerland

SEARCHING THE "EXPERIMENTS" COMPUTER DATABASE ONLINE

General information — As mentioned in the Introduction, the summaries in this report and summaries of many earlier experiments are contained in a computer database named EXPERIMENTS maintained at SLAC under the SPIRES database management system.

Anyone with an account on the SLAC IBM 3081 computer may access this database online. If you have an account but are unfamiliar with SPIRES, a "Guide to VM SPIRES" is available from the SLAC Library, Bin 196, SLAC, P.O. Box 4349, Stanford, CA 94309, USA (phone: 415/926-2411). If you do not have an account and cannot find anyone who does (at major laboratories, ask at the library), contact Louise Addis of the SLAC Library. If you just want to try out the system, contact us about using a temporary guest account: Particle Data Group, 50-308, Lawrence Berkeley Laboratory, Berkeley, CA 94720, USA (phone: 415/486-4724, or FTS 451-4724).

The EXPERIMENTS database is also available under a different system in Europe (contact M. Whalley, Dept. of Physics, Univ. of Durham, South Road, Durham DH1 3LE, UK) and in the USSR (contact V. V. Ezhela, Inst. for High Energy Physics, Serpukhov, Moscow Region, USSR).

Logging on to SPIRES — If you will be communicating with the SLAC computer at 1200 baud or less (such as over telephone lines or with a hardcopy terminal), you will probably want to run in line-by-line mode, in which case you need to set your terminal/modem for half-duplex operation. If you will be communicating at a speed greater than 1200 baud, you will probably want to run in full-screen mode, in which case you need to use full-duplex, even-parity, 7-data-bit operation. You will usually connect to the computer through the MICOM switch, which will ask you what "class" you want. If you are set up for line-by-line mode, type:

VMLINE

If you are set up for full-screen mode, type:

VM

In full-screen mode, you will then be asked to type a carriage return, and for the kind of terminal you are using (e.g., VT100 or ADM3A). Finally, in either mode, type an extra carriage return after you see the message VM/370 ONLINE. In full-screen mode, whenever the screen fills up (indicated by the word MORE at the bottom), you may clear it by hitting the CLEAR key (which may be ENTER, CONTROL-L, or CONTROL-Z on your terminal — note this is *not* the same as a carriage return); if you don't clear the screen, the computer will do so automatically after a minute or so. (You can hold the screen indefinitely by hitting a carriage return.) Also, if you are listing information and want to abort the listing, type HT and a carriage return *before* hitting the CLEAR key. In line-by-line mode, you can abort a listing with the BREAK or ATTN key.

After going through the above connection procedure, log on to the computer by typing:

Logon <your-account>

e.g., Logon **JDOE**

Then type your password when asked for it (it will not show on your terminal), and finally type an extra carriage return after the system gives its introductory messages. Here and below, words *not* enclosed in angular brackets <> are to be typed as shown, except that only the letters in **BOLDFACE UPPER CASE** are actually needed, and these may be entered in upper or lower case. Words in angular brackets are "variables" for which you substitute an appropriate value, again in either upper or lower case. Do *not* type the brackets.

To enter the SPIRES system, type:

SPIRES

(Special SPIRES-only accounts, ending in the letters SPI, don't need to do this.)

To get a detailed explanation of how to use a particular SPIRES command, type:

EXPLAIN <command-word>

e.g., **EXPLAIN FIND, EXPLAIN EXPLAIN, EXPLAIN EVERYTHING**

Searching the EXPERIMENTS database — A brief description of how to use the EXPERIMENTS database under SPIRES follows. To access the EXPERIMENTS database, type:

SElect EXPERIMENTS

To find out the indices that are available for searching in this database and the various names you may use to refer to them, type:

SHoW INDeX

To see a random selection of values in an index (and thus determine the form to use as a search value), type:

BROwse <index-name>

e.g., **BROwse** **EXPeriment-num**

To see a selection of values in an index near a particular value (perhaps to see if a value in which you are interested is valid or to see nearby values), type:

BROwse <index-name> <value>

e.g., **BROwse** **EXPeriment-num** **SLAC-PEP**

To search for experiments satisfying certain criteria, type:

FIND <index-name> <value> **AND(OR)** <index-name> <value> . . .

Some sample searches are:

FIND **EXPeriment-num** **CERN-UA-001**

FIND **Author** **RUBBIA**

FIND **DETECTOR** **OMEGA OR OMEGAPRIME**

FIND **Title** **J/PSI**

(The above search finds any experiment with J/PSI as part of the title.)

FIND **CITATION** **"PRL 46 (1981) 1115"**

Note that citations have spaces but no commas between the elements. Note also the quotes which are required here and in the following two examples; for an explanation, see the discussion below on *Searching Problems*.

FIND **REAction** **"PI- P --> PI0 N" AND ECM 3 TO 4**

The "arrow" here is composed of two minus signs and a greater-than sign. Specifying the reaction as, e.g., **PI- P#**, would get all reactions with π^-p as the initial state, regardless of the final state. Energies and momenta are in GeV and GeV/c.

FIND **Particle** **"UPSI(1S)"**

Note again the use here of double quotes. They are required.

Searching Problems: *There are three common reasons why a search may fail spuriously:*

(1) *For searching in the SPIRES database, all energies and momenta are in GeV and GeV/c.*

(2) *Any search value containing any of the special characters () < > = must be enclosed in double quotes; see the examples above for CITATION, REACTION, and PARTICLE.*

(3) *You may have used an incorrect form of the value for which you were searching (e.g., an incorrect particle or experiment name). To find the correct form, use the BROWSE command for the index you are searching (see above), or look in the lists of names and abbreviations beginning on page 25. Note, in particular, that in reaction and particle searches, an antiparticle name is formed by following the corresponding particle name with BAR (thus the antiproton is written as PBAR); in title searches, particle names are somewhat variable in their spelling, and several forms may be used.*

After entering a FIND command, you will be told the number of experiments satisfying the criteria given. You then have several options:

- (1) You may list out the information available for these experiments by typing:

TYPE (or **TYPe PAUse** if you are in line-by-line mode on a CRT terminal)

*You may abort a long listing by hitting the **BREAK** or **ATTN** key if you are in line-by-line mode, or by typing **HT** followed by a carriage return followed by the **CLEAR** (**ENTER**, **CONTROL-L**, or **CONTROL-Z**) key if you are in full-screen mode.*

*You may sometimes get the word **HOLDING** in the lower right-hand corner of your terminal. Hit the **CLEAR** (**ENTER**, **CONTROL-L**, or **CONTROL-Z**) key to resume.*

- Or (2) you may narrow the list already found (i.e., add more selection criteria) by typing:

AND <index-name> <value>

- Or (3) you may broaden the list already found (i.e., include more cases) by typing:

OR <index-name> <value>

- Or (4) you may initiate a new search with a new FIND command, or issue any other command.

To switch to a briefer format (which does not list reactions and certain other information), type:

SET FORMat QUICKLIST

To switch back to the complete format, type:

SET FORMat DEFAULT

To terminate the session and log off the computer, type:

CP LOGoff

BEAM/TARGET/MOMENTUM INDEX

Beam-target	Lab momentum (GeV/c)	Experiment
γe^-	0.12-0.40	INS-ES-111
γp	0.90-1.15	INS-17-1
γp	10.5	SLAC-BC-076
γp	20	SLAC-BC-072/073
γp	20	SLAC-3C-075
γp	50-200	CERN-NA-014-2
γp	65-180	CERN-WA-069
γp	80-140	FNAL-612
γp	<200	CERN-NA-014
γp	100-260	FNAL-691
γp	200-600	FNAL-683
γ nucleon	10-180	CERN-NA-001
γ deut	0.35-1.10	INS-ES-113
γ deut	0.4-0.8	INS-ES-112
γ deut	0.5-1.0	INS-18-3
γ deut	0.5-1.0	INS-ES-103
γ deut	0.5-1.0	INS-19-1
γ He	0.17-0.27	INS-ES-116
γ He	0.20-0.45	INS-ES-105
γ He	0.20-0.45	INS-19-2
γ nucleus	?	INS-ES-101
γ nucleus	?	INS-ES-118
γ nucleus	0.20-0.45	INS-17-2
γ nucleus	0.20-0.45	INS-18-1
γ nucleus	0.35-0.60	INS-ES-107
γ nucleus	17-35	SERPUKHOV-170
γ nucleus	10-180	CERN-NA-001
γ nucleus	70-200	CERN-EMU-006
γ nucleus	<300	FNAL-458
γ nucleus	200-500	FNAL-687
γ crystal	15-150	CERN-WA-081
γ crystal	20-200	CERN-NA-033
γ crystal	100-150	CERN-NA-046

MOMENTUM RANGES FOR NEUTRINO BEAMS ARE NOT DEFINED VERY SYSTEMATICALLY

νe^-	?	UNDERGROUND-SUBBURY
ν deut	?	UNDERGROUND-SUBBURY
ν Ne	10-200	FNAL-646
$\nu_e e^-$	0.020-0.053	LAMPF-225
$\nu_e e^-$	0.03	LAMPF-1015
$\nu_e e^-$	<70	SERPUKHOV-152
$\nu_e e^-$	10-200	FNAL-646
ν_e nucleon	5-30	SERPUKHOV-136
ν_e nucleon	<70	SERPUKHOV-152
ν_e deut	?	UNDERGROUND-SUBBURY
ν_e Ne	10-200	FNAL-646
ν_e nucleus	0.5-3.0	CERN-PS-180
ν_e nucleus	3-30	SERPUKHOV-107
ν_e nucleus	10-250	FNAL-636
$\bar{\nu}_e e^-$	10-200	FNAL-646
$\bar{\nu}_e e^-$	<230	FNAL-594
$\bar{\nu}_e$ nucleon	5-30	SERPUKHOV-136
$\bar{\nu}_e$ Ne	10-200	FNAL-646
$\nu_\mu e^-$	<0.05	LAMPF-1015
$\nu_\mu e^-$	<12	BNL-734
$\nu_\mu e^-$	<70	SERPUKHOV-152
$\nu_\mu e^-$	5-100	CERN-WA-079
$\nu_\mu e^-$	<150	CERN-WA-021
$\nu_\mu e^-$	<230	FNAL-594
$\nu_\mu e^-$	<260	CERN-WA-018
$\nu_\mu p$	<12	BNL-734
$\nu_\mu p$	5-20	SERPUKHOV-145
$\nu_\mu p$	<150	CERN-WA-021
$\nu_\mu p$	<260	CERN-WA-001
$\nu_\mu p$	<260	CERN-WA-025
$\nu_\mu n$	<12	BNL-734
$\nu_\mu n$	5-20	SERPUKHOV-145

$\nu_\mu n$	3-30	SERPUKHOV-107
$\nu_\mu n$	<230	FNAL-594
$\nu_\mu n$	<260	CERN-WA-025
ν_μ nucleon	3-30	SERPUKHOV-128
ν_μ nucleon	5-30	SERPUKHOV-136
ν_μ nucleon	?	SERPUKHOV-152
ν_μ deut	<260	CERN-WA-001
ν_μ deut	<260	CERN-WA-025
ν_μ Ne	10-200	FNAL-646
ν_μ Fe	<160	CERN-WA-001-2
ν_μ Fe	<260	CERN-WA-001
ν_μ Fe	30-230	FNAL-701
ν_μ Pb	<200	CERN-WA-044
ν_μ nucleus	0.5-1.5	CERN-PS-181
ν_μ nucleus	0.5-3.0	CERN-PS-180
ν_μ nucleus	3-30	SERPUKHOV-107
ν_μ nucleus	<160	CERN-WA-018-2
ν_μ nucleus	<230	FNAL-594
ν_μ nucleus	<260	CERN-WA-018
ν_μ nucleus	<400	FNAL-744
ν_μ nucleus	<500	FNAL-733
ν_μ nucleus	<500	FNAL-745
ν_μ nucleus	<600	FNAL-770
ν_μ nucleus	10-250	FNAL-636
ν_μ nucleus	10-400	FNAL-632
$\bar{\nu}_\mu e^-$	<0.05	LAMPF-1015
$\bar{\nu}_\mu e^-$	<12	BNL-734
$\bar{\nu}_\mu e^-$	5-100	CERN-WA-079
$\bar{\nu}_\mu e^-$	<200	FNAL-180
$\bar{\nu}_\mu e^-$	<230	FNAL-594
$\bar{\nu}_\mu e^-$	<260	CERN-WA-018
$\bar{\nu}_\mu p$	<12	BNL-734
$\bar{\nu}_\mu p$	3-30	SERPUKHOV-107
$\bar{\nu}_\mu p$	<150	CERN-WA-021
$\bar{\nu}_\mu p$	<200	FNAL-180
$\bar{\nu}_\mu p$	<230	FNAL-594
$\bar{\nu}_\mu p$	<260	CERN-WA-001
$\bar{\nu}_\mu p$	<260	CERN-WA-025
$\bar{\nu}_\mu n$	<12	BNL-734
$\bar{\nu}_\mu n$	<260	CERN-WA-025
$\bar{\nu}_\mu$ nucleon	5-30	SERPUKHOV-136
$\bar{\nu}_\mu$ nucleon	<200	FNAL-180
$\bar{\nu}_\mu$ deut	<260	CERN-WA-001
$\bar{\nu}_\mu$ deut	<260	CERN-WA-025
$\bar{\nu}_\mu$ Ne	10-200	FNAL-646
$\bar{\nu}_\mu$ Fe	<160	CERN-WA-001-2
$\bar{\nu}_\mu$ Fe	<260	CERN-WA-001
$\bar{\nu}_\mu$ Fe	<260	CERN-WA-018
$\bar{\nu}_\mu$ Fe	30-230	FNAL-701
$\bar{\nu}_\mu$ nucleus	3-30	SERPUKHOV-107
$\bar{\nu}_\mu$ nucleus	<160	CERN-WA-018-2
$\bar{\nu}_\mu$ nucleus	<230	FNAL-594
$\bar{\nu}_\mu$ nucleus	<260	CERN-WA-018
$\bar{\nu}_\mu$ nucleus	<500	FNAL-733
$\bar{\nu}_\mu$ nucleus	<400	FNAL-744
$\bar{\nu}_\mu$ nucleus	<600	FNAL-770
$\bar{\nu}_\mu$ nucleus	10-400	FNAL-632
ν_τ Ne	10-200	FNAL-646
ν_τ nucleon	10-250	FNAL-636
$\bar{\nu}_\tau$ Ne	10-200	FNAL-646
$e^- p$	3-21	SLAC-E-140
$e^- p$	14	SLAC-E-136
$e^- p$	21	SLAC-E-136
$e^- p$	28.5	SLAC-E-136
e^- deut	3-21	SLAC-E-140
e^- Fe	3-21	SLAC-E-140
e^- W	2.5	KEK-PF-000

BEAM/TARGET/MOMENTUM INDEX

Beam-target	Lab momentum (GeV/c)	Experiment
e^- Au	3-21	SLAC-E-140
e^- nucleus	20	SLAC-E-137
e^- nucleus	450	FNAL-774
e^- crystal	0.35	INS-ES-102
e^- crystal	1.2	INS-ES-117
e^- crystal	1.2	INS-ES-119
e^- crystal	1-10	CERN-PS-188
e^- crystal	>30	CERN-NA-043
e^+ crystal	1-10	CERN-PS-188
e^+ crystal	>30	CERN-NA-043
$e^\pm$ crystal	20-200	CERN-NA-042
$e^\pm$ crystal	150	CERN-NA-033

Beam-target	C.m. energy (GeV)	Experiment
$e^+ e^-$	0.32	CERN-NA-007
$e^+ e^-$	0.357	CERN-NA-007
$e^+ e^-$	0.391	CERN-NA-007
$e^+ e^-$	0.423	CERN-NA-007
$e^+ e^-$	<1.4	NOVOSIBIRSK-ND
$e^+ e^-$	0.36-1.40	NOVOSIBIRSK-CMD
$e^+ e^-$	3.1	SLAC-SP-032
$e^+ e^-$	3.69	SLAC-SP-032
$e^+ e^-$	3.77	SLAC-SP-032
$e^+ e^-$	4-5	SLAC-SP-032
$e^+ e^-$	4.4-11.2	DESY-DORIS-CRYSTAL-BALL
$e^+ e^-$	7.2-10.4	NOVOSIBIRSK-MD-1
$e^+ e^-$	9-11.5	DESY-DORIS-ARGUS
$e^+ e^-$	9-12	CESR-CLEO
$e^+ e^-$	9.4-11.6	CESR-CUSB
$e^+ e^-$	9.4-11.6	CESR-CUSB-II
$e^+ e^-$	10-44	DESY-PETRA-JADE
$e^+ e^-$	12-47	DESY-PETRA-MARK-J
$e^+ e^-$	12-47	DESY-PETRA-TASSO
$e^+ e^-$	14-47.3	DESY-PETRA-CELLO
$e^+ e^-$	29	SLAC-PEP-002
$e^+ e^-$	29	SLAC-PEP-004/009
$e^+ e^-$	29	SLAC-PEP-005
$e^+ e^-$	29	SLAC-PEP-006
$e^+ e^-$	29	SLAC-PEP-012
$e^+ e^-$	29	SLAC-PEP-020
$e^+ e^-$	29	SLAC-PEP-021
$e^+ e^-$	35	DESY-PETRA-PLUTO-2
$e^+ e^-$	50-52	KEK-TE-004
$e^+ e^-$	<70	KEK-TE-001
$e^+ e^-$	<70	KEK-TE-002
$e^+ e^-$	<70	KEK-TE-003
$e^+ e^-$	<100	SLAC-SLC-SLD
$e^+ e^-$	<100	SLAC-SLC-6
$e^+ e^-$	<120	CERN-LEP-ALEPH
$e^+ e^-$	<120	CERN-LEP-DELPHI
$e^+ e^-$	<120	CERN-LEP-L3
$e^+ e^-$	<120	CERN-LEP-OPAL

Beam-target	Lab momentum (GeV/c)	Experiment
$\mu^+ e^-$	0.005	LAMPF-869
$\mu^+ e^-$	0.020-0.029	TRIUMF-304
$\mu^+ e^-$	?	TRIUMF-168
$\mu^- p$	0	SIN-R-78-15.1
$\mu^- p$	0	TRIUMF-452
$\mu^- p$	?	TRIUMF-248
$\mu^- p$	120-280	CERN-NA-002
$\mu^- p$	120-280	CERN-NA-009
μ^- deut	0	TRIUMF-297
μ^- He	0	BNL-745
μ^- He	0	SIN-R-82-03.1
μ^- Li	0	TRIUMF-326

Beam-target	Lab momentum (GeV/c)	Experiment
μ^- nucleus	0	SIN-R-81-02
μ^- nucleus	0	TRIUMF-104
μ^- nucleus	0.09	PSI-R-87-03
μ^- nucleus	100-280	CERN-NA-004
μ^+ Al	0.125	BNL-754
μ on p	100	CERN-NA-047
μ on p	120	CERN-NA-037
μ on p	280	CERN-NA-037
μ on p	<750	FNAL-665
μ on deut	100	CERN-NA-047
μ on deut	120	CERN-NA-037
μ on deut	280	CERN-NA-037
μ on deut	<750	FNAL-665
μ on nucleus	120	CERN-NA-037
μ on nucleus	160	CERN-NA-037
μ on nucleus	280	CERN-NA-037
μ on nucleus	280	CERN-NA-028
μ on nucleus	300	FNAL-782
μ on nucleus	325	CERN-NA-028
μ on nucleus	<750	FNAL-665
μ on nucleus	?	FNAL-802
pion deut	?	TRIUMF-375
pion ^{12}C	4	KEK-132
pion nucleus	250	FNAL-769
$\pi^+ p$	0.077-0.15	TRIUMF-394
$\pi^+ p$	0.1-0.2	PSI-R-85-13
$\pi^+ p$	0.131	TRIUMF-530
$\pi^+ p$	0.14	SIN-R-82-17
$\pi^+ p$	0.146	TRIUMF-530
$\pi^+ p$	0.15	LAMPF-567
$\pi^+ p$	0.152	TRIUMF-530
$\pi^+ p$	0.158	TRIUMF-530
$\pi^+ p$	0.16	LAMPF-567
$\pi^+ p$	0.169	LAMPF-567
$\pi^+ p$	0.182	TRIUMF-441
$\pi^+ p$	0.184	TRIUMF-530
$\pi^+ p$	0.188	LAMPF-567
$\pi^+ p$	0.207	LAMPF-567
$\pi^+ p$	0.219	TRIUMF-441
$\pi^+ p$	0.221	TRIUMF-530
$\pi^+ p$	0.225	LAMPF-567
$\pi^+ p$	0.226	TRIUMF-530
$\pi^+ p$	0.242	LAMPF-567
$\pi^+ p$	0.247	LAMPF-058/120
$\pi^+ p$	0.254	TRIUMF-441
$\pi^+ p$	0.279	TRIUMF-561
$\pi^+ p$	0.288	TRIUMF-441
$\pi^+ p$	0.292	TRIUMF-561
$\pi^+ p$	0.299	TRIUMF-561
$\pi^+ p$	0.30-0.46	CERN-SC-094
$\pi^+ p$	0.313	TRIUMF-561
$\pi^+ p$	0.321	TRIUMF-441
$\pi^+ p$	0.353	TRIUMF-441
$\pi^+ p$	0.38	TRIUMF-446
$\pi^+ p$	0.385	TRIUMF-441
$\pi^+ p$	0.471-0.625	LAMPF-806
$\pi^+ p$	0.471-0.687	LAMPF-849
$\pi^+ p$	0.687	LAMPF-058/120
$\pi^+ p$	1.4-2.1	ITEP-801
$\pi^+ p$	3.94	ITEP-803
$\pi^+ p$	3.94	ITEP-804
$\pi^+ p$	4.35	ITEP-763
$\pi^+ p$	5-20	SERPUKHOV-102
$\pi^+ p$	6	BNL-838
$\pi^+ p$	6	KEK-179
$\pi^+ p$	10	BNL-755
$\pi^+ p$	60-70	SERPUKHOV-161

BEAM/TARGET/MOMENTUM INDEX

Beam-target	Lab momentum (GeV/c)	Experiment	Beam-target	Lab momentum (GeV/c)	Experiment
π^+ p	80	CERN-WA-069	π^+ nucleus	0.2-2.0	KEK-094
π^+ p	85	CERN-WA-076	π^+ nucleus	0.5-1.5	KEK-157
π^+ p	100	FNAL-597	π^+ nucleus	0.8	BNL-828
π^+ p	140	CERN-WA-069	π^+ nucleus	1-5	KEK-090
π^+ p	147	FNAL-570	π^+ nucleus	1-9	ITEP-771
π^+ p	200	CERN-WA-070	π^+ nucleus	1.05	BNL-798
π^+ p	250	CERN-NA-022	π^+ nucleus	1.5	ITEP-812
π^+ p	280	CERN-WA-070	π^+ nucleus	1.85	ITEP-823
π^+ p	280	CERN-WA-083	π^+ nucleus	2.9	ITEP-741
π^+ p	300	CERN-NA-024	π^+ nucleus	3	ITEP-823
π^+ p	400	FNAL-609	π^+ nucleus	30	CERN-WA-072
π^+ n	5-20	SERPUKHOV-102	π^+ nucleus	100	FNAL-597
π^+ deut	0.038	LAMPF-828	π^+ nucleus	150	CERN-NA-003
π^+ deut	0.038	LAMPF-1085	π^+ nucleus	200	FNAL-565
π^+ deut	0.054	LAMPF-1085	π^+ nucleus	200	CERN-NA-001
π^+ deut	0.054	LAMPF-828	π^+ nucleus	250	CERN-NA-022
π^+ deut	0.066	LAMPF-1085	π^+ nucleus	250	FNAL-615
π^+ deut	0.066	LAMPF-828	π^+ nucleus	280	CERN-NA-003
π^+ deut	0.077	LAMPF-1085	π^+ nucleus	500	FNAL-672
π^+ deut	0.087	TRIUMF-506	π^+ nucleus	530	FNAL-706
π^+ deut	0.096	TRIUMF-399	π^+ crystal	1-10	CERN-PS-188
π^+ deut	0.096-0.169	LAMPF-767	$\pi^- e^-$	250	CERN-NA-007
π^+ deut	0.121	TRIUMF-506	$\pi^- e^-$	300	CERN-NA-007
π^+ deut	0.128	TRIUMF-399	$\pi^- p$	0	PSI-R-86-05
π^+ deut	0.128	TRIUMF-502	$\pi^- p$	0	SIN-R-81-01
π^+ deut	0.15	TRIUMF-506	$\pi^- p$	0	SIN-R-85-10
π^+ deut	0.15	TRIUMF-399	$\pi^- p$	0	SIN-R-85-14
π^+ deut	0.15	LAMPF-567	$\pi^- p$	0	TRIUMF-217
π^+ deut	0.16	LAMPF-567	$\pi^- p$	0.077-0.22	TRIUMF-009
π^+ deut	0.169	LAMPF-567	$\pi^- p$	0.077-0.15	TRIUMF-394
π^+ deut	0.169-0.364	TRIUMF-205	$\pi^- p$	0.087-0.128	LAMPF-190
π^+ deut	0.188	LAMPF-567	$\pi^- p$	0.10-0.15	LAMPF-808
π^+ deut	0.195-0.41	TRIUMF-337	$\pi^- p$	0.1-0.2	PSI-R-85-13
π^+ deut	0.207	LAMPF-567	$\pi^- p$	0.13	TRIUMF-560
π^+ deut	0.209-0.410	SIN-R-79-07	$\pi^- p$	0.14	SIN-R-82-17
π^+ deut	0.215-0.443	SIN-R-78-18	$\pi^- p$	0.182	TRIUMF-441
π^+ deut	0.22-0.26	SIN-R-73-01.2	$\pi^- p$	0.195-0.364	TRIUMF-537
π^+ deut	0.225	LAMPF-567	$\pi^- p$	0.219	TRIUMF-441
π^+ deut	0.242	LAMPF-567	$\pi^- p$	0.247	LAMPF-058/120
π^+ deut	0.246-0.37	TRIUMF-377	$\pi^- p$	0.247-0.687	LAMPF-804
π^+ deut	0.265	TRIUMF-360	$\pi^- p$	0.254	TRIUMF-441
π^+ deut	0.275-0.60	LAMPF-825	$\pi^- p$	0.279	TRIUMF-561
π^+ deut	0.31-0.417	LAMPF-605	$\pi^- p$	0.283-0.292	TRIUMF-414
π^+ deut	0.31-0.417	LAMPF-979	$\pi^- p$	0.288	TRIUMF-441
π^+ deut	0.331-0.417	LAMPF-1096	$\pi^- p$	0.292	TRIUMF-561
π^+ deut	0.34	SIN-R-78-18	$\pi^- p$	0.299	TRIUMF-561
π^+ deut	0.353	TRIUMF-508	$\pi^- p$	0.30-0.46	CERN-SC-094
π^+ deut	0.364	TRIUMF-443	$\pi^- p$	0.313	TRIUMF-561
π^+ deut	0.37	LAMPF-581	$\pi^- p$	0.321	TRIUMF-441
π^+ deut	0.37	LAMPF-783	$\pi^- p$	0.35-0.45	SIN-R-86-02
π^+ deut	0.37	TRIUMF-503	$\pi^- p$	0.353	TRIUMF-441
π^+ deut	0.396	TRIUMF-443	$\pi^- p$	0.385	TRIUMF-441
π^+ deut	0.478	LAMPF-783	$\pi^- p$	0.471-0.625	LAMPF-806
π^+ deut	0.48-1.16	KEK-083	$\pi^- p$	0.471-0.687	LAMPF-849
π^+ deut	0.573	LAMPF-783	$\pi^- p$	0.687	LAMPF-052/120
π^+ deut	0.74	KEK-081	$\pi^- p$	1.4-2.1	ITEP-801
π^+ deut	1.05	BNL-798	$\pi^- p$	1.46	ITEP-764
π^+ deut	1.5	KEK-081	$\pi^- p$	4.85	ITEP-763
π^+ trit	0.128-0.331	SIN-R-85-11	$\pi^- p$	6	BNL-838
π^+ trit	0.243-0.413	LAMPF-905	$\pi^- p$	6	KEK-179
π^+ ^3He	0.128-0.331	SIN-R-79-05	$\pi^- p$	7	ITEP-763
π^+ ^3He	0.195	TRIUMF-557	$\pi^- p$	<8	KEK-064
π^+ ^3He	0.243-0.413	LAMPF-905	$\pi^- p$	8	BNL-771
π^+ He	0.128-0.331	SIN-R-85-11	$\pi^- p$	8	KEK-121
π^+ He	0.242	LAMPF-898	$\pi^- p$	8-12	CERN-WA-074
π^+ He	0.288	LAMPF-998	$\pi^- p$	8.95	KEK-135
π^+ He	0.374	LAMPF-898	$\pi^- p$	10	BNL-755
π^+ He	0.396	TRIUMF-556	$\pi^- p$	12	BNL-818
π^+ ^7Li	300	FNAL-705	$\pi^- p$	13	BNL-726
π^+ Be	1.05	KEK-160			
π^+ ^{12}C	1.05	BNL-758			
π^+ C	3	ITEP-841			
π^+ Pb	3	ITEP-841			

BEAM/TARGET/MOMENTUM INDEX

Beam-target	Lab momentum (GeV/c)	Experiment	Beam-target	Lab momentum (GeV/c)	Experiment
$\pi^- p$	13.5	BNL-755	$\pi^- Be$	300	CERN-WA-077
$\pi^- p$	20	CERN-WA-007	$\pi^- C$	0.74	ITEP-764
$\pi^- p$	20-40	SERPUKHOV-105	$\pi^- C$	1.2	ITEP-841
$\pi^- p$	21	BNL-769	$\pi^- C$	1.46	ITEP-764
$\pi^- p$	21	BNL-852	$\pi^- C$	1.5-3.0	ITEP-826
$\pi^- p$	22	BNL-747	$\pi^- C$	3	ITEP-841
$\pi^- p$	32	SERPUKHOV-169	$\pi^- C$	3	ITEP-825
$\pi^- p$	32	SERPUKHOV-172	$\pi^- C$	5	ITEP-841
$\pi^- p$	33	SERPUKHOV-142	$\pi^- C$	5	ITEP-826
$\pi^- p$	38	SERPUKHOV-140	$\pi^- C$	40	SERPUKHOV-151
$\pi^- p$	40	CERN-WA-007	$\pi^- Ne$	7	ITEP-763
$\pi^- p$	40	SERPUKHOV-112	$\pi^- Al$	1.2	ITEP-841
$\pi^- p$	40	SERPUKHOV-147	$\pi^- Al$	3	ITEP-841
$\pi^- p$	40	SERPUKHOV-149	$\pi^- Al$	5	ITEP-841
$\pi^- p$	40	SERPUKHOV-155	$\pi^- Si$	40	SERPUKHOV-157
$\pi^- p$	40	SERPUKHOV-164	$\pi^- Si$	200	CERN-NA-032
$\pi^- p$	40-50	SERPUKHOV-148	$\pi^- S$	0.74	ITEP-764
$\pi^- p$	60	CERN-WA-007	$\pi^- S$	1.46	ITEP-764
$\pi^- p$	60-70	SERPUKHOV-161	$\pi^- Cu$	0.74	ITEP-764
$\pi^- p$	80	CERN-WA-007	$\pi^- Cu$	1.2	ITEP-841
$\pi^- p$	80	CERN-WA-069	$\pi^- Cu$	3	ITEP-841
$\pi^- p$	100	CERN-NA-012	$\pi^- Cu$	5	ITEP-841
$\pi^- p$	100	FNAL-597	$\pi^- Cu$	225	FNAL-326
$\pi^- p$	140	CERN-WA-069	$\pi^- Cu$	230	CERN-NA-032
$\pi^- p$	147	FNAL-570	$\pi^- Cd$	1.2	ITEP-841
$\pi^- p$	200	CERN-WA-070	$\pi^- Cd$	3	ITEP-841
$\pi^- p$	230	CERN-NA-012	$\pi^- Cd$	5	ITEP-841
$\pi^- p$	280	CERN-WA-070	$\pi^- In$	0.74	ITEP-764
$\pi^- p$	280	CERN-WA-083	$\pi^- In$	1.46	ITEP-764
$\pi^- p$	300	CERN-NA-024	$\pi^- Sn$	225	FNAL-326
$\pi^- p$	320	FNAL-597	$\pi^- Xe$	0	ITEP-851
$\pi^- p$	360	CERN-NA-027	$\pi^- Xe$	0.4	ITEP-851
$\pi^- nucleon$	40	SERPUKHOV-163	$\pi^- Xe$	1	ITEP-851
$\pi^- deut$	0	PSI-R-86-05	$\pi^- W$	225	FNAL-326
$\pi^- deut$	0	SIN-R-81-01	$\pi^- Pb$	1.2	ITEP-841
$\pi^- deut$	0.096	TRIUMF-399	$\pi^- Pb$	1.5-3.0	ITEP-826
$\pi^- deut$	0.096-0.169	LAMPF-767	$\pi^- Pb$	3	ITEP-841
$\pi^- deut$	0.128	TRIUMF-399	$\pi^- Pb$	3	ITEP-825
$\pi^- deut$	0.128	TRIUMF-502	$\pi^- Pb$	5	ITEP-841
$\pi^- deut$	0.15	TRIUMF-399	$\pi^- Pb$	5	ITEP-826
$\pi^- deut$	0.246-0.37	TRIUMF-377	$\pi^- Pb$	100-200	CERN-NA-029
$\pi^- deut$	0.331-0.417	LAMPF-1096	$\pi^- Bi$	0.74	ITEP-764
$\pi^- deut$	0.37	LAMPF-581	$\pi^- Bi$	1.46	ITEP-764
$\pi^- deut$	0.37	LAMPF-783	$\pi^- nucleus$	0.2-2.0	KEK-094
$\pi^- deut$	0.37	TRIUMF-503	$\pi^- nucleus$	1	SERPUKHOV-127
$\pi^- deut$	0.408	LAMPF-981	$\pi^- nucleus$	1-1.2	KEK-150
$\pi^- deut$	0.42-1.16	KEK-083	$\pi^- nucleus$	1-9	ITEP-771
$\pi^- deut$	0.478	LAMPF-783	$\pi^- nucleus$	1.5	ITEP-812
$\pi^- deut$	0.573	LAMPF-783	$\pi^- nucleus$	1.85	ITEP-823
$\pi^- deut$	1-1.8	ITEP-762	$\pi^- nucleus$	2.5	ITEP-813
$\pi^- deut$	1.46	ITEP-764	$\pi^- nucleus$	3	ITEP-823
$\pi^- deut$	40	SERPUKHOV-149	$\pi^- nucleus$	3	ITEP-813
$\pi^- trit$	0.128-0.331	SIN-R-85-11	$\pi^- nucleus$	4	KEK-187
$\pi^- trit$	0.243-0.413	LAMPF-905	$\pi^- nucleus$	5	ITEP-813
$\pi^- ^3He$	0.0-0.331	SIN-R-79-05	$\pi^- nucleus$	30	CERN-WA-072
$\pi^- ^3He$	0.243-0.413	LAMPF-905	$\pi^- nucleus$	40	SERPUKHOV-112
$\pi^- He$	0.128-0.331	SIN-R-85-11	$\pi^- nucleus$	40	SERPUKHOV-155
$\pi^- He$	0.242	LAMPF-898	$\pi^- nucleus$	40-50	SERPUKHOV-148
$\pi^- He$	0.288	LAMPF-998	$\pi^- nucleus$	75	FNAL-615
$\pi^- He$	0.374	LAMPF-898	$\pi^- nucleus$	100	FNAL-597
$\pi^- ^6Li$	0.74	ITEP-764	$\pi^- nucleus$	125	FNAL-537
$\pi^- ^6Li$	1.46	ITEP-764	$\pi^- nucleus$	140-200	CERN-NA-010
$\pi^- ^7Li$	0.74	ITEP-764	$\pi^- nucleus$	150	CERN-NA-003
$\pi^- ^7Li$	1.46	ITEP-764	$\pi^- nucleus$	200	FNAL-565
$\pi^- ^7Li$	300	FNAL-705	$\pi^- nucleus$	200	CERN-NA-003
$\pi^- Be$	3	ITEP-825	$\pi^- nucleus$	205	FNAL-515
$\pi^- Be$	100-200	CERN-NA-011	$\pi^- nucleus$	250	FNAL-615
$\pi^- Be$	150	CERN-WA-077	$\pi^- nucleus$	280	CERN-NA-003
$\pi^- Be$	185	FNAL-673	$\pi^- nucleus$	300	CERN-NA-012-2
$\pi^- Be$	225	FNAL-326	$\pi^- nucleus$	300	CERN-NA-017
			$\pi^- nucleus$	320	FNAL-597
			$\pi^- nucleus$	320	CERN-WA-078

BEAM/TARGET/MOMENTUM INDEX

Beam-target	Lab momentum (GeV/c)	Experiment
π^- nucleus	340	CERN-WA-082
π^- nucleus	350	CERN-WA-071
π^- nucleus	350	CERN-WA-075
π^- nucleus	350	CERN-WA-084
π^- nucleus	500	FNAL-791
π^- nucleus	500	FNAL-672
π^- nucleus	530	FNAL-706
π^- nucleus	600	FNAL-653
π^- nucleus	800	FNAL-791
π^- crystal	1-10	CERN-PS-188
kaon nucleus	250	FNAL-769
$K^+ p$	6	BNL-838
$K^+ p$	10	BNL-755
$K^+ p$	11	SLAC-E-135
$K^+ p$	32.1	SERPUKHOV-133
$K^+ p$	80	CERN-WA-069
$K^+ p$	100	FNAL-597
$K^+ p$	140	CERN-WA-069
$K^+ p$	147	FNAL-570
$K^+ p$	250	CERN-NA-022
$K^+ n$	5-20	SERPUKHOV-102
K^+ deut	0.5-0.7	BNL-835
K^+ deut	1.5	KEK-081
K^+ deut	1.7	KEK-081
K^+ Xe	<0.8	ITEP-871
K^+ Xe	0.56-0.81	ITEP-791
K^+ Xe	0.56-0.81	ITEP-814
K^+ Xe	0.79	ITEP-802
K^+ Xe	0.8	ITEP-761
K^+ nucleus	0.5-0.7	BNL-835
K^+ nucleus	100	FNAL-597
K^+ nucleus	200	FNAL-565
K^+ nucleus	250	CERN-NA-022
$K^- e^-$	250	CERN-NA-007
$K^- p$	0	BNL-811
$K^- p$	0.7	BNL-702
$K^- p$	1.8	BNL-813
$K^- p$	6	BNL-771
$K^- p$	6	BNL-838
$K^- p$	8-16	CERN-WA-074
$K^- p$	10	BNL-755
$K^- p$	11	SLAC-E-135
$K^- p$	20	CERN-WA-007
$K^- p$	22	BNL-747
$K^- p$	32	SERPUKHOV-172
$K^- p$	33	SERPUKHOV-142
$K^- p$	40	CERN-WA-007
$K^- p$	40	SERPUKHOV-112
$K^- p$	40	SERPUKHOV-147
$K^- p$	40	SERPUKHOV-149
$K^- p$	40-50	SERPUKHOV-148
$K^- p$	60	CERN-WA-007
$K^- p$	80	CERN-WA-007
$K^- p$	80	CERN-WA-069
$K^- p$	140	CERN-WA-069
K^- nucleon	40	SERPUKHOV-163
K^- deut	0.87	BNL-773
K^- deut	40	SERPUKHOV-149
$K^- {}^3\text{He}$	0.715	BNL-829
$K^- {}^3\text{He}$	0.87	BNL-820
$K^- {}^3\text{He}$	1.8	BNL-836
$K^- \text{He}$	0.72	BNL-774
$K^- \text{He}$	0.8	BNL-788
$K^- {}^6\text{Li}$	0.8	BNL-788
$K^- \text{C}$	0.8	BNL-759
$K^- \text{Si}$	40	SERPUKHOV-157

Beam-target	Lab momentum (GeV/c)	Experiment
$K^- \text{Si}$	200	CERN-NA-032
$K^- \text{Xe}$	<0.8	ITEP-871
$K^- \text{W}$	6	BNL-751
K^- nucleus	?	KEK-167B
K^- nucleus	0	KEK-117
K^- nucleus	0.4	CERN-PS-166
K^- nucleus	0.45	CERN-PS-166
K^- nucleus	0.65	KEK-166
K^- nucleus	0.65	KEK-175
K^- nucleus	0.8	BNL-760
K^- nucleus	0.8	BNL-781
K^- nucleus	1	SERPUKHOV-127
K^- nucleus	1.5-1.8	KEK-176
K^- nucleus	40	SERPUKHOV-112
K^- nucleus	40-50	SERPUKHOV-148
K^- nucleus	200	FNAL-565
$K_L \text{Cu}$	1-8	ITEP-811

pp COLLIDING BEAM EXPERIMENTS ARE MERGED IN WITH FIXED-TARGET EXPERIMENTS BY GIVING THE EQUIVALENT LAB MOMENTUM FOR SCATTERING ON A STATIONARY PROTON

$p p$	?	SACLAY-113
$p p$	?	SACLAY-121
$p p$	0.221	PSI-Z-84-02
$p p$	0.272	PSI-Z-84-72
$p p$	0.3	SIN-Z-75-02
$p p$	0.346-3.37	KEK-174
$p p$	0.511-0.745	SACLAY-173
$p p$	0.644	TRIUMF-171
$p p$	0.683	TRIUMF-497/287
$p p$	0.775	TRIUMF-208
$p p$	0.777-1.09	TRIUMF-301
$p p$	0.794	TRIUMF-552
$p p$	0.8	TRIUMF-552
$p p$	0.8-1.2	SIN-R-71-07
$p p$	0.826-1.81	SACLAY-144
$p p$	0.85	SACLAY-118
$p p$	0.85	SACLAY-124
$p p$	0.862	SACLAY-123
$p p$	0.868	SACLAY-118
$p p$	0.868	SACLAY-124
$p p$	0.874	SACLAY-123
$p p$	0.883	SACLAY-123
$p p$	0.883-1.09	TRIUMF-132/192
$p p$	0.889	SACLAY-118
$p p$	0.889	SACLAY-124
$p p$	0.894	SACLAY-118
$p p$	0.909	SACLAY-124
$p p$	0.926	TRIUMF-174
$p p$	0.954-1.46	LAMPF-508
$p p$	0.989	TRIUMF-174
$p p$	1-1.7	SACLAY-070
$p p$	1-2	SACLAY-017
$p p$	1-2	SACLAY-106
$p p$	1-3.8	SACLAY-052
$p p$	1-3.8	SACLAY-101
$p p$	1.02	TRIUMF-544
$p p$	1.02-1.21	SACLAY-129
$p p$	1.05	TRIUMF-174
$p p$	1.06	TRIUMF-368
$p p$	1.08	LAMPF-815
$p p$	1.09	LAMPF-336
$p p$	1.09	LAMPF-392
$p p$	1.09	LAMPF-563
$p p$	1.09-1.46	LAMPF-1072
$p p$	1.09-1.46	LAMPF-518
$p p$	1.1-1.5	LAMPF-1027
$p p$	1.1	SACLAY-124
$p p$	1.1	TRIUMF-300
$p p$	1.1	TRIUMF-496
$p p$	1.11	TRIUMF-174
$p p$	1.12-3.62	SACLAY-087
$p p$	1.12	SACLAY-124
$p p$	1.17	SACLAY-124

BEAM/TARGET/MOMENTUM INDEX

Beam-target	Lab momentum (GeV/c)	Experiment	Beam-target	Lab momentum (GeV/c)	Experiment
p p	1.19	LAMPF-815	p p	85	CERN-WA-076
p p	1.2	SIN-R-78-05.4	p p	100	FNAL-597
p p	1.2	SIN-R-82-06	p p	147	FNAL-570
p p	1.2-3.8	SACLAY-104	p p	200	CERN-NA-025
p p	1.22	LAMPF-590	p p	200	CERN-WA-070
p p	1.27	LAMPF-815	p p	200	FNAL-581/704
p p	1.28	LAMPF-336	p p	212	CERN-R-420
p p	1.28	LAMPF-583	p p	250	CERN-NA-022
p p	1.28	LAMPF-708	p p	280	CERN-WA-070
p p	1.28	LAMPF-709	p p	280	CERN-WA-073
p p	1.28	LAMPF-790	p p	281	CERN-R-211
p p	1.28	LAMPF-885	p p	293-2094	CERN-R-210
p p	1.28-1.46	LAMPF-636	p p	300	CERN-WA-076
p p	1.3-3.2	SACLAY-052-2	p p	300	CERN-NA-024
p p	1.37	SACLAY-088	p p	314	CERN-UA-006
p p	1.37	SACLAY-089	p p	360	CERN-NA-025
p p	1.38	LAMPF-815	p p	360	CERN-NA-023
p p	1.38	LAMPF-708	p p	400	CERN-NA-027
p p	1.38	LAMPF-1035	p p	400	FNAL-557
p p	1.46	LAMPF-815	p p	400	FNAL-609
p p	1.46	LAMPF-336	p p	400	FNAL-623
p p	1.46	LAMPF-392	p p	479	CERN-R-211
p p	1.46	LAMPF-563	p p	479	CERN-R-421
p p	1.46	LAMPF-590	p p	479	CERN-R-608
p p	1.46	LAMPF-583	p p	479-2047	CERN-R-110
p p	1.46	LAMPF-708	p p	479-2047	CERN-R-501
p p	1.46	LAMPF-709	p p	479-2047	CERN-R-808
p p	1.46	LAMPF-790	p p	511-2047	CERN-R-807
p p	1.46	LAMPF-885	p p	800	FNAL-557
p p	1.46	LAMPF-637	p p	800	FNAL-743
p p	1.46	LAMPF-792	p p	1031	CERN-R-421
p p	1.46	SACLAY-132	p p	1440	CERN-R-420
p p	1.51	SACLAY-088	p p	1440	CERN-R-211
p p	1.51	SACLAY-089	p p	1496	CERN-R-608
p p	1.56	SACLAY-088	p p	2048	CERN-R-211
p p	1.56	SACLAY-089	p p	2048	CERN-R-421
p p	1.62	SACLAY-088	p p	2048	CERN-R-608
p p	1.62	SACLAY-089	p p	2048	CERN-R-419
p p	<1.7	SACLAY-060	p p	2048	CERN-R-422
p p	1.7	SACLAY-088	p p	2114	CERN-R-420
p p	1.7	SACLAY-089	p n	0.346-3.37	KEK-174
p p	1.81	SACLAY-088	p n	0.876-1.08	TRIUMF-460
p p	1.81	SACLAY-089	p n	1.09	LAMPF-392
p p	1.92-3.72	SACLAY-177	p n	1.22	LAMPF-590
p p	1.98	SACLAY-174	p n	1.46	LAMPF-392
p p	1.99	SACLAY-174	p n	1.46	LAMPF-590
p p	1.99	SACLAY-174	p n	1.46	LAMPF-792
p p	2.03	SACLAY-174	p n	32	SERPUKHOV-150
p p	2.09	SACLAY-174	p n	<70	SERPUKHOV-119
p p	2.2	SACLAY-174	p nucleon	1.46	LAMPF-634
p p	2.25	SACLAY-132	p nucleon	70	SERPUKHOV-169
p p	2.31	SACLAY-174	p nucleon	70	SERPUKHOV-136
p p	2.78	SACLAY-132	p deut	?	SACLAY-037
p p	3.31	SACLAY-132	p deut	?	SACLAY-113
p p	5.6	BNL-722	p deut	?	SACLAY-197
p p	6	BNL-834	p deut	0.3	PSI-Z-85-06
p p	6	BNL-838	p deut	0.644	TRIUMF-482
p p	6-20	BNL-850	p deut	0.679	TRIUMF-332
p p	7.85	ITEP-763	p deut	0.808	TRIUMF-482
p p	10	BNL-834	p deut	0.846	TRIUMF-332
p p	10	BNL-755	p deut	0.954	TRIUMF-482
p p	12	BNL-834	p deut	0.989	TRIUMF-332
p p	13-26	BNL-782	p deut	1.03	SACLAY-068
p p	13.5	BNL-785	p deut	1.08	TRIUMF-332
p p	18.5	BNL-785	p deut	1.09	LAMPF-635
p p	20	CERN-WA-007	p deut	1.09	TRIUMF-482
p p	22	BNL-842	p deut	1.09	LAMPF-664
p p	28	BNL-748	p deut	1.09	LAMPF-853
p p	28	BNL-794	p deut	1.22-3.10	SACLAY-095
p p	32	SERPUKHOV-150	p deut	1.28	LAMPF-635
p p	40	CERN-WA-007	p deut	1.28	LAMPF-664
p p	60	CERN-WA-007	p deut	1.28	LAMPF-853
p p	60-70	SERPUKHOV-161	p deut	1.28	LAMPF-1119
p p	70	SERPUKHOV-100	p deut	1.46	LAMPF-635
p p	70	SERPUKHOV-155	p deut	1.46	LAMPF-664
p p	80	CERN-WA-007	p deut	1.46	LAMPF-853

BEAM/TARGET/MOMENTUM INDEX

Beam-target	Lab momentum (GeV/c)	Experiment
p deut	1.46	LAMPF-1119
p deut	1.46	LAMPF-795
p deut	1.46	LAMPF-818
p deut	1.46	LAMPF-951
p deut	>1.58	SACLAY-198
p deut	1.58-2.20	SACLAY-099
p deut	1.60-3.41	SACLAY-095
p deut	3.37	KEK-159
p deut	32	SERPUKHOV-150
p deut	70	SERPUKHOV-100
p deut	900	FNAL-772
p trit	1.41	LAMPF-1135
p trit	1.44	LAMPF-1135
p trit	1.46	LAMPF-1135
p ³ He	0.793	TRIUMF-541
p ³ He	0.912	LAMPF-973
p ³ He	1.26	LAMPF-973
p ³ He	1.38	LAMPF-973
p ³ He	1.4	SACLAY-050
p ³ He	1.4	SACLAY-126
p ³ He	1.46	LAMPF-973
p ³ He	1.6	SACLAY-050
p He	0.3	SIN-Z-80-01
p He	0.912	LAMPF-973
p He	1.26	LAMPF-973
p He	1.38	LAMPF-973
p He	1.46	LAMPF-973
p He	72-525	CERN-R-210
p He	119-514	CERN-R-110
p He	258	CERN-R-418
p ⁷ Li	300	FNAL-705
p Be	7.5	ITEP-825
p Be	22	BNL-817
p Be	100-200	CERN-NA-011
p Be	200	FNAL-673
p Be	250	FNAL-673
p Be	400	FNAL-555
p Be	450	CERN-NA-034
p Be	451	CERN-NA-044
p Be	800	FNAL-756
p Be	800	FNAL-800
p Be	900	FNAL-711
p ¹² C	1.46	LAMPF-651
p ¹² C	1.99	SACLAY-174
p ¹² C	2.2	SACLAY-174
p ¹² C	2.31	SACLAY-174
p ¹² C	4	KEK-132
p C	3	ITEP-841
p C	4.5	ITEP-826
p C	7.5	ITEP-841
p C	7.5	ITEP-826
p C	7.5	ITEP-825
p C	70	SERPUKHOV-168
p Mg	70	SERPUKHOV-168
p Si	200	CERN-NA-032
p Si	800-925	FNAL-771
p Ca	900	FNAL-772
p Cr	500	FNAL-524
p Cu	0.846-0.933	TRIUMF-298
p Cu	0.88	SACLAY-107
p Cu	30	FNAL-776
p Cu	70	SERPUKHOV-168
p Cu	150	FNAL-776
p Cu	400	FNAL-776
p Cu	400	CERN-NA-020
p Cu	800	FNAL-776
p Ag	500	FNAL-524
p W	70	SERPUKHOV-168
p W	500	FNAL-524
p W	1000	FNAL-793

Beam-target	Lab momentum (GeV/c)	Experiment
p Ir	20	CERN-PS-162
p ¹⁹⁷ Au	800	FNAL-792
p Pb	0.644	SACLAY-199
p Pb	3	ITEP-841
p Pb	4.5	ITEP-826
p Pb	7.5	ITEP-841
p Pb	7.5	ITEP-826
p Pb	7.5	ITEP-825
p Pb	451	CERN-NA-044
p Th	28	BNL-779
p U	20	CERN-PS-162
p U	28	BNL-779
p nucleus	0.808-0.982	SACLAY-155
p nucleus	1	SERPUKHOV-127
p nucleus	1-4	KEK-113
p nucleus	1-5	KEK-090
p nucleus	1-9	ITEP-771
p nucleus	1-28	BNL-778
p nucleus	1.2	SIN-R-81-06
p nucleus	1.46	SACLAY-192
p nucleus	1.5-2.0	KEK-173
p nucleus	2.78	SACLAY-192
p nucleus	2.89	SACLAY-133
p nucleus	3	ITEP-813
p nucleus	3.52	SACLAY-133
p nucleus	3.7	SACLAY-057
p nucleus	3.88	KEK-133
p nucleus	4-9	JINR-86-01
p nucleus	4.54-10.1	ITEP-831
p nucleus	5	ITEP-813
p nucleus	6	BNL-834
p nucleus	6-20	BNL-850
p nucleus	7.5	ITEP-813
p nucleus	9.96	ITEP-842
p nucleus	10	BNL-834
p nucleus	10	BNL-855
p nucleus	12	KEK-136
p nucleus	12	BNL-834
p nucleus	12	KEK-049
p nucleus	<13	KEK-082
p nucleus	15-65	SERPUKHOV-153
p nucleus	16	BNL-810
p nucleus	16	BNL-814
p nucleus	17	BNL-790
p nucleus	20	BNL-855
p nucleus	60.5	CERN-NA-045
p nucleus	70	SERPUKHOV-121
p nucleus	70	SERPUKHOV-144
p nucleus	70	SERPUKHOV-155
p nucleus	70	SERPUKHOV-171
p nucleus	100	FNAL-597
p nucleus	200	FNAL-565
p nucleus	200-800	FNAL-466
p nucleus	202	CERN-NA-045
p nucleus	203	CERN-WA-080
p nucleus	250	CERN-NA-022
p nucleus	250	FNAL-769
p nucleus	370	CERN-WA-082
p nucleus	400	FNAL-565
p nucleus	400	CERN-NA-003
p nucleus	400	CERN-NA-030
p nucleus	400	CERN-WA-038
p nucleus	400	CERN-WA-065
p nucleus	400	CERN-WA-066
p nucleus	400	FNAL-557
p nucleus	400	FNAL-605
p nucleus	400	FNAL-613
p nucleus	400	FNAL-708
p nucleus	450	CERN-NA-030
p nucleus	450	CERN-WA-068
p nucleus	500	FNAL-576
p nucleus	500	FNAL-672
p nucleus	800	FNAL-557
p nucleus	800	FNAL-605
p nucleus	800	FNAL-706

BEAM/TARGET/MOMENTUM INDEX

Beam-target	Lab momentum (GeV/c)	Experiment
p nucleus	800	FNAL -508
p nucleus	800	FNAL -653
p nucleus	800	FNAL -747
p nucleus	800	FNAL -750
p nucleus	800	FNAL -751
p nucleus	800	FNAL -758
p nucleus	800	FNAL -759
p nucleus	800	FNAL -761
p nucleus	800	FNAL -762
p nucleus	800	FNAL -763
p nucleus	800	FNAL -764
p nucleus	800	FNAL -765
p nucleus	1000	FNAL -672
p nucleus	1000	FNAL -729
p nucleus	?	FNAL -766
p crystal	1 10	CERN-PS-188
$\bar{p}$ p	0	CERN-PS-170
$\bar{p}$ p	0	CERN-PS-171
$\bar{p}$ p	0	CERN-PS-174
$\bar{p}$ p	0	CERN-PS-175
$\bar{p}$ p	0	CERN-PS-182
$\bar{p}$ p	0	CERN-PS-183
$\bar{p}$ p	0	CERN-PS-195
$\bar{p}$ p	?	KEK-131
$\bar{p}$ p	<0.2	CERN-PS-179
$\bar{p}$ p	<0.3	CERN-PS-183
$\bar{p}$ p	0.1-0.6	CERN-PS-178
$\bar{p}$ p	0.15-0.60	CERN-PS-173
$\bar{p}$ p	0.22-0.80	CERN-PS-172
$\bar{p}$ p	0.3-0.7	CERN-PS-198
$\bar{p}$ p	0.30-1.55	CERN-PS-172
$\bar{p}$ p	0.30: -0.551	BNL -762
$\bar{p}$ p	0 0.78	KEK-074A
$\bar{p}$ p	0 1.5	CERN-PS-199
$\bar{p}$ p	0.58	KEK-068
$\bar{p}$ p	<1.8	CERN-PS-201
$\bar{p}$ p	<2	CERN-PS-197
$\bar{p}$ p	<2	CERN-PS-170
$\bar{p}$ p	0.6-1.9	CERN-PS-202
$\bar{p}$ p	1.2 1.6	BNL -789
$\bar{p}$ p	1. 2.0	CERN-PS-185
$\bar{p}$ p	3 7	FNAL -760
$\bar{p}$ p	3.5-7.5	CERN-R-704
$\bar{p}$ p	5	BNL -771
$\bar{p}$ p	6	BNL -838
$\bar{p}$ p	8 12	CERN-WA -074
$\bar{p}$ p	20	CERN-WA -007
$\bar{p}$ p	32	SERPUKHOV -138
$\bar{p}$ p	32	SERPUKHOV -150
$\bar{p}$ p	40	CERN-WA -007
$\bar{p}$ p	40-50	SERPUKHOV -148
$\bar{p}$ p	60	CERN-WA -007
$\bar{p}$ p	74	CERN-WA -042
$\bar{p}$ p	80	CERN-WA -007
$\bar{p}$ p	100	FNAL -597
$\bar{p}$ p	137	CERN-WA -042
$\bar{p}$ p	147	FNAL -570
$\bar{p}$ p	200	FNAL -581/704

HERE, FOR THE REST OF $\bar{p}p$, WE SWITCH FROM LAB MOMENTUM TO C.M. ENERGY

Beam-target	C.m. energy (GeV)	Experiment
$\bar{p}$ p	20	CERN-R-420
$\bar{p}$ p	23.5-62.7	CERN-R-210
$\bar{p}$ p	24.3	CERN-UA-006
$\bar{p}$ p	30	CERN-R-211
$\bar{p}$ p	30	CERN-R-421
$\bar{p}$ p	30	CERN-R-608
$\bar{p}$ p	30-62	CERN-R-110
$\bar{p}$ p	30-62	CERN-R-501
$\bar{p}$ p	30-62	CERN-R-608
$\bar{p}$ p	31-62	CERN-R-807
$\bar{p}$ p	44	CERN-R-421
$\bar{p}$ p	52	CERN-R-420

Beam-target	Lab momentum (GeV/c)	Experiment
$\bar{p}$ p	52	CERN-R-211
$\bar{p}$ p	53	CERN-R-608
$\bar{p}$ p	62	CERN-R-211
$\bar{p}$ p	62	CERN-R-421
$\bar{p}$ p	62	CERN-R-608
$\bar{p}$ p	63	CERN-R-420
$\bar{p}$ p	100-540	CERN-UA-004
$\bar{p}$ p	300-2000	FNAL -710
$\bar{p}$ p	300-2000	FNAL -713
$\bar{p}$ p	500-2000	FNAL -741
$\bar{p}$ p	500-2000	FNAL -775
$\bar{p}$ p	540	CERN-UA-001
$\bar{p}$ p	540	CERN-UA-003
$\bar{p}$ p	540	CERN-UA-005
$\bar{p}$ p	630	CERN-UA-001
$\bar{p}$ p	630	CERN-UA-002
$\bar{p}$ p	630	CERN-UA-007
$\bar{p}$ p	630	CERN-UA-008
$\bar{p}$ p	800-900	CERN-UA-005-2
$\bar{p}$ p	2000	FNAL -735
$\bar{p}$ p	2000	FNAL -740

Beam-target	Lab momentum (GeV/c)	Experiment
$\bar{p}$ n	32	SERPUKHOV -150
$\bar{p}$ deut	0	CERN-PS-174
$\bar{p}$ deut	0	CERN-PS-175
$\bar{p}$ deut	<0.2	CERN-PS-179
$\bar{p}$ deut	<0.65	BNL -772
$\bar{p}$ deut	0.3 0.7	CERN-PS-198
$\bar{p}$ deut	<1.8	CERN-PS-201
$\bar{p}$ deut	32	SERPUKHOV -150
$\bar{p}$ deut	74	CERN-WA -042
$\bar{p}$ deut	137	CERN-WA -042

$\bar{p}$ ^3He	<0.2	CERN-PS-179
$\bar{p}$ He	0.03	CERN-PS-194/2
$\bar{p}$ He	0.031-0.087	CERN-PS-194
$\bar{p}$ He	0.2	CERN-PS-194/2
$\bar{p}$ He	<0.6	CERN-PS-179
$\bar{p}$ ^7Li	300	FNAL -705
$\bar{p}$ C	0.1	CERN-PS-204
$\bar{p}$ Ne	<0.6	CERN-PS-179
$\bar{p}$ nucleus	0	CERN-PS-176
$\bar{p}$ nucleus	0	CERN-PS-177
$\bar{p}$ nucleus	0	CERN-PS-186
$\bar{p}$ nucleus	0	CERN-PS-203
$\bar{p}$ nucleus	0.03	CERN-PS-194/2
$\bar{p}$ nucleus	0.2	CERN-PS-194/2
$\bar{p}$ nucleus	0.3-0.6	CERN-PS-184
$\bar{p}$ nucleus	0.6	CERN-PS-187
$\bar{p}$ nucleus	<1.8	CERN-PS-201
$\bar{p}$ nucleus	5	BNL -854
$\bar{p}$ nucleus	7	BNL -854
$\bar{p}$ nucleus	9	BNL -854
$\bar{p}$ nucleus	40-50	SERPUKHOV -148
$\bar{p}$ nucleus	100	FNAL -597
$\bar{p}$ nucleus	125	FNAL -537
$\bar{p}$ crystal	0.03	CERN-PS-194/2
$\bar{p}$ crystal	0.2	CERN-PS-194/2

n p	0.5-1.2	PSI-R-87-12
n p	0.55-1.2	PSI-R-86-14
n p	0.8-1.2	SIN-R-72-02
n p	0.609	TRIUMF-498
n p	0.609-1.09	TRIUMF-190
n p	0.68	TRIUMF-182
n p	0.771	TRIUMF-466
n p	0.773	TRIUMF-466
n p	0.776	TRIUMF-466
n p	0.782	TRIUMF-466
n p	0.795	TRIUMF-466
n p	0.808 1.46	LAMPF -960
n p	0.827 1.81	SACLAY-144

BEAM/TARGET/MOMENTUM INDEX

Beam-target	Lab momentum (GeV/c)	Experiment
n p	0.846	TRIUMF-182
n p	0.883	TRIUMF-369
n p	0.95-2	SACLAY-078
n p	0.99	TRIUMF-182
n p	1-2	SACLAY-106
n p	1.02	TRIUMF-372
n p	1.06	TRIUMF-121
n p	1.06	TRIUMF-368
n p	1.09	LAMPF-665
n p	1.09-1.46	LAMPF-770
n p	1.09-1.81	SACLAY-136
n p	1.22	LAMPF-590
n p	1.28	LAMPF-876
n p	1.28	LAMPF-665
n p	1.28-1.70	SACLAY-140
n p	1.45	LAMPF-961
n p	1.46	LAMPF-665
n p	1.46	LAMPF-590
n p	1.46	LAMPF-876
n p	1.46	LAMPF-589
n p	10-28	BNL-766
n p	231	TRIUMF-498
n deut	0.6-1.2	SIN-R-72-02
n C	2-10	ITEP-862
n Si	280	FNAL-400
n Si	560	FNAL-400
n Pb	2-10	ITEP-862
n nucleus	?	LAMPF-XXX
n nucleus	0.8-1.2	SIN-R-80-10
n nucleus	2-9.5	ITEP-822
n nucleus	40-60	SERPUKHOV-146
n nucleus	<70	SERPUKHOV-159
n nucleus	300	FNAL-630
$\bar{n}$ p	0.0043-0.043	BNL-795
$\bar{n}$ p	0.1-0.5	BNL-767
$\bar{n}$ p	<1.8	CERN-PS-201
$\bar{n}$ deut	<1.8	CERN-PS-201
$\bar{n}$ C	0.1-0.6	CERN-PS-178
$\bar{n}$ Al	0.1-0.6	CERN-PS-178
$\bar{n}$ Fe	0.1-0.6	CERN-PS-178
$\bar{n}$ Cu	0.1-0.6	CERN-PS-178
$\bar{n}$ Pb	0.1-0.6	CERN-PS-178
Λ Cu	300-800	FNAL-756
Λ Cu	300-800	FNAL-800
Λ nucleus	80-350	FNAL-619
Σ^- p	74	CERN-WA-042
Σ^- p	137	CERN-WA-042
Σ^- deut	74	CERN-WA-042
Σ^- deut	137	CERN-WA-042
Σ^- Be	360	CERN-WA-089
Σ^- Cu	360	CERN-WA-089
Σ^- nucleus	0	BNL-723
Σ^- nucleus	1	SERPUKHOV-127
Σ^- nucleus	250	FNAL-730
Ξ^- p	74	CERN-WA-042
Ξ^- p	137	CERN-WA-042
Ξ^- deut	0	BNL-813
Ξ^- deut	74	CERN-WA-042
Ξ^- deut	137	CERN-WA-042
Ξ^- Be	116	CERN-WA-042
Ξ^- Be	300	CERN-WA-089
Ξ^- Cu	300	CERN-WA-089
Ξ^0 Cu	300-800	FNAL-756
Ξ^0 Cu	300-800	FNAL-800
Ω^- Be	300	CERN-WA-089

Beam-target	Lab momentum (GeV/c)	Experiment
Ω^- Cu	300	CERN-WA-089
deut p	?	SACLAY-066
deut p	?	SACLAY-190
deut p	0.621-1.02	SACLAY-137
deut p	0.65	SACLAY-157
deut p	0.77-1.50	SACLAY-108
deut p	0.889	SACLAY-166
deut p	1.2	SACLAY-166
deut p	1.3	SACLAY-157
deut p	1.46	LAMPF-685
deut p	1.6	SACLAY-157
deut p	1.6-3.6	SACLAY-115
deut p	1.62	SACLAY-138
deut p	1.77-3.62	SACLAY-117
deut p	2.02-9.07	JINR-86-03
deut p	2.05	SACLAY-138
deut p	2.1	SACLAY-157
deut p	2.31	SACLAY-138
deut p	2.4	SACLAY-157
deut p	2.93	SACLAY-038-2
deut p	3.2	SACLAY-157
deut p	3.39	SACLAY-145
deut deut	?	SACLAY-066
deut deut	1.5-4.0	KEK-125
deut deut	1.91-2.62	SACLAY-105
deut deut	2.02-9.07	JINR-86-03
deut deut	2.98	SACLAY-080
deut deut	3.39	SACLAY-080
deut deut	3.72	SACLAY-080
deut deut	254	CERN-R-418
deut ^3He	0.22-0.26	SIN-R-73-01.2
deut C	1.5-4.0	KEK-125
deut Al	1.5-4.0	KEK-125
deut nucleus	1.6-3.6	SACLAY-115
deut nucleus	3.72	SACLAY-134
deut nucleus	4-9	JINR-86-01
$\overline{\text{deut}} p$	12-13	SERPUKHOV-139
$\overline{\text{deut}} deut$	12-13	SERPUKHOV-139
$^3\text{He} p$	1.8-4.3	SACLAY-085
$^3\text{He} p$	3-13.5	JINR-86-03
$^3\text{He} p$	4.74	SACLAY-050
$^3\text{He} ^3\text{He}$	?	SACLAY-092
^3He nucleus	1.8-4.3	SACLAY-085
^3He nucleus	3-13.5	JINR-86-03
^3He nucleus	13.5	JINR-86-01
He p	4.3	SACLAY-013
He p	7	SACLAY-013
He deut	4.3	SACLAY-013
He deut	7	SACLAY-013
He ^3He	4.3	SACLAY-013
He ^3He	7	SACLAY-013
He He	4.3	SACLAY-013
He He	5	SACLAY-013
He He	70.2-524	CERN-R-210
He He	117-512	CERN-R-110
He He	117-512	CERN-R-808
He He	125	CERN-R-418
He He	125-512	CERN-R-807
He nucleus	4.01-18	JINR-86-03
He nucleus	18	JINR-86-01
He nucleus	18	JINR-86-04
He nucleus	>45	CERN-PS-192
$^6\text{Li} p$	7.73-8.40	SACLAY-206
$^{12}\text{C} p$	3.38	TRIUMF-478
$^{12}\text{C} C$	54	JINR-86-04
^{12}C nucleus	54	JINR-86-04
^{12}C nucleus	181	BNL-810
^{12}C nucleus	191	BNL-826

BEAM/TARGET/MOMENTUM INDEX

Beam-target	Lab momentum (GeV/c)	Experiment
¹³ C p	3.52	TRIUMF-478
¹⁶ O C	96.1	BNL-831
¹⁶ O C	224	BNL-831
¹⁶ O Au	232	BNL-844
¹⁶ O Au	3633	CERN-NA-041
O Hg	232	BNL-801
¹⁶ O Hg	3617	CERN-NA-039
¹⁶ O Pb	3217	CERN-EMU-002
¹⁶ O U	3202	CERN-NA-038
¹⁶ O nucleus	96.1	BNL-831
¹⁶ O nucleus	223-3217	CERN-EMU-001
¹⁶ O nucleus	224	BNL-831
¹⁶ O nucleus	232	BNL-802
¹⁶ O nucleus	239	BNL-847
¹⁶ O nucleus	247	BNL-806
¹⁶ O nucleus	255	BNL-808
¹⁶ O nucleus	255	BNL-814
¹⁶ O nucleus	255	BNL-815
¹⁶ O nucleus	255	BNL-825
¹⁶ O nucleus	255	CERN-EMU-005
¹⁶ O nucleus	815	CERN-EMU-005
¹⁶ O nucleus	815	CERN-WA-086
¹⁶ O nucleus	961	CERN-NA-040
¹⁶ O nucleus	975	CERN-EMU-003
¹⁶ O nucleus	975	CERN-EMU-004
¹⁶ O nucleus	975	CERN-EMU-007
¹⁶ O nucleus	975	CERN-NA-035
¹⁶ O nucleus	975	CERN-WA-080
¹⁶ O nucleus	975	CERN-WA-087
¹⁶ O nucleus	3202	CERN-NA-040
¹⁶ O nucleus	3202	CERN-NA-034-2
¹⁶ O nucleus	3202	CERN-NA-036
¹⁶ O nucleus	3217	CERN-EMU-005
¹⁶ O nucleus	3217	CERN-WA-086
¹⁶ O nucleus	3217	CERN-EMU-003
¹⁶ O nucleus	3217	CERN-EMU-004
¹⁶ O nucleus	3217	CERN-EMU-007
¹⁶ O nucleus	3217	CERN-NA-035
¹⁶ O nucleus	3217	CERN-WA-080
¹⁶ O nucleus	3217	CERN-WA-087
¹⁶ O nucleus	3217	CERN-EMU-008
Mg Mg	109	JINR-86-04
²⁸ Si nucleus	406	BNL-802
²⁸ Si nucleus	418	BNL-847
²⁸ Si nucleus	432	BNL-806
²⁸ Si nucleus	446	BNL-825
³² S C	192	BNL-831
³² S C	448	BNL-831

Beam-target	Lab momentum (GeV/c)	Experiment
³² S Al	6433	CERN-EMU-002
³² S ³² S	6445	CERN-NA-044
³² S Cu	6433	CERN-EMU-002
³² S W	6433	CERN-WA-085
³² S Au	7266	CERN-NA-041
³² S Hg	464	BNL-801
³² S Pb	480	BNL-793
³² S Pb	6433	CERN-EMU-002
³² S Pb	6445	CERN-NA-044
³² S U	6403	CERN-NA-038
³² S nucleus	?	CERN-NA-034-3
³² S nucleus	192	BNL-831
³² S nucleus	448	BNL-831
³² S nucleus	477	BNL-847
³² S nucleus	480	BNL-804
³² S nucleus	509	BNL-808
³² S nucleus	509	BNL-810
³² S nucleus	509	BNL-814
³² S nucleus	509	BNL-826
³² S nucleus	1630	CERN-WA-086
³² S nucleus	1921	CERN-NA-040
³² S nucleus	1921	CERN-NA-045
³² S nucleus	1951	CERN-EMU-004
³² S nucleus	1951	CERN-EMU-007
³² S nucleus	1951	CERN-NA-035
³² S nucleus	6401	CERN-NA-040
³² S nucleus	6403	CERN-NA-045
³² S nucleus	6403	CERN-NA-036
³² S nucleus	6433	CERN-WA-086
³² S nucleus	6433	CERN-EMU-004
³² S nucleus	6433	CERN-EMU-007
³² S nucleus	6433	CERN-NA-035
³² S nucleus	6433	CERN-EMU-001
³² S nucleus	6433	CERN-EMU-008
³² S nucleus	6433	CERN-EMU-009
³² S nucleus	6433	CERN-WA-080
³² S nucleus	6433	CERN-WA-087
⁴⁰ Ca nucleus	8034	CERN-EMU-008
¹⁹⁷ Au nucleus	3135	BNL-808
nucleus nucleus	?	JINR-86-02
nucleus nucleus	?	JINR-86-05
hadron p	200-2000	FNAL-690
charged ⁺ crystal	12-180	FNAL-660
charged ⁺ crystal	20-200	FNAL-754
charged ⁺ crystal	30-200	FNAL-753
charged ⁻ crystal	12-180	FNAL-660
charged ⁻ crystal	20-200	FNAL-754

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ABBREVIATIONS USED IN THE SUMMARIES

JOURNALS

Following are abbreviations for journals listed in the summaries:

AJP	American Journal of Physics
ANNP	Annals of Physics
APL	Applied Physics Letters
APP	Acta Physica Polonica
ARNPS	Annual Review of Nuclear and Particle Science
ASTJ	Astrophysical Journal
CAMP	Comments on Atomic and Molecular Physics
CJP	Canadian Journal of Physics
CNPP	Comments on Nuclear and Particle Physics
CPC	Computer Physics Communications
CZJP	Czechoslovakian Journal of Physics
EPL	Europhysics Letters
HFI	Hyperfine Interactions
HPA	Helvetica Physica Acta
IEEE MAG	Institute of Electrical and Electronics Engineers Transactions on Magnetics
IEEE TNS	Institute of Electrical and Electronics Engineers Transactions on Nuclear Science
IJMP	International Journal of Modern Physics
JASA	Journal of the Acoustical Society of America
JETP	Journal of Experimental and Theoretical Physics (translation of ZETF)
JETPL	Journal of Experimental and Theoretical Physics Letters (translation of ZETFP)
JJAP	Japanese Journal of Applied Physics
JdeP	Journal de Physique
JPHY	Journal of Physics
JPL	Journal de Physique Lettres
JPSJ	Journal of the Physical Society of Japan
LNC	Lettere al Nuovo Cimento
NC	Nuovo Cimento
NIM	Nuclear Instruments and Methods
NP	Nuclear Physics
PL	Physics Letters
PR	Physical Review
PRPL	Physics Reports (Physics Letters C)
PRL	Physical Review Letters
PS	Physica Scripta
PTP	Progress of Theoretical Physics
RMP	Reviews of Modern Physics
RNC	Rivista del Nuovo Cimento
RSI	Review of Scientific Instruments
SHEP	Surveys in High Energy Physics
SJNP	Soviet Journal of Nuclear Physics (translation of YF)
YF	Yadernaya Fizika (translated as SJNP)
ZETF	Zhurnal Eksperimental'noi i Teoreticheskoi Fiziki (translated as JETP)
ZETFP	Pis'ma v Zhurnal Eksperimental'noi i Teoreticheskoi Fiziki (translated as JETPL)
ZPHY	Zeitschrift für Physik

KINEMATIC VARIABLES

Following are abbreviations used with reactions to indicate the momenta or energies at which they are studied:

PLAB	beam momentum in the lab frame
TLAB	beam kinetic energy in the lab frame
ELAB	beam total energy in the lab frame
PLAB/N	beam momentum per nucleon in the lab frame
TLAB/N	beam kinetic energy per nucleon in the lab frame
ELAB/N	beam total energy per nucleon in the lab frame
ECM	total energy in the c.m. frame

ACCELERATORS

BNL	Brookhaven AGS proton synchrotron (31 GeV/c Plab)
BNL-ION	Brookhaven heavy-ion accelerator
CERN	CERN proton synchrotron (28 GeV/c Plab)
CERN-ISR	CERN proton-proton Intersecting Storage Rings (62 GeV Ecm)
CERN-LEAR	CERN Low-Energy Antiproton Ring
CERN-LEP	CERN Large Electron-Positron collider (100 GeV Ecm)
CERN-PBAR/P	CERN $\bar{p}p$ collider (900 GeV Ecm)
CERN-SC	CERN cyclotron (600 MeV/c Plab)
CERN-SPS	CERN Super Proton Synchrotron (450 GeV/c Plab)
CESR	Cornell Electron-positron Storage Ring (16 GeV Ecm)
COSM	cosmic rays
DESY	Hamburg Deutsches Electron SYNchrotron (7.5 GeV/c Plab)
DESY-DORIS	DESY DORIS electron-positron ring (11.6 GeV Ecm)
DESY-DORIS-II	DESY DORIS upgraded
DESY-HERA	DESY HERA electron (26 GeV) - proton (820 GeV) collider
DESY-PETRA	DESY PETRA electron-positron storage ring (40 GeV Ecm)
FNAL	FNAL proton synchrotron (500 GeV/c Plab)
FNAL-COLLIDER	FNAL $\bar{p}p$ collider (2000 GeV Ecm)
FNAL-TEV	FNAL Tevatron
ITEP	ITEP Moscow proton synchrotron (7 GeV/c Plab)
JINR	JINR (Dubna) synchrotron
KEK-PS	KEK proton synchrotron (12 GeV/c Plab)
KEK-PF-LINAC	KEK electron linac (2.5 GeV) for photon factory and TRISTAN
KEK-TRISTAN	KEK electron-positron storage ring (60 GeV Ecm)
LAMPF	Los Alamos Meson/Proton Factory (1460 MeV/c Plab)
NONE	no accelerator used
NOVO-VEPP-2M	Novosibirsk VEPP-2M electron-positron storage ring (1.4 GeV Ecm)
NOVO-VEPP-4	Novosibirsk VEPP-4 electron-positron storage ring (10.4 GeV Ecm)
PSI	Paul Scherrer Institute, new name for SIN and EIR (see SIN)
SATURNE-II	Saclay Saturne-II p, d, and He synchrotron
SERPUKHOV	Serpukhov proton synchrotron (76 GeV/c Plab)
SIN	Schweizerische Inst. für Nuklearforschung (590 MeV Plab)
SLAC	Stanford electron linear accelerator (40 GeV/c Plab)
SLAC-PEP	SLAC Positron-Electron Project (36 GeV Ecm)
SLAC-SLC	SLAC Linear e^+e^- Collider (100 GeV Ecm)
SLAC-SPEAR	SLAC SPEAR electron-positron ring (8.4 GeV Ecm)
TOKYO	Inst. for Nucl. Studies (Tokyo) electron synchrotron (1.3 GeV/c Plab)
TRIUMF	Canadian TRIangle University Meson Facility (520 MeV Plab)

DETECTORS

For bubble chambers, we use a construction such as:

DBC-2M, or **HBC-15FT-HYB**, or **HLBC-BEBC-TST**.

The first element, one of

HBC, **DBC**, **HEBC**, or **HLBC**,

tells whether the chamber fill is hydrogen, deuterium, helium, or heavy liquid. The second element gives the size or name of the chamber. Where appropriate, a third element, one of

HYB, **RAP**, or **TST**,

indicates that the chamber is part of a hybrid system, or that it is rapid cycling, or that it contains a track-sensitive target.

In searching the SLAC/SPIRES database from which this report is taken, use the following abbreviations for general kinds of detectors (in this report, the words are spelled out):

CALO	calorimeter
CNTR	counter(s)
COMB	combination of various elements
DAS	double-arm spectrometer
DRIFT	drift chamber
EMUL	emulsion
ELECTRONIC	electronic detector
IONIZATION	detector looking for ionization
MICROSTRIP	microstrip detector
NEUTRONSPEC	neutron spectrometer
OSPK	optical spark chamber
OTHER	rare, nonelectronic detector (e.g., moon, ocean floor)
PHOTON	photon spectrometer such as NaI or Ge detectors
PLASTIC	Lexan, etc., used like emulsion
SAS	single-arm spectrometer
SPEC	spectrometer system
STRC	streamer chamber
TRAD	transition radiation detector
WAZ	wide-angle spectrometer
WIRE	wire chamber
X-RAY	detector x-ray spectrometer

Acronyms for specific detectors:

AFS	CERN-ISR Axial-Field Spectrometer
ALEPH	CERN-LEP detector
ALPHA-POLIS	JINR detector
AMY	KEK-TRISTAN high-resolution lepton detector
ARGUS	DESY-DORIS-II detector
BCD	FNAL Bottom Collider Detector
BENKEI	KEK-PS detector
BIS-2	Serpukhov upgrade of BIS
BIS-2M	Serpukhov upgrade of BIS-2
CCM	FNAL, FNAL-TEV Chicago Cyclotron Magnet spectrometer
CDF	Collider Detector at Fermilab
CDHS	CERN-PS, CERN-SPS CERN-Dortmund-Heidelberg-Saclay neutrino detector
CELLO	DESY-PETRA spectrometer system
CHARM	CERN-PS, CERN-SPS CERN-Hamburg-Amsterdam-Rome-Moscow neutrino detector
CHARM-II	CERN-SPS upgrade of CHARM detector
CLEO	CESR spectrometer system
CMD	Novosibirsk detector
CRYS-BALL	SLAC-PEP, DESY-DORIS, DESY-DORIS-II Crystal Ball large-solid-angle neutral detector
CRYS-BARREL	CERN-LEAR Crystal Barrel large-solid-angle detector
CRYS-BOX	LAMPF Crystal Box crystal array detector
CUSB	CESR Columbia-Stony Brook high-resolution calorimeter
CUSB-II	CESR upgrade of CUSB
DASP	DESY-DORIS Double-Arm Spectrometer system

DETECTORS

DELCO	SLAC-SPEAR, SLAC-PEP detector
DELPHI	CERN-LEP detector
DIOGENE	Saclay SATURNE-II pictorial drift chamber
D0	FNAL-COLLIDER detector
EHS	CERN-SPS European Hybrid Spectrometer
EMC	CERN-SPS European Muon Collaboration detector
EMRIC	Saclay detector
EPICS	LAMPF Energetic Pion Channel and Spectrometer
EVA	BNL Exclusive Variable Apparatus
FANCY	KEK-PS, KEK-TRISTAN Forward And Cylindrical detector system
FMPS	FNAL, FNAL-TEV Fermilab Multiparticle Spectrometer
FODS	Serpukhov double-arm spectrometer
GAMS-2000	Serpukhov hodoscope gamma spectrometer
GAMS-4PI	Serpukhov gamma spectrometer
GAMS-4000	CERN-SPS 64×64 cell Pb-glass array
GIBS	JINR detector
HELIOS	CERN-SPS detector
HPW	Harvard-Penn-Wisconsin neutrino detector
HRS	SLAC-PEP High-Resolution Spectrometer
HYPERON-II	Serpukhov detector
HYPERSPEC	BNL hypernuclear spectrometer
H1	DESY-HERA detector
ISTRA-M	Serpukhov detector
JADE	DESY-PETRA detector
JANUS	LAMPF proton polarimeter
JETSET	CERN-LEAR compact general purpose detector
KASKAD	Serpukhov cascade magnetic spectrometer
LAB-E	FNAL, FNAL-TEV target-calorimeter muon-spectrometer detector for neutrino physics
LAHRS	LAMPF Los Alamos High-Resolution proton Spectrometer
LASS	SLAC Large-Aperture Superconducting Solenoid spectrometer
LENA	DESY-DORIS nonmagnetic lead-glass NaI detector
LEPTON	Serpukhov magnetic wide-aperture spectrometer with automatic spark chambers
LEPTON-F	Serpukhov detector
L3	CERN-LEP detector
MAC	SLAC-PEP Magnetic Calorimeter
MARK-I	SLAC-SPEAR, SLAC-PEP, SLAC-SLC detector
MARK-III	SLAC-SPEAR detector
MARK-J	DESY-PETRA detector
MASPIC	JINR detector
MD-1	Novosibirsk detector
MEGA	LAMPF array of electron and photon spectrometers
MIS	Serpukhov multiparticle spectrometer
MPS	BNL MultiParticle Spectrometer
MPS-II	BNL upgrade of MPS
MTS	ITEP detector
NEUTSPEC	Novosibirsk neutral-particle energy and angle measuring detector
NHS	ITEP non-magnetic hadron spectrometer
NICE	Serpukhov nonmagnetic precision spectrometer
OMEGA	CERN, CERN-SPS spectrometer system
OMEGAPRIME	CERN-SPS spectrometer system
OMICRON	CERN-SC spectrometer system
OPAL	CERN-LEP detector
PINOT	Saclay high resolution pi0 and eta detector
PLASTIC-BALL	CERN-SPS plastic ball detector
PLUTO	DESY-DORIS, DESY-PETRA superconducting solenoid spectrometer
PROZA	JINR, Serpukhov polarized proton target with frozen polarization, gamma spectrometer, neutron detector
PROZA-M	Serpukhov polarized target detector
QUARTZ	Serpukhov crystal-diffraction spectrometer
RISK	Serpukhov 4.7×.9×.8 m ³ streamer chamber in magnetic field
RMS	CERN Rutherford Magnetic Spectrometer
SASF	FNAL Single-Arm Spectrometer Facility
SFINKS	Serpukhov detector
SFM	CERN-ISR Split-Field Magnet

DETECTORS

SHIP	KEK-TRISTAN detector for Search for Highly Ionizing Particles
SIGMA	Serpukhov CERN-IHEP magnetic spectrometer
SINDRUM	SIN large-solid-angle magnetic detector
SINDRUM-II	SIN upgraded large-angle solenoid detector
SLD	SLAC-SLC detector
SLON	JINR detector
SPEC-6M	Serpukhov 6-meter spectrometer
SPES-I	Saclay high-resolution spectrometer
SPES-II	CERN, CERN-LEAR high-resolution spectrometer
SPES-III	Saclay high-resolution spectrometer
SPES-IV	Saclay high-resolution spectrometer
SPES-0	Saclay modular lead-glass Cerenkov detector
SPHERE	JINR detector
SSF	SLAC Spectrometer Facility — 1.6, 8, and/or 20 GeV spectrometers
SUPERBENKEI	KEK window-frame type superconducting magnetic spectrometer
TAGX	TOKYO large-aperture spectrometer system
TASSO	DESY-PETRA detector
TELAS	KEK-PS Target-Embodied Large-Aperture Spectrometer
TISS	ITEP spark chamber and 2.5-m spectrometer
TOKIWA	KEK-PS spectrometer
TOPAZ	KEK-TRISTAN solenoidal spectrometer with TPC
TPC	SLAC-PEP Time Projection Chamber
TPS	FNAL Tagged Photon Spectrometer
2-GAMMA	SLAC-PEP system of forward detectors for 2-gamma process
UA1	CERN-PBAR/P UA1 experiment detector
UA2	CERN-PBAR/P UA2 experiment detector
VENUS	KEK-TRISTAN Versatile Economical and Novel Universal Spectrometer
ZEUS	DESY-HERA detector

PARTICLES

The first column gives the name as printed in this report, the second gives the name to use in searching the SLAC/SPIRES database from which this report is taken (see p. 3). Generally, charges of particles are omitted here (π^+ , π^- , π^0), as are such obvious constructions as (γ), $\gamma(s)$, $\gamma's$, ^{37}Ar , etc.

As printed herein	For searching SLAC/SPIRES database	Definition or comment
Ag	AG	silver nucleus
Al	AL	aluminum nucleus
annihil	ANNIHIL	annihilation final state in nucleon-antinucleon scattering
anomalon	ANOMALON	nuclear fragment with anomalous cross section
Ar	AR	argon nucleus
Au	AU	gold nucleus
axion	AXION	hypothesized light Higgs scalar boson
$a_0(980)$	A0(980)	meson [was $\delta(980)$]
$a_1(1260)$	A1(1260)	meson
$a_2(1320)$	A2(1320)	meson
$B(5270)$	B(5270)	bottom meson
$B^*(5330)$	B*(5330)	excited bottom meson
baryon	BARYON	unspecified baryon
$\bar{\text{baryon}}$	BARYONBAR	unspecified antibaryon
baryonium	BARYONIUM	meson coupling mainly to baryon-antibaryon
Be	BE	beryllium nucleus
Bi	BI	bismuth nucleus
Bor	BOR	boron nucleus — note name not same as chemical symbol
bottom	BOTTOM	unspecified particle with naked bottom
bottomonium	BOTTOMONIUM	unspecified $b\bar{b}$ meson
Br	BR	bromine nucleus
$b_1(1235)$	B1(1235)	the "Buddha" meson
C	C	carbon nucleus
$C^*(4.44)$	C*(4.44)	4.44 keV excited state of carbon nucleus
Ca	CA	calcium nucleus
Cd	CD	cadmium nucleus
centauro	CENTAURO	final state with 50 or more charged particles, no π^0 's
charged	CHARGED	unspecified charged particle
charm	CHARM	unspecified charmed particle
$\bar{\text{charm}}$	CHARMBAR	unspecified anticharmed particle
charmed-baryon	CHARMED-BARYON	unspecified charmed baryon
charmed-meson	CHARMED-MESON	unspecified charmed meson
charmonium	CHARMONIUM	unspecified $c\bar{c}$ meson
$\chi_b(\text{unspec})$	CHI/B(UNSPEC)	unspecified radiative decay product of higher mass Υ 's
$\chi_{b0}(1P)$	CHI/B0(1P)	$b\bar{b}$ meson
$\chi_{b0}(2P)$	CHI/B0(2P)	$b\bar{b}$ meson
$\chi_{b1}(1P)$	CHI/B1(1P)	$b\bar{b}$ meson
$\chi_{b1}(2P)$	CHI/B1(2P)	$b\bar{b}$ meson
$\chi_{b2}(1P)$	CHI/B2(1P)	$b\bar{b}$ meson
$\chi_{b2}(2P)$	CHI/B2(2P)	$b\bar{b}$ meson
$\chi_c(\text{unspec})$	CHI/C(UNSPEC)	unspecified radiative decay product of $\psi(2S)$
$\chi_{c1}(1P)$	CHI/C1(1P)	$c\bar{c}$ meson
$\chi_{c2}(1P)$	CHI/C2(1P)	$c\bar{c}$ meson
Cl	CL	chlorine nucleus
Cr	CR	chromium nucleus
crystal	CRYSTAL	crystal, general target for channeling experiments
Cu	CU	copper nucleus
$D(\text{unspec})$	D(UNSPEC)	unspecified charmed nonstrange meson
D	D	charmed nonstrange meson
$D^*(2010)$	D*(2010)	excited charmed nonstrange meson
D_s	D/S	$D_s(1971)$ charmed strange meson [was F_s^+]

PARTICLES

As printed herein	For searching SLAC/SPIRES database	Definition or comment
$\bar{D}$	DBAR	anticharmed nonstrange meson
darmstadton	DARMSTADTON	possible 1.8-MeV boson that decays to e^+e^-
$\Delta(\text{unspec})$	DELTA(UNSPEC)	unspecified $I = 3/2$, $S = 0$ baryon
$\Delta(1232\text{ P}_{33})$	DELTA(1232P33)	nucleon resonance
$\Delta(1950\text{ B})$	DELTA(1950B)	bump in production experiment
$\bar{\Delta}(1232\text{ P}_{33})$	DELTABAR(1232P33)	antinucleon resonance
demon	DEMON	exotic 6-quark deuteron-like state
deut	DEUT	deuteron
$\bar{\text{deut}}$	DEUTBAR	antideuteron
dibaryon	DIBARYON	unspecified nonstrange dibaryon resonance
dibaryon($S = -1$)	DIBARYON(S=-1)	unspecified $S = -1$ dibaryon resonance
dibaryon($S = -2$)	DIBARYON(S=-2)	unspecified $S = -2$ dibaryon resonance
e^+	E+	positron
$e^\pm$	E+-	electron or positron
e^-	E-	electron
η	ETA	$\eta(549)$ meson
$\eta(1080)$	ETA(1080)	meson
$\eta(1430)$	ETA(1430)	glueball candidate [was $\epsilon(1430)$]
η_b	ETA/B	lowest mass $J^P = 0^- b\bar{b}$ meson
$\eta_c(1S)$	ETA/C(1S)	lowest mass $J^P = 0^- c\bar{c}$ meson
$\eta_c(2S)$	ETA/C(2S)	charmonium meson
η'	ETAPRIME	$\eta'(958)$ meson
exotic-meson	EXOTIC-MESON	cannot be formed of $q\bar{q}$
exotic-nucleon	EXOTIC-NUCLEON	cannot be formed of qqq
Fe	FE	iron nucleus
frag	FRAG	nuclear fragment
$f_0(1300)$	F0(1300)	$\pi\pi$ S-wave (near 1300 MeV) [was $\epsilon(1300)$]
$f_0(1590)$	F0(1590)	meson
$f_0(700)$	F0(700)	$\pi\pi$ S-wave (near 700 MeV) [was $\epsilon(700)$]
$f_0(975)$	F0(975)	meson [was $S(975)$]
$f_1(1285)$	F1(1285)	meson [was $D(1285)$]
$f_1(1420)$	F1(1420)	meson [was $E(1420)$]
$f_2(1270)$	F2(1270)	meson
$f_2(1720)$	F2(1720)	glueball candidate [was $\theta(1690)$]
$f'_2(1525)$	F2PRIME(1525)	meson
$f_4(2050)$	F4(2050)	$I = 0$, $J^P = 4^+$ meson resonance [was $h(2050)$]
Ga	GA	gallium nucleus
γ	GAMMA	photon
Ge	GE	germanium nucleus
glueball	GLUEBALL	unspecified glueball
gluon	GLUON	
$h(990)$	H(990)	meson
hadron	HADRON	unspecified hadron
He	HE	helium nucleus
Hg	HG	mercury nucleus
higgs	HIGGS	Higgs boson
hvy-flavor	HVY-FLAVOR	unspecified particle carrying a flavor heavier than strange
hvy-lepton	HVY-LEPTON	unspecified heavy lepton
hvy- ν	HVY-NU	unspecified heavy neutrino
hvy- ν_e	HVY-NUE	unspecified heavy electron neutrino
hvy- ν_μ	HVY-NUMU	unspecified heavy muon neutrino
hypernuc	HYPERNUC	unspecified hypernucleus, generally containing more than two baryons
hyperon	HYPERON	unspecified hyperon
In	IN	indium nucleus
inelastic	INELASTIC	same as X, except elastic excluded

PARTICLES

As printed herein	For searching SLAC/SPIRES database	Definition or comment
Ir	IR	iridium nucleus
$J/\psi(1S)$	J PSI(1S)	$J/\psi(3097)$
jet	JET	jet of particles
K	K	K meson
$K^*(\text{unspec})$	$K^*(\text{UNSPEC})$	unspecified K^*
$K^*(892)$	$K^*(892)$	meson
$\bar{K}^*(\text{unspec})$	$K^*\text{BAR}(\text{UNSPEC})$	unspecified $\bar{K}^*$
$\bar{K}^*(892)$	$K^*\text{BAR}(892)$	meson
kaon	KAON	kaon or antikaon of unspecified charge
$\bar{K}$	KBAR	$\bar{K}$ meson
K_L	KL	K_{long} , neutral K meson
$KN(1760)$	KN(1760)	meson
K_S	KS	K_{short} , neutral K meson
$K_1(1240-1400)$	K1(1240-1400)	meson [was $Q(1240-1400)$]
$K_2(1770)$	K2(1770)	meson [was $L(1770)$]
$K_2^*(1430)$	K2*(1430)	meson
Λ	LAMBDA	Λ hyperon
$\Lambda(\text{unspec})$	LAMBDA(UNSPEC)	unspecified $I = 0$, $S = -1$ baryon
$\Lambda(1330\text{ B})$	LAMBDA(1330B)	bump in production experiment
$\Lambda(1520\text{ D}_{03})$	LAMBDA(1520D03)	hyperon resonance
$\Lambda N(2130)$	LAMBDA-N(2130)	$S = -1$ dibaryon resonance
Λ_c^+	LAMBDA/C+	$\Lambda_c(2285)^+$ $I = 0$ charmed baryon
$\bar{\Lambda}$	LAMBDABAR	antilambda
lepton	LEPTON	unspecified lepton
Li	LI	lithium nucleus
longlived	LONGLIVED	unspecified particle stable under strong and electromagnetic decay
meson	MESON	unspecified meson
meson(2950)	MESON(2950)	bump seen in $p\bar{p}\pi$
Mg	MG	magnesium nucleus
monopole	MONOPOLE	magnetic monopole
μ	MU	muon
mult[charged]	MULT(CHARGED)	multiplicity distribution for unspecified charged particle
muon	MUON	muon of unspecified charge
muonium	MUONIUM	μ^+e^- atom
n	N	neutron
$n(\text{spect})$	N(SPECT)	spectator neutron
$N(\text{unspec})$	N(UNSPEC)	unspecified $I = 1/2$, $S = 0$ baryon
$N(1440\text{ B})$	N(1440B)	bump in production experiment
$N(1440\text{ P}_{11})$	N(1440P11)	nucleon resonance
$N(1520\text{ B})$	N(1520B)	bump in production experiment
$N(1520\text{ D}_{13})$	N(1520D13)	nucleon resonance
$N(1675\text{ D}_{15})$	N(1675D15)	nucleon resonance
$N(1680\text{ F}_{15})$	N(1680F15)	nucleon resonance
$N(1700\text{ B})$	N(1700B)	bump in production experiment
$N^*(\text{unspec})$	$N^*(\text{UNSPEC})$	$S = 0$ baryon of unspecified mass and isospin
$N_{5/2}^*(\text{unspec})$	$N^{*5/2}(\text{UNSPEC})$	unspecified $I = 5/2$, $S = 0$ baryon
$\bar{n}$	NBAR	antineutron
Na	NA	sodium nucleus
Ne	NE	neon nucleus
neutral	NEUTRAL	unspecified neutral particle
Nit	NIT	nitrogen nucleus — note name not same as chemical symbol
$N\bar{N}(2020)$	NNBAR(2020)	meson
$N\bar{N}(2200)$	NNBAR(2200)	meson
$N\phi(1950)$	NPHI(1950)	reported baryon with $s\bar{s}$ plus 3 other quarks
ν	NU	unspecified neutrino

PARTICLES

As printed herein	For searching SLAC/SPIRES database	Definition or comment
$\bar{\nu}$	NUBAR	unspecified antineutrino
nucleon	NUCLEON	unspecified nucleon
<u>nucleon</u>	NUCLEONBAR	unspecified antinucleon
nucleus	NUCLEUS	unspecified nucleus
ν_e	NUE	electron neutrino
$\bar{\nu}_e$	NUEBAR	electron antineutrino
<u>nuino</u>	NUINO	any light supersymmetric particle
<u>nuino</u>	NUINOBAR	antineutrino
ν_μ	NUMU	muon neutrino
$\bar{\nu}_\mu$	NUMUBAR	muon antineutrino
ν_τ	NUTAU	τ neutrino
$\bar{\nu}_\tau$	NUTAUBAR	τ antineutrino
O	O	oxygen nucleus
ω	OMEGA	$\omega(783)$ meson
$\Omega^*(\text{unspec})$	OMEGA*(UNSPEC)	$S = -3$ baryon of unspecified mass and isospin
Ω^-	OMEGA-	Ω^- hyperon
Ω_c^0	OMEGA/C0	$\Omega_c(2740)^0$ $I = 0$ charmed doubly strange baryon
p	P	proton
$p(\text{spect})$	P(SPECT)	spectator proton
Pb	PB	lead nucleus
$\bar{p}$	PBAR	antiproton
ϕ	PHI	$\phi(1020)$ meson
$\phi(1680)$	PHI(1680)	meson
photino	PHOTINO	spin-1/2 SUSY partner of the photon
π	PI	pion
pion	PION	pion of unspecified charge
$\pi_2(1680)$	PI2(1680)	meson [was $A(1680)$]
pomeron	POMERON	
positronium	POSITRONIUM	e^+e^- bound state
$\psi(\text{unspec})$	PSI(UNSPEC)	unspecified ψ meson
$\psi(2S)$	PSI(2S)	$c\bar{c}$ meson
$\psi(3770)$	PSI(3770)	$c\bar{c}$ meson
$\psi(4415)$	PSI(4415)	$c\bar{c}$ meson
Pt	PT	platinum nucleus
quark	QUARK	quark of unspecified charge
quark(1/3)	QUARK(1/3)	quark of charge $-1/3$
quark(2/3)	QUARK(2/3)	quark of charge $2/3$
<u>quark(1/3)</u>	QUARKBAR(1/3)	antiquark of charge $1/3$
quark(2/3)	QUARKBAR(2/3)	antiquark of charge $-2/3$
ρ	RHO	$\rho(770)$ meson
$\rho(1250)$	RHO(1250)	meson
$\rho(1700)$	RHO(1700)	meson
$\rho_3(1690)$	RHO3(1690)	meson [was $g(1690)$]
S	SU	sulfur nucleus — note SPIRES database spelling
s-electron	SELECTRON	spin-0 SUSY partner of the electron or positron
Se	SE	selenium nucleus
shower	SHOWER	shower track
Si	SI	silicon nucleus
Σ	SIGMA	Σ hyperon
$\Sigma(\text{unspec})$	SIGMA(UNSPEC)	unspecified $I = 1$, $S = -1$ baryon
$\Sigma(1385 \text{ P}_{13})$	SIGMA(1385P13)	hyperon resonance
$\Sigma(1670 \text{ B})$	SIGMA(1670B)	bump in production experiment
$\Sigma(1915 \text{ B})$	SIGMA(1915B)	bump in production experiment
$\Sigma(2250 \text{ B})$	SIGMA(2250B)	bump in production experiment
$\Sigma_c(2455)$	SIGMA/C(2455)	$I = 1$ charmed baryon

PARTICLES

As printed herein	For searching SLAC/SPIRES database	Definition or comment
$\bar{\Sigma}$	SIGMABAR	ordinary $\bar{\Sigma}$ antihyperon
Sn	SN	tin nucleus
s-particle	SPARTICLE	supersymmetric partner of any ordinary particle
s-quark	SQUARK	spin-0 SUSY quark partner
strange	STRANGE	unspecified strange particle
strange	STRANGEBAR	unspecified strangeness +1 particle
strangeonium	STRANGEONIUM	unspecified meson whose quark content is dominantly $s\bar{s}$, such as the ϕ
Ta	TA	tantalum nucleus
tachyon	TACHYON	
τ	TAU	τ lepton
Th	TH	thorium nucleus
Tl	TL	thallium nucleus
top	TOP	unspecified particle with naked top
trit	TRIT	tritium nucleus
U	U	uranium nucleus
U(2980)	U(2980)	possible exotic meson
U(3100)	U(3100)	possible exotic meson
unspec	UNSPEC	unspecified particle
T(unspec)	UPSI(UNSPEC)	unspecified T particle
T(1S)	UPSI(1S)	$b\bar{b}$ meson
T(2S)	UPSI(2S)	$b\bar{b}$ meson
T(3S)	UPSI(3S)	$b\bar{b}$ meson
T(4S)	UPSI(4S)	$b\bar{b}$ meson
T(10850)	UPSI(10860)	$b\bar{b}$ meson
T(11020)	UPSI(11020)	$b\bar{b}$ meson
vee	VEE	unspecified neutral-strange-particle decay
vmeson	VMESON	vector meson of unspecified mass
W	WT	tungsten nucleus — note SPIRES database spelling
W^+, W^-	W^+, W^-	weak gauge boson
water	WATER	
X	X	anything, as is $pp \rightarrow \pi^+ X$ or $K^- p \rightarrow X$
X(1700)	X(1700)	meson
X(1935)	X(1935)	meson [was S(1935)]
X(2220)	X(2220)	meson seen in J/ψ decays [was ξ (2220)]
X-ray	X-RAY	X-ray frequency photon
Xe	XE	xenon nucleus
Ξ	XI	Ξ hyperon
Ξ (unspec)	XI(UNSPEC)	unspecified $I = 1/2$, $S = -2$ baryon
Ξ (1530 P ₁₃)	XI(1530P13)	Ξ resonance
Ξ (1620)	XI(1620)	Ξ resonance
Ξ (1820)	XI(1820)	Ξ resonance
Ξ (1950)	XI(1950)	Ξ resonance
Ξ (2030)	XI(2030)	Ξ resonance
Ξ (2250)	XI(2250)	Ξ resonance
Ξ (2500)	XI(2500)	Ξ resonance
Ξ^* (unspec)	XI*(UNSPEC)	unspecified Ξ resonance
Ξ_c^-, Ξ_c^0	XI:C-, XI/C0	Ξ_c (2460) $I = 1/2$ charmed strange baryon
$\bar{\Xi}$	XIBAR	$\bar{\Xi}$ antihyperon
Y	Y	Λ or Σ or low-mass Y^*
Y^* (unspec)	Y*(UNSPEC)	$S = -1$ baryon of unspecified mass and isospin
Z	Z	neutral weak gauge boson
Z^* (unspec)	Z*(UNSPEC)	$S = -1$ exotic baryon of unspecified mass and isospin
ζ (8300)	ZETA(8300)	reported ζ (8300) meson
Zn	ZN	xenon nucleus

SUMMARIES OF BROOKHAVEN EXPERIMENTS

BNL Experiments

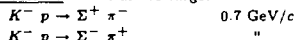
BNL-702 (Dec 1976) Approved Jan 1977; Started Feb 1980; Completed Mar 1983.

RADIATIVE DECAY $\Sigma^+ \rightarrow p\gamma$ FROM POLARIZED Σ^+ HYPERONS

YALE U - S Axelrod, R Morrison, J Snow, M E Zeller
(✓ Spokesperson)
BROOKHAVEN - D M Lazarus
MOUNT HOLYOKE COLL - H Nicholson
PITTSBURGH U - J A Thompson

Accelerator BNL Detector Combination

Reactions Polarized target



Particles studied Σ^+ , Σ^-

Comments Also studies nonleptonic decays of the Σ^+ and Σ^- .
Ran for 1640 hours.

Papers PR D32 (1985) 11.

BNL-722 (Mar 1978) Approved May 1978; Started Apr 1982; Completed Apr 1983.

FURTHER SEARCH FOR EXOTIC SIX-QUARK STATES

BROOKHAVEN - I H Chiang, R A Johnson, T F Kycia
(✓ Spokesperson), K K Li, L S Littenberg

Accelerator BNL Detector Double-arm spectrometer

Reactions



Particles studied dibaryon ($S = -2$)

Comments A repeat of BNL-703 with an improvement in sensitivity by a factor 100. Ran for 1255 hours.

BNL-723 (Mar 1978) Approved May 1979, Oct 1983; Started Mar 1982; Completed Jul 1984.

A PRECISION MEASUREMENT OF THE MAGNETIC MOMENT OF THE Σ^- BY THE EXOTIC ATOMS TECHNIQUE

WILLIAM AND MARY COLL - M Eckhause, D W Hertzog,
J R Kane, W Phillips, W F Vulcan, R E Welsh
(✓ Spokesperson), R J Whyte, R G Winter

BOSTON U - G Dodson, J Miller, F O'Brien, B L Roberts
(✓ Spokesperson), D Tieger

CARNEGIE MELLON U - R B Sutton

CAL TECH - R J Powers

WYOMING U - A R Kunselman

Accelerator BNL Detector Spectrometer

Reactions



Particles studied Σ^-

Comments Uses Ge(Li) detectors to measure fine-structure splitting in Σ^- atoms. Measures, in addition to the Σ^- magnetic moment, the masses of the Σ^- and K^- and the effects of their strong interaction with heavy nuclei. Ran for 1504 hours.

Papers PRL 51 (1983) 1131, PRL 60 (1988) 186, and PR D37 (1988) 1142.

BNL-726 (Apr 1978) Approved May 1978; Started Jul 1980; Completed Jun 1982.

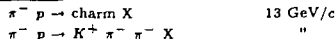
SEARCH FOR CHARM IN HADRONIC INTERACTIONS NEAR THRESHOLD

NEW YORK U - J H Christenson (Spokesperson), E Hummel,
G A Kreiter, J Sculli

BROOKHAVEN - P Yamin

Accelerator BNL Detector Spectrometer

Reactions



Particles studied $D^*(2010)^-$, $\bar{D}^0$, charmed-baryon

Comments Looks for $D^{*-} \rightarrow \bar{D}^0 \pi^-$ decay followed by $\bar{D}^0 \rightarrow K^+ \pi^-$ decay, and for charmed baryons in the missing mass against the D^{*-} . Ran for 1795 hours.

Papers PRL 55 (1985) 154.

BNL-734 (Aug 1978) Approved Feb 1979, Feb 1984; Started Jan 1981; Completed May 1986.

A MEASUREMENT OF THE ELASTIC SCATTERING OF NEUTRINOS FROM ELECTRONS AND PROTONS

BROOKHAVEN - L A Ahrens, S H Aronson, B G Gibbard,
M J Murtagh (✓ Spokesperson), S J Murtagh, P J Wanderer,
D H White

BROWN U - J Callas, D Cutts, J Hoftun, R E Lanou

KEK - K Abe, K Amako, S Kabe, T Shinkawa, A Sterad

OSAKA U - Y Nagashima, Y Suzuki

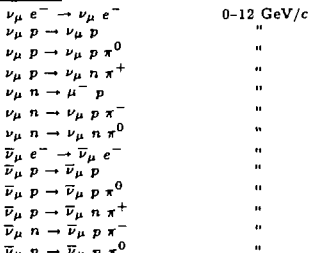
PENN U - E W Beier, L S Durkin, S M Heagy, M Hurley,

A K Mann, H H Williams, T York

SUNY, STONY BROOK - D Hedin, M D Marx, E Stern

Accelerator BNL Detector Calorimeter

Reactions



Comments Ran for 4630 hours.

Papers PRL 51 (1983) 1514, IEEE TNS 30 (1983) 3782, PRL 54 (1985) 18, PR D31 (1985) 2732, PRL 56 (1986) 1107, PR D34 (1986) 75, PRL 58 (1987) 636, NIM A254 (1987) 515, PR D35 (1987) 785, PL B194 (1987) 420, PL B202 (1988) 284, and PRL 62 (1989) 1709.

BNL-745 (Apr 1979) Approved Sep 1979, Feb 1984; Started Feb 1983; Completed May 1986.

AN IMPROVED TEST OF QED — AN EXPERIMENT TO MEASURE VACUUM POLARIZATION IN THE 8D-8P TRANSITIONS IN MUONIC HELIUM

CERN & COLUMBIA U - E Zavattini

BROOKHAVEN - M May

COLUMBIA U - J Derderian, J French, A M Sachs

(✓ Spokesperson)

Accelerator BNL Detector Counter

Reactions



Comments The transitions are stimulated by infrared radiation from an isotopic-gas CO₂ laser. Ran for 2142 hours.

Papers PR A (accepted).

BNL-747 (Aug 1979) Approved Oct 1980, Feb 1984; Started Jun 1982; Completed 1988.

A HIGH STATISTICS STUDY OF ϕ AND $\phi\phi$ PRODUCTION FROM $\pi^- p$ AND $K^- p$ INTERACTIONS AT 22 GeV/c — A SEARCH FOR GLUEBALLS

SUMMARIES OF BROOKHAVEN EXPERIMENTS

BROOKHAVEN - A Etkin, K J Foley, R W Hackenburg,
R S Longacre, W A Love, T W Morris, E D Platner, A C Saulys
BROOKHAVEN & CITY COLL, N Y - S J Lindenbaum
(✓ Spokesperson)

CITY COLL, N Y - C S Chan, M A Kramer

Accelerator BNL Detector MPS-II

Reactions

$\pi^- p \rightarrow \phi \phi n$	22 GeV/c
$\pi^- p \rightarrow \phi K^+ K^- n$	"
$K^- p \rightarrow \phi Y^0$	"
$K^- p \rightarrow \phi \phi Y^0$	"
$K^- p \rightarrow \phi K^+ K^- Y^0$	"

Particles studied glueball

Comments Of particular interest is the role of glueballs in the breaking of the OZI rule in $\pi^- p \rightarrow \phi \phi n$. Three new $I^G J^{PC} = 0^{+2++}$ meson states, the $f_2(2010)$, $f_2(2300)$, and $f_2(2340)$, fit the glueball resonance hypothesis and no other one proposed. A second-phase experiment is planned to search for exotic J^{PC} glueballs in $\pi^- p \rightarrow \phi \phi n$ and other reactions.

Papers PRL 49 (1982) 1620, SHEP 4 (1983) 69, PL 131B (1983) 221, CNPP 13 (1984) 285, PL 149B (1984) 407, PL 165B (1985) 202, PL 165B (1985) 217, and PL B201 (1988) 568.

BNL-748 (Aug 1979) Approved Feb 1980, Oct 1982, Oct 1983:
Started Mar 1982; Completed May 1984.

POLARIZATION IN pp ELASTIC SCATTERING AT MEDIUM AND HIGH $p_{\perp}^2$ FROM 15 TO 28.5 GeV/c

MICHIGAN U - K A Brown, R J Bruni, P R Cameron,
D G Crabb, R L Cummings, M Fujisaki, M Hejazifar,
F Z Khairi, A D Krusch (✓ Spokesperson), A M T Lin, S L Linn,
R S Raymond, T Shima, K M Terwilliger

NOTRE DAME U - J R O'Fallon
BROOKHAVEN - G T Danby, Y Y Lee, L G Ratner
COPENHAGEN U - P H Hansen
MIAMI U, FLA - A Perlmutter

MARYLAND U & MICHIGAN U - D C Peaslee
TEXAS A AND M - T S Bhatia, G Glass, L C Northcliffe
ZURICH, ETH - M Simonius

Accelerator BNL Detector Double-arm spectrometer

Reactions Polarized target

$$p p \rightarrow p p \quad 28 \text{ GeV/c}$$

Comments Found very large polarization at $p_{\perp}^2 = 6.6 \text{ GeV}^2$.
Ran for 2550 hours.

Papers PRL 50 (1983) 802, and PRL 51 (1983) 2359.

BNL-749 (Aug 1979) Approved Sep 1979, Oct 1983; Started
Mar 1982; Completed Apr 1984.

A MEASUREMENT OF MILLIWEAK CP VIOLATION IN K_L - K_S DECAYS THROUGH THE DETERMINATION OF ϵ'

BROOKHAVEN - R C Larsen, L B Leipuner, W M Morse
YALE U - R K Adair (Spokesperson), K Black, S R Blatt,
M K Campbell, H Kasha

Accelerator BNL Detector Spectrometer

Reactions

$$K^0 \rightarrow \pi^+ \pi^- \quad -$$

$$K^0 \rightarrow \pi^0 \pi^0 \quad -$$

Particles studied K^0

Comments Ran for 2037 hours.

Papers PRL 54 (1985) 1828.

BNL-751 (Apr 1980) Approved Oct 1980; Started May 1983;
Completed Apr 1984.

MEASUREMENT OF HYPERON RADIATIVE DECAY

BRANDEIS U - J Bensinger, M Fortner, L Kirsch, H Piekarz,
R Foster (Spokesperson), P Zogroffu

SOUTHEASTERN MASS U - Z Bar-Yam, J Dowd, W Kern
NOTRE DAME U - J M Bishop, N N Biswas, N M Cason,
V P Kenney, J Piekarz, M Rath, R Ruchti, W D Shepherd
DUKE U - L Fortney, E McGrory

Accelerator BNL Detector MPS-II

Reactions

$$K^- W \rightarrow \Xi^0 X \quad 6 \text{ GeV/c}$$

$$K^- W \rightarrow \Omega^- X \quad "$$

Particles studied Ξ^0, Ω^-

Comments Measures the radiative decays $\Xi^0 \rightarrow p \gamma$, $\Xi^0 \rightarrow \Lambda \gamma$,
 $\Xi^0 \rightarrow \Sigma^0 \gamma$, and $\Omega^- \rightarrow \Xi^- \gamma$. Ran for 850 hours.

Papers PL B215 (1988) 195.

BNL-754 (Dec 1979) Approved Feb 1980; Started May 1983;
Completed Jun 1985.

DETERMINATION OF THE DYNAMICS OF μ^+ MOTION IN ALUMINUM

BTL, MURRAY HILL - A T Fiory, R P Minnick
BROOKHAVEN - A N Goland, Y C Jean, K G Lynn
WILLIAM AND MARY COLL - W J Kossler (Spokesperson)
GEORGE MASON U - W F Lankford
VIRGINIA STATE COLL - C E Stronach

Accelerator BNL Detector Counter

Reactions Polarized beam
 $\mu^+ \text{ Al} \quad 125 \text{ MeV/c}$

Comments Studies depolarization effects in aluminum under
various conditions. Ran for 127 hours.

Papers PL 112B (1982) 319.

BNL-755 (Jan 1980) Approved Apr 1980, Oct 1983; Started
Feb 1983; Completed Apr 1984.

$\pi^- p$ TWO-BODY EXCLUSIVE REACTIONS AT 90° FROM 8 GeV/c TO 18 GeV/c, AND (PHASE II) LARGE ANGLE EXCLUSIVES — POSITIVES AND POLARIZATION

BROOKHAVEN - D S Barton, G Bunce (✓ Spokesperson),
A S Carroll, Y Makdisi

MINNESOTA U - B Baller, G Blazey, H Courant, K Heller,
S Heppelmann, M Marshak (✓ Spokesperson), E Peterson,
M Shupe, D S Wahi

SOUTHEASTERN MASS U - S Gushue, J Russell

Accelerator BNL Detector Double-arm spectrometer

Reactions

$\pi^- p \rightarrow \pi^- p$	10, 13.5 GeV/c
$\pi^- p \rightarrow \rho^- p$	"
$\pi^- p \rightarrow a_2(1320)^- p$	"
$\pi^- p \rightarrow \pi^+ \Delta(1232 P_{33})^-$	"
$\pi^- p \rightarrow K^+ \Sigma^-$	"
$\pi^- p \rightarrow K^+ \Sigma(1385 P_{13})^-$	"
$\pi^- p \rightarrow \Lambda K^0$	"
$\pi^+ p \rightarrow \pi^+ p$	10 GeV/c
$\pi^+ p \rightarrow K^+ \Sigma^+$	"
$K^+ p \rightarrow K^+ p$	"
$p p \rightarrow p p$	"
$p p \rightarrow p \Delta(1232 P_{33})^+$	"
$K^- p \rightarrow K^- p$	"

Comments The apparatus is a single-arm spectrometer and a nonmagnetic arm. The experiment probed quark diagrams involved in exclusive large-angle scattering. Quark exchange between initial-state hadrons dominates. Helicity nonconservation from the initial to the final state is observed for $\pi^- p \rightarrow \rho^- p$. Ran for 2579 hours.

Papers PRL 55 (1985) 1820, PRL 55 (1985) 1824 and PRL 60 (1988) 1118.

SUMMARIES OF BROOKHAVEN EXPERIMENTS

BNL-758 (Apr 1980) Approved May 1980 Started Feb 1983:
Completed Apr 1983

THE (π^- , K^-) REACTION — A NEW TOOL FOR THE STUDY OF HYPERNUCLEAR STRUCTURE

LOS ALAMOS - J Amann, T S Bhatia, T Kozlowski, J C Peng,
R Silbar, H A Thiessen (✓ Spokesperson)
BROOKHAVEN - R Chrien, P Pile, R Sutter
FLORIDA STATE U - H Plendl
HOUSTON U - S Bart, R Hackenburg, E Hungerford
RUTGERS U - C Jausser, J McGill
VASSAR COLL - R L Stearns
CARNEGIE MELLON U - P D Barnes, G B Franklin, R Grace
TEXAS U - M Barlett, G W Hoffmann, E C Milner

Accelerator BNL Detector Spectrometer

Reactions

$\pi^- + {}^{12}\text{C} \rightarrow K^- \text{ hypernuc}$ 1050 MeV/c

Particles studied hypernuc

Comments The first experiment using this reaction with sufficient resolution to study hypernuclear states. Ran for 696 hours.

Papers PRL 54 (1985) 1237. No other papers expected.

BNL-759 (Jan 1981) Approved Mar 1981 Started May 1983:
Completed May 1983.

THE WEAK DECAY MODES OF HYPERNUCLEI

CARNEGIE MELLON U - P D Barnes (✓ Spokesperson),
R A Eisenstein, G Franklin, R Grace, C Maher, R Rieder,
J Seydoux, J Szymanski, W R Wharton
BROOKHAVEN - S Bart, R Chrien, P Pile, Y Xu
HOUSTON U - R Hackenburg, E Hungerford
NEW MEXICO U - B Baasalleck
TEXAS U - M Barlett, E Milner
VASSAR COLL - R L Stearns

Accelerator BNL Detector Spectrometer

Reactions

$K^- \text{C} \rightarrow \pi^- \text{ hypernuc}$ 800 MeV/c

Particles studied hypernuc

Comments Studies (1) the 4-fermion weak interactions $\Lambda N \rightarrow NN$, and (2) $\Lambda \rightarrow N\pi$ decays in nuclear matter. Measures the ground-state lifetime of ${}^{12}\text{C}$ and the partial decay rates for these processes. Ran for 489 hours

Papers PRL 55 (1985) 1055

BNL-760 (Apr 1980) Approved May 1980 Started May 1982:
Completed Jun 1982.

SPIN DEPENDENCE OF THE Λ NUCLEUS INTERACTION DETERMINED BY OBSERVATION OF HYPERNUCLEAR γ RAYS

MIT - M Deutsch (Spokesperson), J Piekarz
BROOKHAVEN - R Chrien, M May, H Palevsky, H Piekarz,
R Sutter
TURIN U - R Cester
HOUSTON U - S Bart, E V Hungerford, B Mayes, L Pinsky
NEW YORK U - B Budick
VASSAR COLL - R L Stearns
BEIJING, IHEP - Y Xu

Accelerator BNL Detector Spectrometer

Reactions

$K^- \text{ nucleus} \rightarrow \pi^- \text{ hypernuc } \gamma(s)$ 800 MeV/c

Particles studied hypernuc

Comments Targets are ${}^7\text{Li}$, ${}^9\text{Be}$, and ${}^{16}\text{O}$. Both the π^- and γ 's from de-excitation of the hypernuclear states are detected. Ran for 624 hours

BNL-762 (Aug 1980) Approved Oct 1980 Started Mar 1982:
Completed Apr 1982

SEARCH FOR NARROW STRUCTURES IN THE $\bar{p}p$ ANNIHILATION CROSS SECTION FROM 1900 TO 1950 MeV

BROOKHAVEN - D I Lowenstein
MARYLAND U - D C Peaslee
MICHIGAN STATE U - R J Miller
PENN STATE U - R A Lewis, B Y Oh, G A Smith
(✓ Spokesperson), J Whitmore
SYRACUSE U - T Brando, I Daftari, A de Guzman,
T E Kalogeropoulos, C Petridou, M Singer, G S Tzanakos,
R Venugopal
TEMPLE U - R D von Lintig

Accelerator BNL Detector Spectrometer

Reactions

$\bar{p} p \rightarrow \text{annihil}$ 1900-1950 MeV (Ecm)

Particles studied $X(1935)^0$

Comments Ran for 532 hours.

Papers PL 158B (1985) 505. No other papers expected.

BNL-766 (Sep 1980, Dec 1980) Approved Feb 1981 Started Jun 1982 Completed Jul 1986.

STUDY OF Ω^- PRODUCTION AND DEVELOPMENT OF ON-LINE HARDWARE PROCESSING

NEVIS LABS, COLUMBIA U - M Church, E Gottschalk,
R Hylton, B Knapp (Spokesperson), B Stern, L Wiencke
MASSACHUSETTS U. AMHERST - E Hartouni, D Jensen,
M Kreisler (Spokesperson), M Rabin, J Uribe
MEXICO U - C Avilez (Spokesperson), W Correa, J Escalona
FERMILAB - D Christian, G Gutierrez, S Holmes, J Strait,
A Wehman

Accelerator BNL Detector Spectrometer

Reactions

$n p \rightarrow \Omega^- X$	10-28 GeV/c
$n p \rightarrow p \Omega^- 3K^+ 2\pi^-$	"
$n p \rightarrow p \Omega^- K^0 2K^+ \pi^-$	"
$n p \rightarrow \Lambda X$	"
$n p \rightarrow \Lambda K^0 p$	"
$n p \rightarrow \Lambda K^+ p \pi^+ 2\pi^-$	"
$n p \rightarrow \Xi^- X$	"
$n p \rightarrow 2\Lambda X$	"
$n p \rightarrow \phi \pi^+ \pi^- X$	"

Particles studied Ω^-

Comments Only a sampling of the reactions to be studied is listed above. Also studied pp interactions. The spectrometer is designed to measure exclusive topologies with high sensitivity. Ran for 1194 hours.

BNL-767 (Jan 1981) Approved Mar 1981 Started May 1983:
Completed Jun 1985.

DEVELOPMENT OF A LOW ENERGY ANTINEUTRON SOURCE AND MEASUREMENT OF $\bar{n}p$ ANNIHILATION CROSS SECTIONS NEAR $\bar{n}n$ THRESHOLD

BROOKHAVEN - D I Lowenstein
HOUSTON U - C Chu, M Furic, E V Hungerford, T Kishimoto,
B W Mayes, L S Pinsky, L Tang, A Xue
PENN STATE U - T Armstrong, C Elinor, K Hartman, A Hicks,
R A Lewis, W Lochstet, G A Smith (✓ Spokesperson)
RICE U - J Clement, J Kruk, B Moss, G S Mutchler,
W von Witsch

Accelerator BNL Detector Ionization chamber

Reactions

$\bar{n} p \rightarrow \text{annihil}$	100-500 MeV/c
$\bar{n} p \rightarrow X$	"

Particles studied baryonium

Comments Ran for 1748 hours.

Papers PL B175 (1986) 383, and PR D36 (1987) 659.

SUMMARIES OF BROOKHAVEN EXPERIMENTS

BNL-769 (Jan 1981) Approved Mar 1981; Started Apr 1984; Completed Jul 1984.

SEARCH FOR GLUEBALLS AND OTHER MESON STATES

NOTRE DAME U - J M Bishop, N N Biswas, N M Cason
(✓ Spokesperson), V P Kenney, R C Ruchti, W D Shepherd
BRANDEIS U - J Bensinger, L Kirsch, F Lomanno, W Morris,
R Poster

BROOKHAVEN - A Etkin, K J Foley, R Longacre, W A Love,
T W Morris, E D Platner, V A Polychronakos, A C Saulys,
C D Wheeler

BROOKHAVEN & CITY COLL, N Y - S J Lindenbaum

CITY COLL, N Y - M Kramer, Y Terramoto

DUKE U - L R Fortney, A T Gosbaw, W D Walker

Accelerator BNL Detector MPS-II

Reactions

$\pi^- p \rightarrow n K_S K_S \pi^0$ 21 GeV/c

$\pi^- p \rightarrow n K_S K_S$ "

Particles studied glueball, $f_1(1420)$, meson⁰

Comments A search for new mesons with the goal of determining whether they are ordinary quark states, exotic quark states, or glueballs. Ran for 901 hours.

Papers PL B177 (1986) 223, PRL 61 (1988) 802, and PR D40 (1989) 693.

BNL-771 (Jan 1981) Approved Mar 1981, Oct 1983; Started Apr 1983; Completed 1987.

STUDY OF E-MESON CHARACTERISTICS IN $\pi^- p$, $K^- p$, AND $\bar{p} p$ INTERACTIONS

BROOKHAVEN - S U Chung (Spokesperson), R C Pernow,

H Kirk, S D Protopopescu, D Weygand, H J Willutzki

FLORIDA STATE U - A Boehnlein, D Boehnlein, J H Goldman,

V Hagopian, D Reeves

SOUTHEASTERN MASS U - Z Bar-Yam, J Dowd, W Kern,

E King, H Rudnicka

INDIANA U - R Crittenden, A Dzierba, T Marshall, S Teague,
D Ziemska

Accelerator BNL Detector MPS-II

Reactions

$\pi^- p \rightarrow K^+ K_S \pi^- X$ 8 GeV/c

$\pi^- p \rightarrow f_1(1420) n$ "

$\pi^- p \rightarrow \Xi^- \pi^+ \pi^- X$ "

$\pi^- p \rightarrow \Xi^*(\text{unspec})^- X$ "

$K^- p \rightarrow K^+ K_S \pi^- X$ 6 GeV/c

$K^- p \rightarrow f_1(1420) \Lambda$ "

$K^- p \rightarrow \Lambda K^- \pi^+ K^0$ "

$K^- p \rightarrow \Xi^*(\text{unspec})^0 K^0$ "

$K^- p \rightarrow \Lambda K_S \pi^- K^+$ "

$K^- p \rightarrow \Xi^*(\text{unspec})^- K^+$ "

$\bar{p} p \rightarrow K^+ K_S \pi^- X$ 5 GeV/c

$\bar{p} p \rightarrow f_1(1420) \pi^0$ "

$\bar{p} p \rightarrow f_1(1420) \rho^0$ "

$\bar{p} p \rightarrow \bar{p} p \pi^0$ "

Particles studied $f_1(1420)$, glueball, $\Xi^*(\text{unspec})$, baryonium, strangeonium

Comments An attempt to see if the $f_1(1420)$ is a glueball.

Papers PR D30 (1984) 1409, PRL 55 (1985) 779, PR D34 (1986) 1960, and PRL 61 (1988) 1557.

BNL-772 (Aug 1981) Approved Feb 1982 Started Apr 1983; Completed May 1983.

SEARCH FOR $\bar{p} n$ BOUND AND RESONANT STATES

SYRACUSE U - I Daftari, A de Guzman, T E Kalogeropoulos

(Spokesperson), C Petridou, R Venugopal

BROOKHAVEN - H Brown, M Sakitt

CASE WESTERN RESERVE U - R Debbas, W Fickinger,

R Marino, K Robinson

BLOOMSBURG U - L Gray
COLUMBIA U - G Tzanakos
LE MOYNE COLL - D Bridges
MARYLAND U - D C Peaslee

Accelerator BNL Detector Spectrometer

Reactions

$\bar{p}$ deut $\rightarrow p X$ 0-650 MeV/c

$\bar{p}$ deut $\rightarrow \pi^+ X$ "

$\bar{p}$ deut $\rightarrow \pi^- X$ "

Particles studied baryonium

Comments Ran for 644 hours.

Papers PRL 56 (1986) 211, PRL 56 (1986) 215, and PL B180 (1986) 313.

BNL-773 (Aug 1981) Approved Feb 1983; Started Apr 1984; Completed Jul 1986.

SEARCH FOR $S = -1$ DIBARYON STATES IN THE Λp MISSING MASS SPECTRUM NEAR THE ΣN THRESHOLD IN THE REACTION $d(K^-, \pi^-) \Lambda p$

BRANDEIS U - J R Bensinger, L Kirsch, H Piekarz

(Spokesperson)

HOUSTON U - E V Hungerford, T Kishimoto, B W Mayes,

L S Pinsky

BROOKHAVEN - S Bart, R Chrien, P Pile, R Sutter

VASSAR COLL - R Stearns

MIT - M Deutsch, J Piekarz

INDIANA U - T Ward

OSAKA U - T Fukuda, T Shibata

TEXAS U - M Balett, G W Hoffman

Accelerator BNL Detector Spectrometer

Reactions

K^- deut $\rightarrow \pi^- \Lambda p$ 870 MeV/c

Particles studied dibaryon($S = -1$)

Comments Ran for 1550 hours.

Papers NP A450 (1986) 85c.

BNL-774 (Aug 1981, Apr 1982) Approved May 1982; Started Apr 1985.

SEARCH FOR Σ HYPERNUCLEAR LEVELS IN ^4He

HOUSTON U - E V Hungerford (Spokesperson), B W Mayes,

H Piekarz, L S Pinsky

BROOKHAVEN - S Bart, R Chrien, P Pile

NEW MEXICO U - B Bassalleck

VASSAR COLL - R Stearns

Accelerator BNL Detector Spectrometer

Reactions

$K^- \text{He} \rightarrow \pi^+ \text{hypernuc}$ 720 MeV/c

Particles studied hypernuc

Comments A continuation of BNL-752. Approved for 650 hours.

Papers PR C35 (1987) 1589.

BNL-775 (Aug 1981) Approved Feb 1982; Started Nov 1982; Completed Jan 1983.

NEUTRINO OSCILLATION EXPERIMENTS AT THE AGS TO COVER THE INTERVAL $0.1 < \Delta^2 \sin(2\alpha) < 100 \text{ eV}^2$

BROOKHAVEN - L A Ahrens, S H Aronson, B G Gibbard,

M J Murtagh (Spokesperson), D H White

BROWN U - J Callas, D C Cutts, M Diwan, J S Hofman,

R E Lanou

HIROSHIMA U - Y Kurihara

KEK - K Abe, K Amako, S Kabe, T Shinkawa, S Terada

OSAKA U - Y Nagashima, Y Suzuki, Y Yamaguchi

PENN U - E W Beier, L S Durkin, S M Heagy, M Hurley,

A K Mann, T York

SUNY, STONY BROOK - D Hedin, M D Marx, E Stern

UC, IRVINE - R C Allen, H H Chen, A Hahn, K C Weng

SUMMARIES OF BROOKHAVEN EXPERIMENTS

Accelerator BNL Detector Calorimeter

Reactions

$\nu_\mu \rightarrow \nu_e$ 0-4 GeV/c

Particles studied ν_μ

Comments A $\nu_\mu \rightarrow \nu_e$ oscillation search using a narrow band beam. Ran for 658 hours.

Papers PL B194 (1987) 586, and PR D36 (1987) 702.

BNL-776 (Sep 1981) Approved Feb 1982; Started Dec 1983; Completed May 1986.

NEUTRINO OSCILLATION EXPERIMENT

COLUMBIA U - C Y Chi, N Kondakis, W Lee (Spokesperson),
B Rubin, R Seto, C Stoughton, G Tzanakos
ILLINOIS U, URBANA - W P Hogan, E O'Brien, T O'Halloran,
K Reardon, S Salman, P D Sheldon, G W Sullivan
JOHNS HOPKINS U - B Blumenfeld, L Chichura, C Chien,
J Krizmanic, E Lincke, L Lueking, W Lyle, L Madansky,
A Pevsner

Accelerator BNL Detector Combination

Reactions

$\nu_\mu \rightarrow \nu_e$ 0-7 GeV/c
 $\nu_\mu \rightarrow \nu_e$ "

Particles studied ν_μ

Comments Studies ν_μ disappearance and $\nu_\mu \rightarrow \nu_e$ oscillations. Ran for 2715 hours.

Papers PRL 62 (1989) 2237.

BNL-777 (Jan 1982) Approved May 1982; Started Feb 1985; Completed May 1988.

SEARCH FOR THE RARE DECAY MODE $K^+ \rightarrow \pi^+ \mu^+ e^-$

BROOKHAVEN - H A Gordon, D M Lazarus, P Rehak,
M J Tannenbaum
YALE U - C Alliegro, C Campagnari, P S Cooper, N Hadley,
A Lee, M E Zeller (✓ Spokesperson)
WASHINGTON U, SEATTLE - V Chaloupka, E Jagel,
H J Lubatti

PSI, VILLIGEN - J Egger, W D Herold, R Kasper

Accelerator BNL Detector Spectrometer

Reactions

$K^+ \rightarrow \pi^+ \mu^+ e^-$ 5.8 GeV/c
 $K^+ \rightarrow \pi^+ e^+ e^-$ "

Particles studied K^+

Papers PRL 59 (1987) 2832, and PRL 61 (1988) 2062.

BNL-778 (Apr 1982) Approved Oct 1982; Started Nov 1984; Completed Jun 1985.

STUDY OF NUCLEAR FRAGMENTS PRODUCED FROM p NUCLEUS COLLISIONS IN THE THRESHOLD REGION $1 < P < 28$ GeV/c USING A WARM GAS JET INTERNAL TARGET

PURDUE U - A Bujak, D D Carmony, L J Gutay, A S Hirsch,
G Paderewski, N T Porile, C Sangster, R P Scharenberg
(Spokesperson), B C Stringfellow

Accelerator BNL Detector Spectrometer

Reactions

p nucleus $\rightarrow$ frag X 1-28 GeV/c

Comments The gas targets are hydrogen and noble gas mixtures. Ran for 1332 hours

Papers NIM A251 (1986) 242.

BNL-779 (Aug 1982) Approved Oct 1982; Started Nov 1982; Completed Sep 1983.

USE OF 28-GeV PROTON EXTERNAL BEAM FOR NUCLEAR SPECTROSCOPY AND NUCLEAR REACTION STUDIES

BROOKHAVEN - Y-Y Chu, S Katcoff (Spokesperson)

Accelerator BNL Detector Spectrometer

Reactions

p Th 28 GeV/c
p U "

Comments Studies neutron-rich nuclides below thorium, measuring their γ -ray spectra and determining their level schemes. Ran for 10 hours.

Papers PR C28 (1983) 1379. No other papers expected.

BNL-780 (Sep 1982) Approved Feb 1983; Started May 1985; Completed 1988.

A SEARCH FOR THE FLAVOR CHANGING NEUTRAL CURRENTS $K_L \rightarrow \mu e$ AND $K_L \rightarrow e^+ e^-$

BROOKHAVEN - R K Adair, E Jastrzembski, R C Larsen,
L B Leipuner, W M Morse (✓ Spokesperson)
YALE U - H Greenlee, H Kasha, E Mannelli, M Mannelli, K Ohl,
S F Schaffner, M P Schmidt (✓ Spokesperson), C B Schwarz

Accelerator BNL Detector Electronic

Reactions

$K_L \rightarrow \mu^+ e^-$ 4-12 GeV/c
 $K_L \rightarrow \mu^- e^+$ "
 $K_L \rightarrow e^+ e^-$ "
 $K_L \rightarrow \mu^+ \mu^-$ "

Particles studied K_L

Comments A sensitivity to branching fractions as small as about 10^{-10} is expected.

Papers PRL 60 (1988) 893, PRL 61 (1988) 2300, and PR D39 (1989) 990.

BNL-781 (Sep 1982) Approved Feb 1983; Started Jan 1984.

SPIN DEPENDENCE OF THE A NUCLEUS INTERACTION DETERMINED BY OBSERVATION OF HYPERNUCLEAR γ RAYS

BROOKHAVEN - S Bart, R E Chrien, M May (Spokesperson),
P Pile

MIT - M Deutsch (Spokesperson)

HOUSTON U - E V Hungerford, B Mayes, L Pinsky

CARNEGIE MELLON U - P Barnes

VASSAR COLL - R L Stearns

NEW YORK U - B Budick

Accelerator BNL Detector Spectrometer

Reactions

K^- nucleus $\rightarrow \pi^-$ hypernuc $\gamma(s)$ 800 MeV/c

Particles studied hypernuc

Comments A continuation of BNL-760. Approved for 1028 hours.

BNL-782 (Sep 1982) Approved Feb 1983; Started Jul 1984.

SPIN-SPIN EFFECTS IN MEDIUM AND HIGH MOMENTUM TRANSFER ELASTIC p SCATTERING

MICHIGAN U - R J Bruni, G R Court, D G Crabb,
R L Cummins, I Gialas, F Z Khairi, A D Kriech
(✓ Spokesperson), A M T Lin, R A Phelps, R R Raylman,
R S Raymond, T Roser, J A Stewart, K M Terwilliger

BROOKHAVEN - K A Brown, G T Danby, Y Y Lee, L G Ratner

MARYLAND U & MICHIGAN U - D C Peaslee

MIT - P R Cameron

NOTRE DAME U - J R O'Fallon

RICE U - J B Roberts

TEXAS A AND M - T S Bhatia, G Glass, L C Northcliffe

ZURICH, ETH - M Simonius

Accelerator BNL Detector Counter

Reactions

p p $\rightarrow$ p p 13-26 GeV/c

SUMMARIES OF BROOKHAVEN EXPERIMENTS

Comments Continues to higher energies studies at Argonne of spin-spin effects.

Papers PR D31 (1985) 3017, PRL 57 (1986) 507, PRL 60 (1988) 2351, and PR D39 (1989) 45.

BNL-785 (Jan 1983) Approved Feb 1983; Started Jul 1984; Completed Feb 1986.

SINGLE SPIN ASYMMETRY MEASUREMENT IN INCLUSIVE $\bar{p}p$ REACTIONS AT 24 GeV/c AND HIGH TRANSVERSE MOMENTUM

BROOKHAVEN - D S Barton, G Bunce, A S Carroll, Y I Makdisi (✓ Spokesperson)
MINNESOTA U - H Courant, K Heller, S Heppelman, M Marshak, S Z Saroff, M Shupe (✓ Spokesperson)
SOUTHEASTERN MASS U - J J Russell

Accelerator BNL Detector Single-arm spectrometer

Reactions Polarized beam

$p p \rightarrow \pi^+ X$	13.5, 18.5 GeV/c
$p p \rightarrow \pi^- X$	"
$p p \rightarrow K^+ X$	"
$p p \rightarrow K^- X$	"
$p p \rightarrow p X$	"

Comments Ran for 624 hours.

BNL-787 (Sep 1983) Approved Oct 1983; Started Jun 1984.

A STUDY OF THE DECAY $K^+ \rightarrow \pi^+ \nu \bar{\nu}$

BROOKHAVEN - M S Atiya, I-H Chiang, J S Frank, J S Haggerty, M M Ito, T F Kycia (✓ Spokesperson), K K Li, L S Littenberg, A Sambamurti, A J Stevens, R C Strand
LOS ALAMOS - W C Louis
PRINCETON U - D Akerib, D Marlow, P Meyers, M Selen, F C Shoemaker, A J S Smith
TRIUMF - E Blackmore, D A Bryman, L Felawka, P Kitching, Y Kuno, J A McDonald, T Numao, P Padley, J-M Poutissou, R Poutissou, J Roy, A S Turcot

Accelerator BNL Detector Spectrometer

Reactions

$K^+ \rightarrow \pi^+ \nu \bar{\nu}$	825 MeV/c
$K^+ \rightarrow \pi^+ \mu^+ \mu^-$	"
$K^+ \rightarrow \mu^+ \mu^+ \mu^- \nu$	"
$K^+ \rightarrow \pi^+ \text{higgs}$	"
$K^+ \rightarrow \pi^+ \gamma \gamma$	"
$K^+ \rightarrow \pi^+ e^+ e^-$	"
$K^+ \rightarrow \pi^+ \pi^0$	"
$K^+ \rightarrow \pi^+ \text{nuino nuino}$	"
$K^+ \rightarrow \pi^+ X$	"

Particles studied K^+ , higgs, nuino

Comments A sensitivity down to a level of about 2×10^{-10} is expected. Searches for evidence for fourth generation quarks and leptons, a light higgs H^0 , a nuino, an axion or Goldstone boson or familon, etc. Approved for 3000 hours. In progress (July 89).

BNL-788 (Sep 1983) Approved Oct 1983; Started May 1985.

THE FOUR-FERMION WEAK INTERACTION AND THE DECAY OF ${}^4\text{He}$ AND ${}^4\text{H}$

CARNEGIE MELLON U - P D Barnes (✓ Spokesperson), G Diebold, G Franklin (✓ Spokesperson), R Grace, D Hertzog, C Maher, R McCrady, B Quinn, J Seydoux, J Szymanski, X Yi
BROOKHAVEN - S Hart, R Chrien, P Pile, R Sutter
HOUSTON U - E V Hungerford, T Kishimoto, L G Tang
NEW MEXICO U - B Bassalleck
VASSAR COLL - R Stearns

Accelerator BNL Detector Spectrometer

Reactions

$K^- \text{He} \rightarrow \pi^- \text{hypernuc}$	800 MeV/c
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$K^- {}^6\text{Li} \rightarrow \pi^- \text{hypernuc}$

Particles studied hypernuc

Comments The ${}^5\text{He}$ hypernucleus comes from decay of the ${}^6\text{Li}$ hypernucleus. Measures the lifetimes and branching fractions for the weak processes $\Lambda \rightarrow p\pi^-$, $\Lambda p \rightarrow np$, and $\Lambda n \rightarrow nn$ in the ${}^4\text{He}$ and ${}^5\text{He}$ hypernuclei. Approved for 650 hours. In progress (July 89).

BNL-789 (Feb 1984) Approved Feb 1984; Started May 1984; Completed Jun 1985.

SEARCH FOR $\zeta(2.22)$ FORMATION IN $\bar{p}p$ INTERACTIONS

NEW YORK U - J H Christenson, E Hummel, G Kreiter, P Nemethy, J Sculli (Spokesperson), M Zuo
BROOKHAVEN - P Yamin

Accelerator BNL Detector Ionization chamber

Reactions

$\bar{p} p \rightarrow K^+ K^-$	1.2-1.6 GeV/c
$\bar{p} p \rightarrow \pi^+ \pi^-$	"

Particles studied $X(2220)$

Comments Ran for 1829 hours.

Papers PRL 58 (1987) 1715.

BNL-790 (Feb 1984) Approved Feb 1984; Started Apr 1984; Completed May 1984.

NUCLEAR STOPPING POWER MEASUREMENTS WITH 18-GeV/c PROTONS

BROOKHAVEN - D S Barton, G Bunce, A S Carroll, Y Y Chu, J B Cumming, P E Hausteine, S Katcoff, T W Ludlam, Y Makdisi, L P Rensberg (Spokesperson)
MINNESOTA U - B Baller, J Blazey, B Collicch, H Courant, K Heller, M Marshak, E Peterson, M Shupe, D S Wahl
SOUTHEASTERN MASS U - S Gushue, J Russell

Accelerator BNL Detector Single-arm spectrometer

Reactions

$p \text{ nucleus} \rightarrow p X$	17 GeV/c
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Comments Measures inclusive proton spectra to determine the rate of energy loss of high energy protons traversing nuclear matter. Ran for 144 hours.

BNL-791 (1984) Approved Jun 1984; Started Apr 1985.

STUDY OF VERY RARE K_L DECAYS

UC, IRVINE - A Heinson, J Horvath, P Knibbe, C Mathiazhagan, W R Molzon (✓ Spokesperson), J Urheim
UCLA - K Arisaka, R D Cousins (✓ Spokesperson), T Kaarsberg, J Konigsberg, J Kubic, P Melese, R Rubin, W E Slater, D Wagner
LOS ALAMOS - G W Hart, W W Kinneson, D M Lee, R J McKee, Jr., E C Milner, G H Sanders, H J Ziock
STANFORD U - S Axelrod, K A Biery, M Diwan, G M Irwin, K Lang, J Margulies, D A Ouimette, A Schwartz, Q H Trang, S G Wojcicki
TEMPLE U - L B Auerbach, P Buchholz, V L Highland, W K McFarlane, M Sivertz
TEXAS U - J L Ritchie, A Yarnashita

WILLIAM AND MARY COLL - M D Chapman, E Eckhouse, J F Ginkel, A D Hancock, D Joyce, J R Kane, C J Kenney, Y Kuang, W F Vulcan, R E Welsh, R J Whyley, R G Winter

Accelerator BNL Detector Spectrometer

Reactions

$K_L \rightarrow \mu\text{on } e^\pm$	4-20 GeV/c
$K_L \rightarrow \mu^+ \mu^-$	"
$K_L \rightarrow e^+ e^-$	"
$K_L \rightarrow \pi^0 e^+ e^-$	"

Particles studied K_L

Comments The first priority is a search for $K_L \rightarrow \mu e$ with a branching-ratio sensitivity of 10^{-12} . Approved for 5000 hours. In progress (July 89).

SUMMARIES OF BROOKHAVEN EXPERIMENTS

Papers PR D38 (1988) 2914.

BNL-793 (Aug 1984) Approved Oct 1984.

SEARCH FOR FRACTIONALLY CHARGED NUCLEI IN 16 A GeV SULFUR-OXYGEN COLLISIONS

UC, BERKELEY - P B Price (✓ Spokesperson)

Accelerator BNL-ION Detector Plastic

Reactions

S Pb 15 GeV (E_{lab}/N)

Particles studied quark

Comments Looks for quarks bound to nuclear fragments. Ran in 1987, and will run more in Summer 89.

BNL-794 (Aug 1984) Approved Oct 1984; Started Mar 1985.

ONE-SPIN EFFECTS IN $pp \rightarrow pp$ AT HIGH p_1^2

MICHIGAN U - P R Cameron, G R Court, D G Crabb, I Gialas, W A Kaufman, F Z Khairi, A D Kirsch (✓ Spokesperson), A M T Jin, G de Muth, R A Phelps, R R Raylman, R S Raymond, T Roser, J A Stewart, K M Terwilliger, B Vuaridel

BROOKHAVEN - K A Brown, G T Danby, L G Ratner

MARYLAND U & MICHIGAN U - D C Peaslee

NOTRE DAME U - J R O'Fallon

RICE U - J B Roberts

TEXAS A AND M - T S Bhatia, G Glass, L C Northcliffe

ZURICH, ETH - M Simonius

Accelerator BNL Detector Double-arm spectrometer

Reactions

$pp \rightarrow pp$ 28 GeV/c

Comments Measures elastic differential cross sections in different initial spin states in the large p_1^2 region from 6.6 to 8 (GeV/c)². Continues studies of BNL-748. Approved for 1200 hours. In progress (July 89).

Papers PR D32 (1985) 3070.

BNL-795 (Sep 1984) Approved Oct 1984; Started Feb 1985; Completed May 1985.

MEASUREMENT OF THE IMAGINARY PART OF THE $f = 1$ NN S-WAVE SCATTERING LENGTH AT THRESHOLD

BROOKHAVEN - D I Lowenstein

HOUSTON U - M Furic, E Hungerford, T Kishimoto, B Mays,

L Pinsky, L Tang, Y Xue

KERNFORSCHUNGSZENTRUM, KARLSRUHE &

KARLSRUHE U - S Cierjacks, H Poth

NEW MEXICO U - B Bassalleck

PENN STATE U - T A Armstrong, R A Lewis, W Lochstet,

B Y Oh, S M Player, G A Smith (✓ Spokesperson), J Whitmore

RICE U - J Buchanan, J Clement, J Kruk, B Moss, G Mutchler,

W von Witsch

Accelerator BNL Detector Ionization chamber

Reactions

$\bar{n} p \rightarrow \text{annihil}$ < 1 MeV (T_{lab})

Particles studied baryonium

Comments Measures the product ($\bar{n}$ velocity)*(annihilation cross section) at energies very close to the $\bar{n}p$ threshold. Complimentary to BNL-767. Ran for 1104 hours.

Papers PR D38 (1988) 742.

BNL-798 (Sep 1984) Approved Oct 1984; Completed 1987.

STUDY OF STRANGENESS IN NUCLEI BY USE OF THE (π^+ , K^+) REACTION

BROOKHAVEN - S Bart, R E Chrien, P H Pile (Spokesperson).

R J Sutter

CARNEGIE MELLON U - P D Barnes, G Diebold, G B Franklin,

D Herzog, J Seydoux, J Symanski

FLORIDA STATE U - H Plendl

HOUSTON U - E V Hungerford, T Kishimoto

LOS ALAMOS - J F Amann, T S Bhatia, J A McGill,

E C Milner, J C Peng (Spokesperson), R Silbar, H A Thiessen

RUTGERS U - C Glashauser

TEXAS U - M Barlett, R Ferguson, G W Hoffman

TRIUMF - D Gill

VASSAR COLL - R L Stearns

Accelerator BNL Detector Spectrometer

Reactions

π^+ nucleus $\rightarrow K^+$ hypernuc 1.05 GeV/c

π^+ deut $\rightarrow K^+$ dibaryon ($S = -1$) "

Particles studied hypernuc, dibaryon ($S = -1$)

Comments Extends measurements of BNL-758.

BNL-801 (Sep 1984) Approved Oct 1984; Completed 1987.

A SEARCH FOR QUARKS PRODUCED IN HEAVY-ION MERCURY INTERACTIONS

SAN FRANCISCO STATE U - G P Alba, R W Bland

(✓ Spokesperson), S Dickson, C L Hodges, R Johnson,

M Lindgren, T L Palmer, D A Stricker

LBL - H Mattis, H Pugh

UC, IRVINE - G Shaw

LOS ALAMOS - R Slansky

Accelerator BNL-ION Detector Other

Reactions

S Hg 14.5 GeV (E_{lab}/N)

O Hg "

Particles studied quark

Comments Quarks produced in collisions of oxygen and sulfur with a mercury target are stopped in the target, which then is distilled and run through an automated Millikan-type device. Quarks are also stopped in a liquid argon tank and collected electrostatically, then dissolved in mercury for the Millikan apparatus.

Papers PR D36 (1987) 3533.

BNL-802 (Sep 1984) Approved Oct 1984.

STUDIES OF PARTICLE PRODUCTION AT EXTREME BARYON DENSITIES IN NUCLEAR COLLISIONS AT THE AGS

BROOKHAVEN - D Alburger, D Beavis, P D Bond, C Chasman

(✓ Spokesperson), Z Chen, Y Y Chu, J B Cumming,

R Debb, J M van Dijk, S Gushue, O Hansen, S Katcoff,

M J LeVine, Y Mlake, B Moskowitz, J Olness, L P Remsberg,

M J Tannenbaum, P Vincent, H Wegner

HIROSHIMA U - K Kitamura, T Sugikate

LBL - H Crawford

MIT - M Bloomer, B Cole, J Costales, L Grodzins, H Huang,

R J Ledoux, R Morse, C Parsons, M Sarabura, S G Steadman,

G Stephens, V Vutsadakis, D Woodruff

TOKYO U, INS - Y Akiba, H Hamagaki, S Hayashi, S Homma

TOKYO U - R S Hayano, H Sakurai

UC, RIVERSIDE - T Abbott, S Y Fung, M Vient

ARGONNE - S Kaufman, P Videbaek

BUENOS AIRES U - M Maricotti

COLUMBIA U - I Juricic, K Kurita, S Nagamiya

(✓ Spokesperson), P Stankus, Y Wu, W Zajc

LIVERMORE - J Engelage

KYUSHU U - Y Ikeda, K Kimura

Accelerator BNL-ION Detector Single-arm spectrometer

Reactions

²⁸Si nucleus $\rightarrow$ charged X 14.5 GeV/c (P_{lab}/N)

¹⁶O nucleus $\rightarrow$ charged X "

Comments Aims to establish effective temperatures in nucleus-nucleus conditions and to measure particle production cross sections. Measures inclusive spectra of π^+ , K^+ , p^+ under well-defined, variable trigger conditions. Approved for 2300 hours. In progress (July 89).

SUMMARIES OF BROOKHAVEN EXPERIMENTS

Papers NIM A254 (1987) 88, RSI 58 (1987) 143, RSI 58 (1987) 1761, PL B197 (1987) 285, ZPHY C38 (1988) 35, and ZPHY C38 (1988) 135.

BNL-804 (Aug 1984) Approved Oct 1984; Completed 1987. SEARCH FOR FRACTIONAL CHARGE WITH HEAVY ION BEAMS AT THE BROOKHAVEN AGS

INDIANA U - S P Ahlen (Spokesperson)

MICHIGAN U - G Tarle (Spokesperson)

Accelerator BNL-ION Detector Plastic

Reactions

S nucleus 15 GeV (E_{lab}/N)

Particles studied quark

BNL-805 (Dec 1984) Approved Mar 1985; Started Aug 1986.

A SEARCH FOR GALACTIC AXIONS

ROCHESTER U - S DePanfilis, A C Melissinos ($\checkmark$ Spokesperson),

B Moskowitz, J Rogers, Y Semertzidis, W Wuensch

BROOKHAVEN - H Halama, A Prodel

FERMILAB - W B Fowler, F Nezzick

Accelerator NONE Detector Other

Particles studied axion

Comments A search for a light-mass galactic axion through its electromagnetic conversion to a photon in the presence of a strong static field. Uses a high-field large-aperture solenoid and microwave detection apparatus. Data from 1 to 4 GHz are complete. Coverage to 6 GHz should be completed in 1989.

Papers PRL 59 (1987) 839, APL 52 (1988) 2266, NIM A284 (1988) 98, and PR D (submitted).

BNL-806 (Dec 1984) Approved Mar 1985; Started Nov 1986; Completed Jun 1988.

NUCLEAR FRAGMENTATION IN HEAVY ION COLLISIONS AT 15 GeV/amu

SIEGEN U - C Brechtman, W Heinrich ($\checkmark$ Spokesperson)

Accelerator BNL-ION Detector Plastic

Reactions

^{28}Si nucleus 14.5 GeV (T_{lab}/N)

^{16}O nucleus "

Particles studied frag

Comments Measures the cross sections for the production of beam fragments with charges greater than six. Studies nuclear fragmentation and coulomb dissociation for various targets.

BNL-808 (Feb 1985) Approved Mar 1985; Completed 1988.

INTERACTIONS OF 14.1 GeV/amu NUCLEI FOR ^{16}O TO ^{197}Au IN LIGHT AND HEAVY TARGETS

CRACOW - R Holynski, A Jurak, A Olszewski, B Wilczynska,

H Wilczynski, W Wolter

LOUISIANA STATE U - L Barbier, W V Jones, E Pruet,

J P Wefel, B Woelke

MINNESOTA U - P S Freier, C J Waddington ($\checkmark$ Spokesperson)

Accelerator BNL-ION Detector Emulsion

Reactions

^{16}O nucleus 15 GeV (T_{lab}/N)

^{32}S nucleus "

^{197}Au nucleus "

Comments A search for evidence for a quark-gluon plasma. Uses emulsion chambers.

Papers PRL 60 (1988) 405, PRL 62 (1989) 733, NP A (accepted), and PR C (accepted).

BNL-810 (Jan 1985) Approved Mar 1985.

A SEARCH FOR QUARK MATTER (QGP) AND OTHER NEW PHENOMENA UTILIZING HEAVY ION COLLISIONS AT THE AGS

BROOKHAVEN - A Etkin, K J Foley, R W Hackenbarg,

R S Longacre, W A Love, T W Morris, E D Platner

($\checkmark$ Spokesperson), A C Saulys

BROOKHAVEN & CITY COLL, N Y - S J Lindenbaum

($\checkmark$ Spokesperson)

CITY COLL, N Y - C Chan, M A Kramer

JOHNS HOPKINS U - P Halman, L Madansky

RICE U - B E Bonner, J A Buchanan, J M Clement, M D Corcoran,

J W Kruk, H E Miettinen, G S Mutchler, F Nesi-Tedaldi,

M Nesi, G C Phillips, J B Roberts

Accelerator BNL-ION Detector MPS

Reactions

p nucleus 15 GeV (T_{lab}/N)

^{32}S nucleus "

^{12}C nucleus "

Comments Searches for anomalous behavior in rapidities, multiplicities, strangeness enhancements, transverse momenta, energy flows, etc. Targets are carbon, sulfur, and gold. The tracking and momentum analysis of most of the charged particles emitted in individual events permit a very sensitive search for anomalous phenomena such as a quark-gluon plasma. Approved for 1650 hours. Some data were taken in December 88. The next run is scheduled for June 89.

BNL-811 (Jan 1985) Approved Mar 1985, Jun 1986.

RADIATIVE KAON CAPTURE AND HYPERON WEAK RADIATIVE DECAY

BIRMINGHAM U - N Hessey, J Lowe

BOSTON U - E C Booth, K P Gall, C Heisey, E K McIntyre,

J P Miller, B L Roberts ($\checkmark$ Spokesperson), W VanRiper,

D A Whitehouse

BRITISH COLUMBIA U - M D Hasinoff, D F Measday,

A J Noble

BROOKHAVEN - M Sakitt, J Skelly

CASE WESTERN RESERVE U - W Fickinger, K Robinson

BUDAPEST, CRIP & TRIUMF - D Horvath

TRIUMF - M Salomon

Accelerator BNL Detector Counter

Reactions

$K^- p \rightarrow \Lambda \gamma$ 0 MeV/c

$K^- p \rightarrow \Lambda \pi^0$ "

$K^- p \rightarrow \Sigma^0 \gamma$ "

$K^- p \rightarrow \Sigma^+ \pi^-$ "

Particles studied Λ , Σ^+

Comments Measures the above reactions for stopping K^- and the weak radiative decays of the Λ and Σ^+ . Approved for 3750 hours. In progress (July 89).

Papers NP A479 (1988) 75c, and ZPHY C42 (1989) 175.

BNL-813 (Jan 1985) Approved Mar 1985.

SEARCH FOR A STRANGENESS -2 DIBARYON

CARNEGIE MELLON U - P D Barnes ($\checkmark$ Spokesperson),

G Diebold, G Franklin ($\checkmark$ Spokesperson), C Maher, B Quinn,

R A Schumacher, J Seydoux, I R Sukatun

BROOKHAVEN - S Bart, R Chrien, P Pile, R Sutter

FREIBURG U - J Franz, N Hamann, E Roessle, H Schmitt

NEW MEXICO U - B Bassalleck, D Wolfe

PITTSBURGH U - S Dytmann

SACLAY - P Birien

VASSAR COLL - R L Stearns

BIRMINGHAM U - J Lowe, J Nelson, R Zybert

ILLINOIS U, URBANA - D Hertzog

KYOTO U - K Imai, A Masaike, K Miyake

KYOTO SANGYO U - F Takeuchi

LOS ALAMOS - J J Szymanski

MANITOBA U - J Birchall, C A Davis, N E Davison,

W T H van Oers, S A Page, W D Ramsey

SUMMARIES OF BROOKHAVEN EXPERIMENTS

TRIUMF - D Gill

Accelerator BNL Detector Spectrometer, Counter

Reactions

$K^- p \rightarrow K^+ \Xi^-$ 1.8 GeV/c

$\Xi^- \text{ deut} \rightarrow \text{dibaryon}(S = -2) n$ 0 GeV/c

Particles studied dibaryon($S = -2$)

Comments Covers from about 100 MeV below to 20 MeV above the AA mass in a triple-coincidence mode. See also BNL-836 for a search in the reaction $K^- {}^3\text{He} \rightarrow K^+ \text{dihyperon } N$. Approved for 1000 hours, to run in 1991.

BNL-814 (Feb 1985) Approved Nov 1985; Started Dec 1988.

STUDY OF EXTREME PERIPHERAL COLLISIONS AND OF THE TRANSITION FROM PERIPHERAL TO CENTRAL COLLISIONS IN REACTIONS INDUCED BY RELATIVISTIC HEAVY IONS

BROOKHAVEN - E Duek, M Fatyga, R Hogue, D Lissauer,

T Ludlam, D Makowiecki, E O'Brien, V Polychronakos,

T Throwe, C Woody

CERN - W J Willis

LOS ALAMOS - J Boissevain, D Fox, H Van Hecke,

W E Sondheim, J W Sunier

MCGILL U - J Barrette, A Legault, S K Mark

NEW MEXICO U - B Bassaleck, J Hall, D Wolfe

PITTSBURGH U - W Cleland, K Jayananda, D Kraus,

U Sonnada, H Takai

SUNY, STONY BROOK - R Bellwied, P Braun-Munzinger

($\sqrt{\text{Spokesperson}}$), G David, N Herrmann, G Ingold, W Llope,

M Muthuswami, J Stachel, L Waters

TEL AVIV U - R Heifetz

TEXAS A AND M - E Barasch, M Rawool, J A Shoemaker,

J Simon, J Sullivan, K Wolf

YALE U - V Greene, T Hemmick, R Majka, J Mitchell, F Roto-

tondo, J Sandweiss, B Shivakumar

Accelerator BNL-ION Detector Spectrometer, Calorimeter

Reactions

p nucleus 15 GeV (T_{lab}/N)

^{16}O nucleus "

^{32}S nucleus "

Comments Combines 4π calorimetry with a high-resolution forward spectrometer, allowing a completely exclusive study of the projectile fragmentation region and a detailed study of more central collisions. Topics include a search for strange matter. Approved for 1500 hours. In progress (July 89).

Papers ZPHY C38 (1988) 45.

BNL-815 (1985) Approved Mar 1986; Completed 1988.

PARTICLE PRODUCTION AND NUCLEAR FRAGMENTATION IN COLLISIONS OF HEAVY IONS IN EMULSION AT AGS ENERGIES

BEIJING, IHEP - G F Xu, P Y Zheng

GRENOBLE, CEN - E Monnard, F Schussler

HUA-ZHONG NORMAL U - X Cai, L S Liu, W Y Qian,

H Q Wang, D C Zhou, J C Zhou

JAMMU U - A Bhasin, S Kachroo, G L Kaul, J Kohli,

L Mangotra, N K Rao

LBL - E M Friedlander, Y J Karant, P J Lindstrom

PANJAB U - M M Aggarwal, R Arora, V Bhatia, M Kaur,

I S Mitra

CHANGSHA, WATER CONSERVANCY COLL - J F Sun,

Z Q Weng

LEBEDEV INST - M I Adamovich, Y A Alexandrov,

M M Chernyavsky, S G Gerasimov, S P Kharlamov,

V G Laronova, N V Maslennikova, G I Orrlova, N G Peresadko,

N G Salmanova, M I Tret'yakova

LUND U - S Garpman, B Jakobsson, L Karlsson, I Otterlund

($\sqrt{\text{Spokesperson}}$), S Persson, K Soederstroem, E Stenlund

MARBURG U - B Dressel, E Ganssauge, S Hackel, H Kallies,

C Mueller, J T Rhee, W Schulz

NATIONAL RESEARCH COUNCIL, OTTAWA - B Judek,

R S Storey

RAJASTHAN U - K B Bhalla, A Gill, V Kumar, P Lal,

S Lokanathan, S Mookerjee, R Raniwala, S Raniwala,

V S Shukla

SHANXI NORMAL U - D H Zhang

TASHKENT, FTI - S A Azimov, L P Chernova, S H Gadzhieva,

K G Gulamov, F G Kadyrov, S N Lukicheva, V S Navotny,

L N Svechnikova

TASHKENT, IFY - E Basova, R A Bondarenko, U G Gulyamov,

S H Nasyrov, N V Petrov, N Saidkhanov, T P Trofimova

WASHINGTON U, SEATTLE - T H Burnett, J Grote, J J Lord,

D Skelding, R J Wilkes

Accelerator BNL-ION Detector Emulsion

Reactions

^{16}O nucleus 15 GeV (T_{lab}/N)

Comments Uses emulsion chambers with lead calorimeters as well as emulsion stacks. Studies pseudo-rapidity density distributions, density fluctuations, multiplicity and angular distributions, production cross sections, etc.

BNL-816 (May 1985) Approved Jun 1985; Completed 1986.

SEARCH FOR NEUTRINO OSCILLATIONS

BROOKHAVEN - M J Murtagh

CERN - C Detraz, M Ferro-Luzzi, J M Perreau

PARIS, CURIE UNIV VI - P Astier, J Chauveau, A Diaczek,

J Dumarchez, F Kovacs, A Letessier, J M Levy, Y Pons,

A M Touchard, F Vannucci ($\sqrt{\text{Spokesperson}}$)

BOSTON U - G Bernardi, T Chrysicopoulou, J Stone

Accelerator BNL Detector Calorimeter

Reactions

$\nu_\mu \rightarrow \nu_e$ < 4 GeV/c

Comments A repeat of CERN-PS-191 with 20 times more statistics. Uses a fine-grained calorimeter.

Papers PL B220 (1989) 646.

BNL-817 (Jun 1985)

POLARIZATION TRANSFER IN HYPERON PRODUCTION

RICE U - D L Adams, B E Bonner ($\sqrt{\text{Spokesperson}}$),

J A Buchanan, J M Clement, M D Corcoran, N Krishna,

J W Kruk, H E Miettinen, G S Mutchler, F Nessi, M Nessi,

J B Roberts ($\sqrt{\text{Spokesperson}}$), P M Stevenson

BROOKHAVEN - S U Chung, R C Fernow, H Willutski

JOHNS HOPKINS U - T Hallman, L Madansky

HOUSTON U - L S Pinsky

MINNESOTA U - K Johns

SOUTHEASTERN MASS U - Z Bar-Yam, J Dowd, W Kern,

E King

Accelerator BNL Detector MPS

Reactions Polarized beam

$p \text{ Be} \rightarrow \Lambda X$ 22 GeV/c

$p \text{ Be} \rightarrow \Sigma^0 X$ "

Comments Approved for 1300 hours. In progress (July 89).

Papers PRL 58 (1987) 447, PR D38 (1988) 729, and PRL 62 (1989) 1591.

BNL-818 (1985) Approved Mar 1986.

SEARCH FOR A J^{PC} -EXOTIC HYBRID MESON

BROOKHAVEN - A Birman, S U Chung ($\sqrt{\text{Spokesperson}}$),

R C Fernow, H Kirk, S D Protopopescu

INDIANA U - R Crittenden, A Dierba, T Marshall, D Zieminska

SOUTHEASTERN MASS U - N Bar-Yam, J Dowd, W Kern,

E King

RICE U - B E Bonner, G C Phillips, J B Roberts

Accelerator BNL Detector MPS

Reactions

$\pi^- p \rightarrow f_1(1285) \pi^- p$ 12 GeV/c

Particles studied exotic-meson

SUMMARIES OF BROOKHAVEN EXPERIMENTS

Comments Looks for a resonance in the $f_1(1285)\pi^-$ system.
Approved for 1000 hours. Runs in 1989.

BNL-820 (1985) Approved Nov 1985; Completed 1988.

SEARCH FOR $S = -1$ DIBARYON RESONANCE (D_5) IN THE MASS REGION 2050-2130 MeV USING THE REACTION $^3\text{He}(K^-, \pi^+)nD_5$

BRANDEIS U - L Bensinger, L Krivich, H Piekarczyk (Spokesperson)
BROOKHAVEN - S Bart, R E Chrien, P H Pile, R J Sutter
INDIANA U - T Ward
MIT - M Deutsch
OSAKA U - T Fukuda, T Shibata
HOUSTON U - E V Hungerford, T Kishimoto, B Mayes, L Pinsky
TEXAS U - M Barlett, G W Hoffman
VASSAR COLL - R L Stearns

Accelerator BNL Detector Spectrometer

Reactions

$K^- ^3\text{He} \rightarrow \pi^+ n$ dibaryon ($S = -1$) 870 MeV/c

Particles studied dibaryon ($S = -1$)

BNL-821 (Sep 1985, Sep 1986) Approved Nov 1986.

A NEW PRECISION MEASUREMENT OF THE MUON G-2 VALUE AT THE LEVEL OF 0.36 PPM

BOSTON U - E Hazen, C Heisey, B Kerosky, F Krienen,
D Magaud, E K McIntyre, J P Miller, B L Roberts,
D Stasinopoulos, L R Sulak, W Worstell
BROOKHAVEN - H N Brown, E D Courant, J R Cullen,
G T Danby, C R Gardner, J W Jackson, M May, A Prodel,
R Shutt, P A Thompson
CITY COLL, N Y - J A Johnson, M S Lubell
COLUMBIA U - A M Sachs
CORNELL U - T Kinoshita
HEIDELBERG U, PHYS INST - H Janousch, H-J Mundinger,
G zu Putlitz, J Rosenkranz, W Schwarz
KEK - K Endo, H Hirabayashi, S Kurokawa, T Sato,
A Yamamoto
LOS ALAMOS - W P Lysenko
MICHIGAN U - A Rich
MISSISSIPPI U - J T Reidy
NOVOSIBIRSK, IYF - L M Barkov, B I Khazin, E A Kuraev,
Ya M Shatunov
SHEFFIELD U - F Combley
WAKO, RIKEN - K Ishida
TOKYO U - K Nagamine, K Nishiyama
YALE U - J M Bailey, S K Dhawan, A A Disco, F J M Farley,
V W Hughes (Spokesperson), Y Kuang, H Venkateramania

Accelerator BNL Detector Calorimeter

Reactions Polarized beam

$\mu\text{on} \rightarrow e^\pm \nu \bar{\nu}$ 3.09 GeV/c

Particles studied muon

Comments Uses a 7-m-radius muon storage ring with a 1.47-tesla vertical field. Approved for 2100 hours. Expected to run in 1992.

BNL-825 (Oct 1985) Approved Nov 1985; Completed 1988.
RADIOCHEMICAL STUDIES OF ULTRARELATIVISTIC NUCLEAR COLLISIONS

OREGON STATE U - C Casey, W Loveland ($\checkmark$ Spokesperson),
Z Xu
BROOKHAVEN - Y Y Chu, J B Cumming, P E Haustein,
S Katcoff
PURDUE U - M Bronikowski, Y H Chung, N T Porile
STUDSVIK SCI RES LAB, NYKOPING - K Aleklett, L Sihver

Accelerator BNL-ION Detector Photon spectrometer

Reactions

^{16}O nucleus 15 GeV (T_{lab}/N)

^{28}Si nucleus "

Particles studied frag

Comments Targets are copper, silver, and gold. Induced radioactivities are determined by off-line γ spectroscopy. Investigates evidence for a quark-gluon plasma.

Papers PR C37 (1988) 1311.

BNL-826 (Dec 1985) Approved Mar 1986; Completed 1988.

EXCLUSIVE EXPERIMENT OF HIGH ENERGY NUCLEAR REACTIONS INDUCED BY ^{32}S IONS WITH 16 GeV/N AT THE BNL AGS

SAGA U, JAPAN - H Itoh (Spokesperson)
TOHOKU U - M Chida, T Hayashino, Y Yamato
NAGOYA U - K Nakazawa
OSAKA U - R Ihara, T Nakai
SAGAMI INST TECH - H Sugimoto, K Taira
GIFU U - S Tasaka
UTSUNOMIYA U - Y Sato
KANAGAWA U - N Tateyama

Accelerator BNL-ION Detector Emulsion

Reactions

^{32}S nucleus 15 GeV (T_{lab}/N)

^{12}C nucleus "

Comments Uses emulsion chambers in a 2-tesla magnetic field. A search for evidence for a quark-gluon plasma, etc.

BNL-828 (Jan 1985) Approved Mar 1986; Completed 1987.

SEARCH FOR η -MESIC NUCLEUS WITH THE (π^+, p) REACTION AT 0.85 GeV/c

LOS ALAMOS - B J Dropesky, R J Estep, G C Giesler, L C Liu ($\checkmark$ Spokesperson)
WILLIAM AND MARY COLL - M Finn, H Funsten ($\checkmark$ Spokesperson), C F Perdrisat
BROOKHAVEN - S Bart, R E Chrien ($\checkmark$ Spokesperson),
P H Pile, R J Sutter, T E Ward
GEORGE MASON U - B J Lieb
RUTGERS U - R D Ransome
HOUSTON U - T Kishimoto
VASSAR COLL - R L Stearns
VIRGINIA TECH - C E Stronach

Accelerator BNL Detector Spectrometer

Reactions

π^+ nucleus $\rightarrow p X$ 0.80 GeV/c

Comments The targets are lithium, carbon, oxygen, and aluminum. Investigates a prediction of strongly bound systems of the η meson and nuclei.

Papers PRL 60 (1988) 2395.

BNL-829 (Jan 1986) Approved 1986; Completed 1989.

SEARCH FOR $S = -1$ THREE BODY BOUND SYSTEM

HOUSTON U - E V Hungerford, T Kishimoto ($\checkmark$ Spokesperson),
B Mayes, L Pinsky
BRANDEIS U - H Piekarczyk
BROOKHAVEN - S Bart, R E Chrien, P H Pile, R J Sutter,
T E Ward
MIT - M Deutsch
OSAKA U - T Fukuda, T Shibata
TEXAS U - M Barlett, G W Hoffman
VASSAR COLL - R L Stearns

Accelerator BNL Detector HYPERSPEC

Reactions

$K^- ^3\text{He} \rightarrow \pi^+ X$ 715 MeV/c

Particles studied hypernuc.

Comments A search for a Λ nn bound state in $K^- ^3\text{He} \rightarrow \pi^+ X$

BNL-831 (1986) Approved 1986; Completed 1987.

SEARCH FOR THE HYPERNUCLEAR PROJECTILE FRAGMENTS IN THE RELATIVISTIC HEAVY-ION COLLISION USING AN EMULSION CHAMBER

SUMMARIES OF BROOKHAVEN EXPERIMENTS

TOKYO U, INS - C Nagoshi, K Omata, Y Shida (Spokesperson)
 KOBE U - H Fukushima, H Fukushima, T Hara, M Miyagaki,
 K Taruma, C Yokoyama
 BROOKHAVEN - D Beavis

Accelerator BNL-ION Detector Emulsion, Counter

Reactions

^{16}O C	6.14 GeV/c (P_{lab}/N)
^{16}O nucleus	"
^{32}S C	"
^{32}S nucleus	"

Comments Ran for 6 hours.

BNL-834 (Jan 1986) Approved Mar 1986; Completed 1987.

STUDY OF HADRONIC HARD SCATTERING WAVE FUNCTIONS USING ELASTIC SCATTERING INSIDE NUCLEI

BROOKHAVEN - D S Barton, G M Bunce, A S Carroll
 (Spokesperson), S Gushue, Y I Makdisi
 MINNESOTA U - H Courant, G Y Fang, K J Heller,
 M L Marshak, M A Shupe
 PENN STATE U - S Heppelmann (Spokesperson)
 SOUTHEASTERN MASS U - J J Russell

Accelerator BNL Detector Spectrometer

Reactions

$p \rightarrow p$	6, 10, 12 GeV/c
p nucleus	"

Comments Studies elastic scattering from protons in nuclei as a function of A.

Papers PRL 61 (1988) 1698.

BNL-835 (Apr 1986) Approved Jun 1986, Mar 1989.

KAON-NUCLEUS TOTAL CROSS SECTION MEASUREMENTS AND PARTIAL DECONFINEMENT IN NUCLEI

TEL AVIV U - J Alster, D Ashery, J Lichtenstadt,
 M A Moinester, I Navon, E Piasetzky (✓ Spokesperson),
 A Rahav, I Yavin
 BROOKHAVEN - S Bart, R E Chrien (✓ Spokesperson), M May,
 P H Pile, R J Sutter

Accelerator BNL Detector Counter

Reactions

K^+ deut	500-700 MeV/c
K^+ nucleus	"

Comments Measures the ratio of K^+ nucleus to K^+d total cross sections to search for evidence for nucleon swelling in nuclei.

Targets are light nuclei with $N = Z$ (^6Li , Ca, and Si). A first run was completed in 1988. A further run is scheduled for January 90.

Papers NC (accepted).

BNL-836 (May 1986) Approved Jun 1986.

SEARCH FOR A STRANGENESS -2 DIBARYON USING A ^3He TARGET

CARNEGIE MELLON U - P D Barnes (✓ Spokesperson),
 G Diebold, G Franklin (✓ Spokesperson), C Maher, B Quinn,
 R A Schumacher, J Seydoux, I R Sukatan
 BROOKHAVEN - S Bart, R Chrien, P Pile, R Sutter
 FREIBURG U - J Franz, N Hamann, E Roessle, H Schmitt
 NEW MEXICO U - B Bassalleck, D Wolfe
 PITTSBURGH U - S Dytman
 SACLAY - P Birien
 VASSAR COLL - R L Stearns
 BIRMINGHAM U - J Lowe, J Nelson, R Zybert
 ILLINOIS U, URBANA - D Hertzog
 KYOTO U - K Imai, A Masaike, K Miyake
 KYOTO SANGYO U - F Takeuchi
 LOS ALAMOS - J J Szymanski

MANITOBA U - J Birchall, C A Davis, N E Davison,
 W T H van Oers, S A Page, W D Ramsey
 TRIUMF - D Gill

Accelerator BNL Detector Spectrometer

Reactions

$K^- ^3\text{He} \rightarrow K^+ n$ dibaryon ($S = -2$) 1.8 GeV/c

Particles studied dibaryon ($S = -2$)

Comments See also BNL-813 for a search in the reaction $\Xi^- d \rightarrow$ dihyperon n. Approved for 700 hours. To run in 1991.

BNL-838 (Oct 1986) Approved Nov 1986; Started 1988; Completed 1988.

90° EXCLUSIVES AT 6 GeV

BROOKHAVEN - D S Barton, G Bunce (✓ Spokesperson),
 A S Carroll, Y I Makdisi
 MINNESOTA U - H Courant, K J Heller, S Heppelmann,
 M L Marshak, M A Shupe
 SOUTHEASTERN MASS U - J J Russell (✓ Spokesperson)

Accelerator BNL Detector Double-arm spectrometer

Reactions

$\pi^- p \rightarrow \pi^- p$	6 GeV/c
$\pi^- p \rightarrow \rho^- p$	"
$\pi^- p \rightarrow \pi^+ \Delta(1232 P_{33})^-$	"
$\pi^- p \rightarrow K^+ \Sigma^-$	"
$\pi^- p \rightarrow K^0 \Lambda$	"
$\pi^+ p \rightarrow \pi^+ p$	"
$\pi^+ p \rightarrow \rho^+ p$	"
$\pi^+ p \rightarrow \pi^+ \Delta(1232 P_{33})^+$	"
$\pi^+ p \rightarrow K^+ \Sigma^+$	"
$K^+ p \rightarrow K^+ p$	"
$K^- p \rightarrow K^- p$	"
$p \rightarrow p$	"
$\bar{p} p \rightarrow \bar{p} p$	"

Comments Continues studies of BNL-755 to a lower momentum, where the cross sections are larger. The apparatus is a single-arm spectrometer and a nonmagnetic arm. Ran for 902 hours.

BNL-839 (1988)

A SEARCH FOR MAGNETIC MONOPOLES

IBM WATSON RES CTR - S Berman (✓ Spokesperson),
 P Chaudhari, C C Chi, C C Tsuei
 BROOKHAVEN - A Prodel (✓ Spokesperson)

Accelerator NONE Detector Other

Particles studied monopole

Comments A study involving the design, construction, and operation of a prototype superconducting induction monopole detection system. The goal is to develop a large area prototype detector which can be replicated to achieve monopole flux limits approaching the Parker limit.

BNL-840 (Jul 1987) Approved Oct 1987.

SEARCH FOR THE COHERENT PRODUCTION OF LIGHT SCALAR AND PSEUDOSCALAR PARTICLES

ROCHESTER U - R Cameron, G Cantatore, A C Melissinos
 (✓ Spokesperson), J T Rogers, Y K Senertzidis
 BROOKHAVEN - H Halama, A G Prodel
 FERMI LAB - F A Nezrick
 CERN & TRIESTE U - E Zavattini

Accelerator NONE Detector Other

Particles studied axion

Comments The detector uses two CBA superconducting dipoles.

A search for light scalar or pseudoscalar particles that couple to the electromagnetic field. Looks for optical rotation of a polarized laser beam traversing in vacuum a strong magnetic field. The expected sensitivity of 10^{-12} rad corresponds to a limit on the coupling $g_{a\gamma\gamma}$ of $10^{-8} (\text{GeV})^{-1}$. Detects Deilbruck

SUMMARIES OF BROOKHAVEN EXPERIMENTS

scattering (real photons from virtual photons) below the e^+e^- threshold. Runs in Summer 1989.

BNL-841 (1987) Approved Aug 1987.

PHYSICS CALIBRATION OF THE SOUDAN II NEUTRINO DECAY EXPERIMENT USING NEUTRINOS AT BROOKHAVEN

ARGONNE - I Ambats, D Ayres, L Balka, L Barrett, J Biggs, J Dawson, T Fields, M C Goodman, N Hill, D Jankowski, F Lopez, E May, L E Price, J Schlereth, J Thron
MINNESOTA U - H Courant, U DasGupta, K Heller, K Johns, M Marshak, E Peterson, D Rosen, K Ruddick, M Shupe, S Werkema
OXFORD U - W W M Allison, G D Barr, C B Brooks, J H Cobb, L Kirby-Gallagher, D H Perkins, P Shield, N West
RUTHERFORD - J Alner, D Cockerill, C Garcia, R Giles, P J Litchfield, G F Pearce
TUFTS U - D Benjamin, J Kochocki, W A Mann ($\checkmark$ Spokesperson), R Milburn, A Napier, W Oliver, B Saitta, J Schneps, N Sundaralingam

Accelerator BNL Detector Calorimeter

Reactions

ν_μ <5 GeV/c

Comments A test of modules for the Soudan II proton decay detector, to run parasitically during neutrino runs. For neutrino energies near the nucleon mass, the flux from the AGS wide-band beam has a shape similar to the spectrum of atmospheric neutrinos. The test measures the extent to which neutrino events can mimic decaying nucleons in the detector. Approved for 350 hours.

BNL-842 (1987) Approved Oct 1987; Completed 1988.

MEASUREMENT OF THE ANALYZING POWER IN pp ELASTIC SCATTERING AT 22 GeV/c AND HIGH MOMENTUM TRANSFER

BROOKHAVEN - R Appel, D S Barton, G Bunce, A S Carroll, S Gushue, D I Lowenstein, Y I Makdisi (Spokesperson)
MINNESOTA U - H Courant, K Heller, M Marshak, S Saroff, M Shupe (Spokesperson), C White
PENN STATE U - S Heppelmann
SOUTHEASTERN MASS U - J J Russell

Accelerator BNL Detector Spectrometer

Reactions Polarized beam

$p p \rightarrow p p$ 22 GeV/c

Comments Measures the left-right asymmetry with a high-intensity vertically polarized beam at $P_t^2 = 6.6$ and 8.7 (GeV/c)².

BNL-844 (1988) Approved Mar 1988.

MEASUREMENT OF ANGULAR DISTRIBUTIONS FOR FRAGMENTS IN THE TARGET RAPIDITY REGION

BROOKHAVEN - Y Y Chu, J B Cumming ($\checkmark$ Spokesperson), P E Haustein, S Katcoff, R W Stoenner
OREGON STATE U - W Loveland

Accelerator BNL-ION Detector Other

Reactions

$^{16}\text{O Au} \rightarrow ^{37}\text{Ar X}$ 13.6 GeV (T_{lab}/N)
 $^{16}\text{O Au} \rightarrow ^{127}\text{Xe X}$ "

Comments Investigates enhanced backward yields of fragments in the mass range $A = 24-48$ observed in BNL-825. Fragments are stopped in catcher foils and yields are determined off-line. Approved for 100 hours. Awaiting the availability of a high intensity ^{16}O beam.

BNL-845 (Jan 1988) Approved Mar 1988; Started Jan 1989.

A SEARCH FOR THE RARE DECAY $K^0 \rightarrow \pi^0 e^+ e^-$

BROOKHAVEN - R K Adair, E Jastrzembki, R C Larsen, L B Leipuner, W M Morse ($\checkmark$ Spokesperson)
YALE U - H Greenlee, H Kasha, E Mannelli, M Mannelli, K Ohl, S Schaffner, M P Schmidt ($\checkmark$ Spokesperson) M Vagins
VASSAR COLL - C Schwarz

Accelerator BNL Detector Electronic

Reactions

K_L 4-20 GeV/c

Particles studied K_L

Comments Uses the BNL-726 detector, suitably modified. Expects to be sensitive to branching fractions greater than 10^{-10} . Normalizes to $K_L^0 \rightarrow \pi^0 \pi^0 \pi^0$ and $K_L^0 \rightarrow \pi^0 \pi^0$ with a π^0 Dalitz decay and $K_L^0 \rightarrow \pi^+ \pi^- \pi^0$. Also sensitive to $K_L^0 \rightarrow e^+ e^- \gamma$ and $K_L^0 \rightarrow e^+ e^-$ decays. Approved for 1500 hours. In progress (July 89).

BNL-847 (1988) Approved Oct 1988.

STUDY OF PARTICLE PRODUCTION IN HEAVY-ION COLLISIONS

SUNY, BUFFALO - P L Jain ($\checkmark$ Spokesperson), K Sengupta, G Singh

Accelerator BNL-ION Detector Emulsion

Reactions

$^{16}\text{O nucleus}$ 14 GeV (T_{lab}/N)
 $^{32}\text{S nucleus}$ "
 $^{28}\text{Si nucleus}$ "

Comments Emphasis is on central collisions with the aim of finding evidence for a new, collective form of quark matter. Approved for 2 hours. Scheduled to run June 89.

BNL-849 (Aug 1988)

SEARCH FOR MUONIUM TO ANTIMUONIUM CONVERSION

A T AND T BELL LABS, MURRAY HILL - D R Harshman (Spokesperson), A P Mills (Spokesperson)

Accelerator BNL Detector Counter

Reactions

$\mu\text{onium} \rightarrow \mu\text{onium}$ —

Comments A search for spontaneous conversion of muonium to antimuonium by looking for the spectator orbital positron remaining after the decay of the μ^- . Approved for 500 hours subject to test, with a request for a further 1550 hours deferred.

BNL-850 (1988) Approved Oct 1988.

EVA, A SOLENOIDAL DETECTOR FOR LARGE ANGLE EXCLUSIVE REACTIONS: PHASE I — DETERMINING COLOR TRANSPARENCY TO 22 GeV/c

BROOKHAVEN - R Appel, D S Barton, G Bunce, A S Carroll (Spokesperson), S Gushue, M Knit, D I Lowenstein, Y I Makdisi
MINNESOTA U - H Courant, K J Heller, K Johns, M L Marshak, C White
MOUNT HOLYOKE COLL - J Krivich, H Nicholson
PENN STATE U - A Everett, S Heppelmann (Spokesperson)
SOUTHEASTERN MASS U - F J Barbosa, J J Russell

Accelerator BNL Detector EVA

Reactions

$p p \rightarrow p p$ 6-20 GeV/c
 $p \text{ nucleus} \rightarrow p p \text{ nucleus}$ "

Comments The detector (EVA = Exclusive Variable Apparatus) is built around the CLEO I solenoid. This first experiment with EVA measures "color transparency," defined as the ratio of pp elastic scattering for the target proton in a nucleus to elastic scattering on free protons. Continues studies of BNL-834. Approved for 1200 hours.

SUMMARIES OF BROOKHAVEN EXPERIMENTS

BNL-851 (Sep 1988) Approved Oct 1988.

A STUDY OF THE DECAY $K^+ \rightarrow \pi^+ e^+ e^-$

BROOKHAVEN - H A Gordon, D M Lazarus, P Rehak
PSI, VILLIGEN - J Egger, W D Herold, H Kaspar
WASHINGTON U, SEATTLE - V Chaloupka, H J Lubatti,
A Shukla, T Zhao
YALE U - C Alliegro, A Deshpande, N J Hadley, A M Lee,
M E Zeller (✓ Spokesperson)

Accelerator BNL Detector Spectrometer

Reactions

$K^+ \rightarrow \pi^+ e^+ e^-$	6 GeV/c (P _{lab})
$K^+ \rightarrow \pi^+ \pi^0$	"
$X \rightarrow e^+ e^-$	---
$\pi^0 \rightarrow e^+ e^-$	---

Particles studied K^+ , π^0

Comments Measures the $K^+ \rightarrow \pi^+ e^+ e^-$ and $\pi^0 \rightarrow e^+ e^-$ branching fractions and searches for an $e^+ e^-$ state in the mass range 1.02 to 350 MeV. Approved for 2000 hours.

BNL-852 (Jan 1989) Approved Mar 1989.

SEARCH FOR GLUEBALLS AND J^{PC} -EXOTIC HYBRID MESONS

BROOKHAVEN - S U Chung (✓ Spokesperson),
S D Protopopescu, D Weygand, H J Willutzki
INDIANA U - R R Crittenden, A R Dzierba (✓ Spokesperson),
P T Smith, D Zieminska
LOUISVILLE U - C Davis
SOUTHEASTERN MASS U - Z Bar-Yam, J Dowd, W Kern
NOTRE DAME U - J M Bishop, N M Cason, R C Ruchti,
W D Shephard
RICE U - B E Bonner, F Nessi-Tedaldi, M Nessi, J B Roberts
WASHINGTON U, SEATTLE - T Burnett

Accelerator BNL Detector MPS

Reactions

$\pi^- p \rightarrow n \eta \pi^0$	21 GeV/c
$\pi^- p \rightarrow p \eta \pi^-$	"

Particles studied exotic-meson, glueball, $f_0(1590)$

Comments Looks in particular for further evidence for an "M(1405)" observed to decay into $\eta \pi^0$ in GAMS-spectrometer experiments at Serpukhov and CERN.

BNL-854 (Jan 1989) Approved Mar 1989.

ANTIPROTON-NUCLEUS INTERACTIONS AT 5-10 GEV/c

RICE U - D L Adams, B E Bonner (✓ Spokesperson),
J A Buchanan, C-N Chiou, J M Clement, M D Corcoran,
J W Kruk (✓ Spokesperson), H E Miettinen, G S Mutchler,
F Nessi-Tedaldi, M Nessi, J B Roberts
LOS ALAMOS - W R Gibbs
BROOKHAVEN - S E Eiseman, A Etkin, K J Foley,
R W Hackenburg, R S Longacre, W A Love, T W Morris,
E D Platner, A C Saulys
BROOKHAVEN & CITY COLL, N Y - S J Lindenbaum
JOHNS HOPKINS U - T J Hallman, L Madansky

Accelerator BNL Detector MPS

Reactions

$\bar{p}$ nucleus $\rightarrow \Lambda X$	5, 7, 9 GeV/c
$\bar{p}$ nucleus $\rightarrow \bar{\Lambda} X$	"
$\bar{p}$ nucleus $\rightarrow K_S^0 X$	"

Comments Measures production cross sections and rapidity distributions of Λ 's, $\bar{\Lambda}$'s, and K_S^0 's for five targets from beryllium to lead. A probe of the high-temperature, low-density region of the nuclear-matter phase diagram in search of evidence for the quark-gluon plasma. Approved for 400 hours.

BNL-855 (Jan 1989) Approved Mar 1989.

LOW ENERGY PHOTON PRODUCTION IN PROTON NUCLEUS COLLISIONS AT THE AGS

BROOKHAVEN - D Lissauer, T Ludlam, C Woody
(✓ Spokesperson)
OAK RIDGE - J Beene, F Bertrand, J Gomez del Campo, A Ray,
D Shapira (✓ Spokesperson), M Tincknell
CERN - J Schukraft, W Willis

Accelerator BNL Detector Spectrometer

Reactions

p nucleus $\rightarrow \gamma X$	10, 20 GeV/c
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Comments Uses the BNL-814 spectrometer and BaF₂ photon detectors. Studies low-energy photon production in correlation with event topology. A search for new sources of soft photons (in excess of nuclear decays and hadronic bremsstrahlung). Approved for 500 hours.

SUMMARIES OF CERN EXPERIMENTS

CERN Experiments

CERN-EMU-001 (Apr 1984) Approved Nov 1984; Completed Oct 1987.

STUDY OF PARTICLE PRODUCTION AND NUCLEAR FRAGMENTATION IN COLLISIONS OF ^{16}O BEAMS WITH EMULSION NUCLEI AT 19-200 A GeV

BEIJING, IHEP - G F Xu, P Y Zheng
GRENOBLE, CEN - E Monnard, F Schussler
HUA-ZHONG NORMAL U - X Cai, L S Liu, W Y Qian,
H Q Wang, D C Zhou, J C Zhou
JAMMU U - A Bhasin, S Kachroo, G L Kaul, L Mangotra,
N K Rao

LBL - E M Friedlander, Y J Karant, P J Lindstrom
PANJAB U - M M Aggarwal, R Arora, V S Bhatia, M Kaur,
I S Mittra

CHANGSHA, WATER CONSERVANCY COLL - J F Sun,
Z Q Weng

LEBEDEV INST - M I Adamovich, Y A Alexandrov,
M M Chernyavsky, S G Gerasimov, S P Kharlamov,
V G Lariionova, N V Maslennikova, G I Orrlova, N G Peresadko,
N G Salimanova, M I Tretyakova

LUND U - S Garpman, B Jakobsson, L Karlsson, I Otterlund
($\checkmark$ Spokesperson), S Persson, K Soederstroem, F Stenlund
MARBURG U - B Dressel, E Ganssauge, S Hackel, H Kallies,
C Mueller, J T Rhee, W Schulz

NATIONAL RESEARCH COUNCIL, OTTAWA - B Judek,
R S Storey

RAJASTHAN U - K B Bhalla, A Gill, V Kumar, P Lal,
S Lokanathan, S Mookerjee, R Raniwala, S Raniwala,
V S Shukla

SHANXI NORMAL U - D H Zhang
TASHKENT, FTI - S A Azimov, L P Chernova, S H Gadzhieva,
K G Gulamov, F G Kadyrov, N S Lukicheva, V S Navotny,
L N Svechnikova

TASHKENT, IFY - E Basova, R A Bondarenko, U G Gulyamov,
S H Nasyrov, N V Petrov, N Saidkhanov, T P Trofimova

WASHINGTON U, SEATTLE - T H Burnett, J Grote, J J Lord,
D Skelding, R J Wilkes

Accelerator CERN-SPS Detector Emulsion

Reactions

^{16}O nucleus 13-200 GeV (T_{lab}/N)
 ^{32}S nucleus 200 GeV (T_{lab}/N)

Comments Studies multiplicities of produced charged particles, pseudo-rapidity density distributions globally, and in selected regions of pseudo-rapidity, density fluctuations and multiplicity and angular distributions of nuclear fragments and recoiling protons, and cross sections for production and interaction of light and medium projectile fragments.

Papers PL B201 (1988) 397, PRL 62 (1989) 2801, and PL B223 (1989) 262

CERN-EMU-002 (May 1984) Approved Nov 1984.

SEARCH FOR FRACTIONALLY CHARGED NUCLEI IN HIGH-ENERGY OXYGEN-LEAD COLLISIONS

UC, BERKELEY - G Gerbier, R Guoxiao, P B Price

($\checkmark$ Spokesperson), W T Williams

CERN - G R Vanderhaeghe

Accelerator CERN-SPS Detector Plastic

Reactions

^{16}O Pb 200 GeV (T_{lab}/N)
 ^{32}S Pb "
 ^{32}S Cu "
 ^{32}S Al "

Particles studied quark

Comments Some running complete, more scheduled for 1990.

Papers PRL 59 (1987) 2535, and PRL 61 (1988) 2193

CERN-EMU-003 (Oct 1984) Approved Nov 1984; Completed Oct 1987

INTERACTIONS OF ^{16}O PROJECTILE AND ITS FRAGMENTS IN NUCLEAR EMULSION AT ABOUT 60 AND 200 GeV/NUCLEON

CAIRO U - O E Badawy (Spokesperson), A El-Hamalawy,

M El-Nadi, M El-Nagdy, A El-Shawarby, A El-Sourgy,
M T Ghoneim, Z Moharram, M Mossaad, A Moussa, N Moussa,
Z A Moussa, O Osman, N Rashid, M Riad, N M Sadek

Accelerator CERN-SPS Detector Emulsion

Reactions

^{16}O nucleus 60, 200 GeV (T_{lab}/N)

Particles studied anomalon

Comments Measures the multiplicity and pseudo-rapidity of shower particles produced in peripheral, semi-central, and central collisions of ^{16}O ions in emulsions.

CERN-EMU-004 (Oct 1985) Approved Feb 1986, Sep 1987; Completed Oct 1987

MEASUREMENT OF COULOMB CROSS SECTION FOR PRODUCTION OF DIRECT ELECTRON PAIRS BY HIGH ENERGY IONS AT THE CERN SPS

ALABAMA U, HUNTSVILLE J C Gregory, T Hayashi,

Y Takahashi

BOSTON U - S P Ahlen, A Marin

KOBE U - S Dake

MICHIGAN U - J A Musser, G Tarle

NASA, MARSHALL - J H Derrickson, P B Eby, W F Fountain,

T A Parnell ($\checkmark$ Spokesperson), F E Roberts, T Tabuki,

J W Watts

TOKYO U - T Ogata, T Tominaga

Accelerator CERN-SPS Detector Emulsion

Reactions

^{16}O nucleus $\rightarrow e^+ e^-$ ^{16}O nucleus 60, 200 GeV (T_{lab}/N)

^{32}S nucleus $\rightarrow e^+ e^-$ ^{32}S nucleus

Comments Aims to establish cross sections to compare with recent calculations and for use in measuring energies of very high energy cosmic rays.

Papers PR A (in press)

CERN-EMU-005 (Oct 1985) Approved Feb 1986; Completed Oct 1987.

STUDY OF EXTREMELY SHORT-RANGE PARTICLE CORRELATIONS IN HIGH-ENERGY ION COLLISIONS

ALABAMA U, HUNTSVILLE - J C Gregory, T Hayashi

NASA, MARSHALL - J H Derrickson, P B Eby, W F Fountain,

T A Parnell, F E Roberts, Y Takahashi (Spokesperson),

J W Watts

TOKYO U - S Dake, M Fuki, O Miyamura, S Nagamiya,

T Ogata, T Tabuki

Accelerator CERN-SPS Detector Emulsion

Reactions

^{16}O nucleus 15, 50, 200 GeV (T_{lab}/N)

Comments Uses an emulsion chamber with air gaps between plates in a 2-tesla magnetic field. Measures two-particle angular correlations for both like-charge and unlike-charge pairs.

CERN-EMU-006 (Mar 1986) Approved Jun 1986; Completed Nov 1986.

STUDY OF THE PRODUCTION MECHANISMS AND DECAY PROPERTIES OF CHARMED PARTICLES OBSERVED IN NUCLEAR EMULSIONS COUPLED TO THE NA14 SPECTROMETER

BOLOGNA U & INFN, BOLOGNA A Forino, R Gessaroli,

A Quarenghi, Vignudelli, F Viaggi

CERN - G Vanderhaeghe

FLORENCE U & INFN, FLORENCE M Bocciarelli, A Conti

(Spokesperson), M G Dagliana, M Meschini, G Parrini

SUMMARIES OF CERN EXPERIMENTS

GENOA U & INFN, GENOA - G Tomasini
LEBEDEV INST - M I Adamovich, Y A Alexandrov,
N M Chernyavsky, S G Gerassimov, S P Kharlamov,
V G Lariionova, G I Orlova, N G Peresadko, N A Salimanova,
M I Tretyakova

Accelerator CERN-SPS **Detector** Emulsion, Spectrometer

Reactions

γ nucleus $\rightarrow$ charm X 70-200 GeV/c

Particles studied Λ_c^+ , charm

Comments A hybrid experiment, using the particle identification power and microstrip vertex detector of the NA-14 spectrometer to speed and enrich the detection of charmed particles.

CERN-EMU-007 (Mar 1987) Approved Jun 1987, Feb 1989.

INTERACTIONS OF 60-200 GeV/NUCLEON ^{16}O AND ^{32}S (^{40}Ar) NUCLEI IN LIGHT AND HEAVY ABSORBERS

CRACOW - R Holyński, A Jurak, A Olszewski, B Wilczyńska,
H Wilczyński, W Wolter, B Wosiek
LOUISIANA STATE U - W V Jones, K Moon, E Pruet, J P Wefel
MINNESOTA U - P S Freier, J Kapusta, C J Waddington
($\checkmark$ Spokesperson)

Accelerator CERN-SPS **Detector** Emulsion

Reactions

^{16}O nucleus 60, 200 GeV (T_{lab}/N)
 ^{32}S nucleus "

Comments Studies (1) projectile fragmentation modes, including transverse momentum distributions and possible dependences on topology, (2) pseudo-rapidity distributions, including searches for structure and correlations, (3) the dependence of charged particle multiplicity on the number of interacting nucleons, and (4) possible enhanced production of direct photons or electrons in high density matter. Ran in 1987, and further running is planned for 1990.

Papers PRL 60 (1988) 405, PRL 62 (1989) 733, NP A (in press), and PR C (in press).

CERN-EMU-008 (Feb 1987) Approved Sep 1987; Completed Oct 1987.

STUDY OF PARTICLES PRODUCTION IN RELATIVISTIC HEAVY-ION COLLISIONS

SUNY, BUFFALO - P L Jain ($\checkmark$ Spokesperson), K Sengupta,
G Singh

Accelerator CERN-SPS **Detector** Emulsion

Reactions

^{16}O nucleus 200 GeV (T_{lab}/N)
 ^{32}S nucleus "
 ^{40}Ca nucleus "

Comments Searches for evidence for quark matter by analyzing events produced in central collisions.

Papers PRL 59 (1987) 2531, EPL 5 (1988) 135, PRL 61 (1988) 1073, PL B213 (1988) 548, PL B214 (1988) 480, EPL 8 (1989) 15, PL B (accepted), and PR C (accepted).

CERN-EMU-009 (Jan 1989) Approved Apr 1989.

AN EMULSION HYBRID SETUP FOR THE STUDY OF SULPHUR-NUCLEUS COLLISIONS AT 200 GeV/N

BARI U & INFN, BARI - N Armenise, M T Muciaccia, S Simone
CERN - M A Mazzoni, G Poulard
UNIVERSITY COLL, DUBLIN - A C Breslin
ALABAMA U, HUNTSVILLE - J C Gregory, T Hayaishi,
Y Takahashi
NASA, MARSHALL - J H Derrickson, T A Parnell, J Watts
UNIVERSITY COLL, LONDON - D H Davis, D Tovee
NAGOYA U - S Aoki, K Hoshino, H Kitamura, M Kobayashi,
K Kodama, M Miyaniishi, K Nakamura, N Nakamura,
S Nakanishi, K Niu, K Niwa, H Tajima

ROME U & INFN, ROME - S Dell'Uomo, S Di Liberto, F Meddi,
G Rosa, C Sgarbi
SALERNO U & INFN, SALERNO - G Grella, G Romano
($\checkmark$ Spokesperson)
TURIN U & INFN, TURIN - B Allesandaro, V Bisi, P Giubellino,
A Marzari-Chiesa, L Ramello, L Riccati

Accelerator CERN-SPS **Detector** Emulsion

Reactions

^{32}S nucleus 200 GeV (T_{lab}/N)

Particles studied charm

Comments The setup includes silicon detectors and emulsion tapes or chambers. Some of the exposures will be in a 2.5 T field. The main aims are (1) a search for charm particles produced in central interactions on silver and lead targets, (2) a study of charged-particle correlations as a function of charge and momentum differences, and (3) a search for electromagnetic dissociation of sulfur in the field of iron, silver, and lead targets in preparation.

CERN-IS-010 (1982) Approved Apr 1982; Completed Dec 1987.

DETERMINATION OF THE ν_e MASS FROM EXPERIMENTS ON ELECTRON-CAPTURE BETA DECAY

AARHUS U - P G Hansen, K Riisager
CERN - H L Ravn, A De Rujula
CHALMERS UNIV TECH - H Axelsson, M Cronqvist, B Jonsson
($\checkmark$ Spokesperson), G Nyman
ZFK, ROSSENDORF - G J Beyer
MADRID U - M J G Borge

Accelerator CERN-SPS **Detector** ?

Particles studied ν_e

Comments Measures the shape of the internal bremsstrahlung spectrum in electron capture near its upper end point. Uses ^{183}Ho and ^{81}Kr .

Papers PL B210 (1988) 249.

CERN-LEP-ALEPH (1982) Approved Nov 1982.

THE ALEPH DETECTOR (APPARATUS FOR LEP PHYSICS)

ALEPH COLLABORATION

ANNECY - D Decamp, P Deschizeaux, J P Lees, M Minard
ATHENS U - G Gounaris, E Matsinos, E Simopoulou, A Vayaki
BARCELONA, AUTONOMA U - J M Crespo, M Delfino,
A Domingo, E Fernandez, M Martinez, R Miquel, S Orteu,
A Pacheco, J Perlas
BARI U - M G Catanesi, A Farilla, A Ghiselli, G Iaselli, G Maggi,
A Mastrogiovanni, S Natali, S Nuzzo, P De Palma, T Ranieri,
G Raso, F Romano, F Ruggieri, G Selvaggi, L Silvestris,
P Tempesta, G Zito
BEIJING, IHEP - Y B Chen, Z Chen, D Huang, Y Jiang,
J F Lin, Z Qian, T Ruan, T Wang, X L Wang, D Wu, W M Wu,
Y G Xie, D Xu, R Xu, Y L Xu, W G Yan, J Q Zhang,
H Q Zhao, W R Zhao
CERN - H Albrecht, A Ball, A Blondel, E Blucher, J Bourrotte,
R Budde, T Charity, D C Cundy, H Drevermann, F Dydak,
Michele Ferro-Luzzi, L Garrido-Beltram, R Grigoire,
R Hagelberg, J Harvey, S Haywood, F James, P Janot,
B Jost, M Kasemann, G Kellner, J Knobloch, A Lacourt,
P Lazeyras, I Lehrs, A Marchioro, P S Marrochesi, P Mato,
J M Maugain, J May, V Mertens, D Miller, A Minten, A Miotto,
P Palazzi, M Pepe, E Petit, G Petrucci, F Ranjard, J Richstein,
W Richter, J Rothberg, W Von Rueden, W D Schlatter,
G Stefanini, H Taureg, W Tejsky, H W Wachsmuth, H Wahl,
W Witzeling, J Wotschack
CLERMONT-FERRAND U - M Bardadin-Otinowska,
M Brossard, A Falvard, D Gay, P Henrard, J Jousset, B Michel,
J C Montret, D Pallin, J Proriot
BOHR INST - H Bertelsen, J Dines-Hansen, F Hansen,
J R Hansen, P Hansen, A Lindahl, B Madsen, R Mollerud,
P Munk, E D Nielsen, S Nilsson, G Petersen
EDINBURGH U - D J Candlin, J Muir, P Osborne, K J Peach
FLORIDA STATE U - M J Corden, C Georgiopoulos, J Lannutti,
D Levinthal, M Mermikides, L Sawyer, J Streets

SUMMARIES OF CERN EXPERIMENTS

FRASCATI - A Antonelli, R Baldini, G Bencivenni, G Bologna, F Bossi, P Campana, G Capon, V Chiarella, G Felici, P Laurelli, G Mannocchi, G P Murtas, G De Ninno, B D'Ettore Piazzoli, P Picchi

GLASGOW U - B Aktoon, R Edgecock, A J Flavell, A Halley, J Hearn, I S Hughes, J G Lynch, D J Martin, P J Nagus, R O'Neill, C Raine, J M Scarr, K M Smith, A S Thompson, R M Turnbull

HEIDELBERG U, IHEP - B Brandl, O Braun, R Geiges, C Geweniger, P Hanke, V Hepp, W Heyde, E E Kluge, J Krause, Y Maumary, M Panter, H Plotow-Besch, B Rensch, K Tittel

INNSBRUCK U - P Girtler, D Kuhn, G Rudolph
LANCASTER U - C Bowdery, A Finch, F Foster, G Hughes, B Rowlington, T Sloan, S Snow

IMPERIAL COLL - A Belk, R Beuselinck, D M Binnie, W Cameron, M Cattaneo, P J Dornan, S Dugeay, R Forty, D A Garbutt, D Gentry, J Hassard, J G McEwen, A Munns, D Price, J Ratcliffe, J K Sedgbeer, G Taylor, I Tomalin, A Watson, D M Websdale

MAINZ U, INST PHYS - T Barczewski, L Baurdick, K Kleinnecht, D Pollmann, B Renk, S Roehn, M Schmelling, K Schmitz, F Steeg, A Voigtlaender, A Weissbeck

MARSEILLE U, LUMINY - J P Albanese, J J Aubert, R Bazzoli, C Benchouk, A Bonissent, G D'Agostini, A Ealet, F Etienne, Y Gally, R Nacach, P Payre, B Pietrzyk, J Raguet, Z Was

MUNICH, MAX PLANCK INST - W Blum, M Bosman, P Cattaneo, G Cowan, B Dehning, H Dietl, J Fent, D Hauff, P Holi, A Jahn, E Lange, G Lutjens, G Lutz, W Maenner, H G Moser, R Richter, A Schwarz, R Settles, U Stiegler, U Stierlin, G Stimpf, J Thomas

ORSAY, LAL - J N Albert, C Arnault, G de Bouard, J Boucrot, R Chase, A Cordier, M Davier, A Ducrops, D Fournier, J F Grivaz, P Heusse, V Journe, J Leffrancois, N Lhermitte, D Lloyd-Owen, A M Lutz, V Marotte, J J Veillet

ECOLE POLYTECHNIQUE - J Badier, D Bernard, U Berthon, G Bonneaud, F Braems, A Busata, G Fouque, F Jacquet, C Lemoine, P Matricon, A Rouge, C Roy, M Rumpf, H Videau, I M Videau, D Zwierski

PISA U - S R Amelodia, G Bagliesi, G Batignani, L Bosio, U Bottigli, P L Braccini, C Bradaschia, R Fantechi, I Ferrante, F Fidecaro, L Foa, E Focardi, F Forti, A Giassi, M Giorgi, F Ligabue, A Lusiani, I Mannelli, A Messineo, F Palla, G Pierazzini, G Sanguinetti, S Scapellato, J Steinberger (Spokesperson), R Tenchini, G Tonelli, G Triggioni

ROYAL HOLLOWAY COLL - J Carter, B J Green, M G Green, P V March, A McKemey, T Medcalf, M Saich, N Stewart, J R Strong, R Thomas, T Wildish

RUTHERFORD - E H Bellamy, J Bizzell, D R Botterill, R Clift, M Edwards, S M Fisher, E Holtom, T Jones, G McPherson, P Norton, D Salmon, G Tappern, J C Thompson, A Tucker

SACLAY - B Bloch-Devaux, P Colas, H Desportes, M Jacquemet, A Joudon, E Lancon, E Locci, P Micholon, B Pignard, J Rander, J F Renardy, A Roussarie, J P Schuller

SHEFFIELD U - J Ashman, C Booth, F Combley, M Dinsdale, J Martin, D Parker, L Thompson, C Wells, S Wheeler

SIEGEN U - S Brandt, H Burkhardt, G Gillissen, C Grupen, M Holder, H Meinhard, E Neugebauer, M Rost, U Schefer, H Seywerd, M Walther

TRIESTE U - M Budinich, M A Ciocci, F Liello, E Milotti, L Rolandi, M Secco

WISCONSIN U - L Bellantoni, J Boudreau, H Chu, D Cinabro, B Le Claire, M Convery, J Conway, D Cowen, A Duff, Z Feng, J Harton, H Hilgart, R Jared, R Johnson, D Mueller, Y Pan, J Pater, S Ritz, J Wear, D Weber, R Wolf, S L Wu, S T Xue, G Zobernig

Accelerator CERN-LEP *Detector* ALEPH

Reactions

$$e^+ e^- < 120 \text{ GeV (Ecm)}$$

Particles studied W^+ , W^- , Z^0 , hvy-lepton, higgs, hvy-flavor

Comments A 4x detector designed to give as much detailed information as possible about complex events. The strong points of the detector are the precision of momentum measurements for charged particles, due to a high magnetic field and a TPC, the good identification of electrons and muons, even when they are immersed in jets, and the spatial resolution obtained in $e\gamma$ calorimetry. In preparation

Papers NIM 225 (1984) 481, NIM 226 (1984) 82, NIM A252 (1986) 392, NIM A252 (1986) 399, NIM A252 (1986) 403, IEEE TNS 34 (1987) 133, CPC 45 (1987) 229, CPC 45 (1987) 283, CPC 45 (1987) 433, IEEE TNS 35 (1988) 316.

CERN-LEP-DELPHI (1982) Approved Nov 1982

THE DELPHI DETECTOR (DETECTOR WITH LEPTON PHOTON AND HADRON IDENTIFICATION)

AMES LAB - H B Crawley, A Firestone, M Gorbica,

J M Hauptman, J W Lamsa, W T Meyer, E I Rosenberg, M Wayne

NIKHEF, AMSTERDAM - G Van Apeldoorn, C Baudoin, M Bonapart, G Burgers, P Van Dam, A N Diddens, D Gosman, F Hartjes, H Hansen, B Koene, D Langerfeld, F Rademakers, E Schyns, J Timmermans, D Toet, F Udo

DEMOCRITOS NUCLEAR RESEARCH CENTER - P Beltran, P Kokkinias, P Kostarakis, H Lampropoulos, A Markou, G Stavropoulos, G Theodosiou, E Zevgoulakos

ATHENS U - P Adrianos, E Anassontzis, P Ioannou, G Kalkanis, S Katsanevas, C Kourkoulis, A Manousakis, P Pramantiotis, L K Resvianis, P Spentziouris, G Voulgaris

ATHENS, TECH UNIV - M Dri, T Filippas, E Fokitis,

E Gazis, E C Katsoufis, A Maltezos, T Papadopoulos,

S D P Vlassopoulos

BRUSSELS U, IIHE - D Bertrand, S Braibant, C Bricman,

C De Clercq, E Daubie, W Van Doninck, F Grard, P Herquet,

M De Jode, J Kesteman, J Lemonne, O Pingot, C Poiret,

F Stichelbaut, S Tavernier, C Van Der Velde, F Verbeure,

J H Wickens

BERGEN U - S J Alvsvag, A G Frodesen, P S Iversen,

A Klovning, E Lillestol, P Osland, A K Topphol

INFN, BOLOGNA - D Bollini, F R Cavallo, C Chiccoli,

G Gamberini, F Navarra, P Pasini, P Privitera, T Rovelli,

G Valenti

BOHR INST - H Bogild, E Dahl-Jensen, G Damgaard,

K Hansen, J Hooper, R Moeller, B S Nielsen, K Spang

CERN - J V Allaby, U Amaldi (Spokesperson), P Bailion,

J Barlow, M Barranco-Luque, W Bell, M Berggren, J Bogaerts,

R C A Brown, D Burckhardt, H Burmeister, T Camporesi,

A Cattai, P Charpentier, M Davenport, D Delikaris, H Dijkstra,

B Van Eijk, N Van Eijndhoven, H G Fischer, H Foeth,

P Gavillet, B Goret, A Grant, J P Grillet, S Haider, B Heck,

H Herr, H J Hijke, R Horisberger, P O Hultb, B D Hyams,

M Jonker, G Kantardjian, H Klein, W Klemp, G Kuhn,

M Lefostier, J C Legrand, J G Loken, G Maehlum, J C Marin,

M Metcalf, H Muller, L Pape, J B Pattison, J Perez, G Petrucci,

M Pimenta, P Queru, E Rosso, D Ruffinoni, D Sendall,

R C Shellard, B Skaali, D Treille, O Ullaland, J P Vanuxem,

P Weilhammer, A M Wetherell, N Yamdagni, G Zumerle

CRACOW - W Dulinski, Z Hajduck, B Muryn, H Palka, G Polok,

K Rybicki, M Turala, A Zaleska

DUBNA - G D Alekseev, D Yu Bardine, P N Bogolubov,

G Chelkov, Yu N Denisov, V M Golovatyuk, R B Kadyrov,

B Khomenko, M Lokajicek, G V Mitelshaker, J Ridky,

T Spassov, L G Tkachev, E N Teyanov, I A Tyapkin,

L Vertogradov, A S Vodopyanov, V Vrba, N Zimin

GENOA U & INFN, GENOA - M Bozzo, C Caso, R Contri,

G Crosetti, G Darbo, S Ferroni, F Fontanelli, V Gracco,

M R Monge, P Morettini, I Roncagliolo, M Sannino, G Sette,

S Squarcia, U Trevisan

HELSINKI U - P Aarnio, P Eerola, M Ellila, K Huitu,

J Joensuu, R Keranen, J Koponen, K Kurvinen, M I Laakso,

R Lauhakangas, P Laurikainen, M Nordberg, R Orava,

J Pyyhtia, H Saarikko, T Salonen, E Sundell, T Tuuva,

M Voutilainen

KERNFORSCHUNGSZENTRUM, KARLSRUHE &

KARLSRUHE U - W D Apel, D Fries, M Kopf, H Mueller,

H Schneider, K R Schubert, R Seufert

LISBON, LIFEPE - P Abreu, F Barao, G P Barreira, J M Gago,

C Gaspar, L Palermo, S Palermo, M E Pol, J Varela, P Vaz,

C Werner

LIVERPOOL U - C Bee, S Biagi, P S L Booth, A Campion,

L J Carroll, D N Edwards, S Gawne, M A Houlden,

J N Jackson, B King, M McCubbin, A Ogilvie, W H Range,

D Reid

LUND U - S Almeded, O Barring, A Hakansson, G Jarlskog,

S Johansson, B Lorstad, V Mjornmark

SUMMARIES OF CERN EXPERIMENTS

MILAN U & INFN, MILAN - M Caccia, M Calvi, P Folegati, P Grignani, W Kuciewicz, C Matteuzzi, C Meroni, P Negri, A Pullia, S Ragazzi, S Rossi, C Troncon, R Turchetta, G Vegni
 ORSAY, LAL - P Antilogus, J E Augustin, S Barlag, E Bouquet, G Cosme, F Couchot, B D'Almagne, F Fulda-Quenzer, M Gaillard, M H Gross, J Haisinski, B Jean-Marie, V Lepeltier, F Richard, P Roudreau, G Wormser
 OSLO U - L Bugge, T Buran, M Dam, A Read, G Skjeving, P Thorsteinen
 OXFORD U - M Bates, C Beeston, H Borner, C Buttar, N Crosland, F Harris, J Krstic, L Lyons, G Myatt, A Pinent, D Radojicic, P Ratoff, P B Renton, A M Segar, M E Veitch, W S C Williams
 PADUA U - P Checchia, M Cresti, G Galeazzi, U Gasparini, I Lippi, M Mazzucato, M Nigro, M Pegoraro, C Pinori, P Ronchese, F Simonetto, L Ventura
 COLLEGE DE FRANCE - P Bejilire, P Billoir, J M Brunet, M Crozon, C Defoix, P Delpierre, J Dolbeau, P Frenkiel, A Jejcic, P Lutz, J Maillard, A Tilquin, G Tristram
 PARIS, CURIE UNIV VI - M Baubillier, M Boratav, J E Campagne, L Cerrito, V Chiorowicz, C Ceara, R Gokieli, B Grossetete, S Palma Lopes, R Pain, C de la Vaisiere, R Zitoun
 ROME, ISS & INFN, ROME - A Baroncelli, C Bosio, L di Ciaccio, G Matthiae, D Sacco, L Tortora
 RUTHERFORD - P Allport, B Franek, G Gopal, J G Guy, G Kalnus, R Lucock, R Sekulin, M Tyndel, V Venus, G Warner
 SACLAY - M De Beer, T Bolognese, P Borgeaud, L Chevalier, P Jarry, J P Laugier, G Hamel de Monchenault, A Ouraou, V Ruhlmann, Y Sacquin, P Siegrist, G Smadja, M L Turleir, D Villanova
 SANTANDER U - L Bravo, J Cuevas, M Fernandez-Alonso, C Astor Ferreres, J Garcia, M A Lopez, J Marco, M T Quesada, A Ruiz
 SERPUKHOV - I I Belokopytov, P Chliapnikov, R I Dzhelyadin, V Falaleev, A Fenjuk, S A Gumenyuk, V V Lapin, V Nikolaenko, V F Obraztsov, B Polyakov, G Sorokin, N E Tyurin, A M Zajtsev
 STOCKHOLM U - B Asman, G Ekspong, A Goobar, J Hall, S O Holmgren, E Johansson, T Moa, Ch Walick
 STRASBOURG, CRN - D Bloch, M Croissiaux, M Dracos, J P Engel, J P Gerber, P Juillot, D Loukas, M Schaeffer, R Strub, M Winter
 TRIESTE U - A De Angelis, G Barbiellini, E Castelli, M Innocente, L Lanceri, P Poropat, R Ragazzon, F Scuri, M Sessa, F Waldner
 TURIN U & INFN, TURIN - F Bianchi, R Cirio, M P Clara, D Gamba, F Marchetto, E Menichetti, G Rinaudo, A Romero
 UPPSALA U - N Bingefors, O Botner, T Ekolf, K Fransson, A Hallgren, B Lund-Jensen, K Woschnagg
 VALENCIA U - J M Benlloch, M V Castillo, J L Contreras, A Ferrer, J Fuster, J J Gomez, J J Hernandez, E Higon, R Llosa, J Martinez, J Salt, E Sanchez, E Vela, J Velasco, J Zuniga
 VIENNA, OAW - W Adam, W Bartl, R Bruehwirt, J Hrubec, G Leder, F Mandl, W Mitaroff, M Pernicka, M Regler, J Strauss
 WARSAW, INR - K Doroba, M Gorski, T Hofmoki, K Krolkowski, R Sosnowski, P Syzmannski, M Szczekowski, M Szeptycka
 WUPPERTAL U - K H Becks, J Drees, H Forbach, K W Glitz, K Hamacher, I Herbst, G Lenzen, E Lieb, P Lorenz, K Moenig, H Staack, S Ueberschaer, M Vollmer, H Wahlen, J Werner, G Zang

Accelerator CERN-LEP Detector DELPHI

Reactions

e^+e^- < 120 GeV ($\sqrt{s}$)

Particles studied W^+ , W^- , Z^0 , hvy-lepton, higgs, hvy-flavor

Comments In preparation.

Papers NIM 225 (1984) 606, NIM A252 (1986) 188, NIM A252 (1986) 413, NIM A252 (1986) 418, NIM A252 (1986) 524, NIM A252 (1986) 573, NIM A256 (1987) 65, NIM A256 (1987) 267, NIM A260 (1987) 124, IEEE TNS 34 (1987) 227, NIM A263 (1988) 215, NIM A265 (1988) 218, NIM A270 (1988) 393, NIM A273 (1988) 565, and NIM A273 (1988) 841.

L3 COLLABORATION

AACHEN, TECH HOCHSCH, I PHYS INST - P Bloemecke, D Braun, M Dohmen, A Schultz von Dratzig, H Esser, H Hammers, S Hancke, U Herten, K Hilgers, F Hofmann, W Karpinski, W Krenz, C Kukules, K Lubelameyer, T Maier, U Martyn, M Micke, L Niessen, D Pandoulas, Y Pei, A Potyka, M Puchholz, H G Sander, D Schmitz, J Schwenke, R Siedling, G Vello, W Wallraff, J Z Flou
 AACHEN, TECH HOCHSCH, III PHYS INST - M Bischops, A Bohm, C Camps, V Commichau, H Fesefeldt, P Goettlicher, T Hamacher, K Hangarter, D Lanske, B Lindemann, J Mnich, S Roehner, H Rose, R Schulte, K Schultze, M Tonutti
 NIKHEF, AMSTERDAM - G J Bobbink, R Buis, J Buskens, P Duinker, J Van Eahdelt, F Erne, H Van der Graaf, H Groenestege, D Harting, F Hartjes, G Horneman, M Jasper, S Keh, N De Koning, X Leysten, G G G Massaro, J Onvlee, Y Peng, P Rewiersma, J C Sens, R Wilhelm
 ANNECY - R Ayad, M Berthet, Y Bertsch, J Blaising, D Boutigny, F Chollet, G Coignet, A Degre, C Girard, C Goy, Y Karyotakis, J C Lacotte, J Lecoq, S Lees-Rosier, C Luci, M Maire, J C Le Marec, R Morand, M Moynot, P Mugnier, A Pellier, D Perret-Gallix, G Perrot, G Sauvage, M Schneegans, J M Thenard, H Vey, M Vivargent
 BEIJING, IHEP - Y Changgen, C Chen, Ho-Sen Chen, Xiao-Ying Cui, B N Jin, Huantie Li, X G Li, K G Lo, Y S Lu, J M Ma, Haiao-Wei Tang, K L Tung, J H Wang, R J Wu, C G Yang, K S Yang, Q Y Yang, S Y Zhang
 TATA INST - T Aziz, S S Chendvankar, S N Ganguli, A Gurtu, A Jain, K Majumdar, P Malhotra, R Raghavan, S Saran, K Sudhakar, S Tonwar
 BUDAPEST, CRIP - E Denes, E Nagy, J Toth, L Urban
 CAL TECH - F Dittus, M Gruenewald, E Jagel, A Krattel, R Mount, H Newmann, F Roeder, R Y Zhu
 CARNEGIE MELLON U - M Athanas, I Brock, F Cannel, A Engler, T Ferguson, R Kraemer, F Linde, C Rippich, X Shi, J Smith, H Vogel
 CERN - B Adeva, U Becker, J Berdugo, F Bruyant, W Carena, M Feldmann, J M Le Goff, D Gusewili, M Harris, T Hebbeker, A Herve, S Lanzano, M Lebeau, P Lecoq, L Leistam, D Linthoefer, C Mana, J-P Martin, E Menant, L Montanet, L Peljun, J A Rubio, J Salicio, F Wittenstein, J Zoll
 WURENLINGEN, INST REAKTORFORSCHUNG - W Boehlen, M Koller, A Kuhn, B Leoni, B Spiess, J Ulbricht
 FLORENCE U - D Antreasyan, M Boccicelli, P Caniato, F Carminati, A M Cartacci, F Cellietti, G Ciancaglini, C Civinini, G Conforto, E Gallo, G Landi, A Marchionni, M Meschini, B Monteleoni, Y F Wang
 FRASCATI - P Spillanti
 GENEVA U - P Bene, S Bergamaschi, M Bourquin, P Extermann, J Field, G Forconi, A Leger, F Masciocchi, R Mermod, G Morand, J Osmann, J Perrier, E Perrin, N Proudit, J P Richeax, W Ruckstuhl, H Stone, J Wenninger, M Zofka
 HARVARD U - P McBride, P Schmitt, K Strauch, Q F Wang
 HAWAII U - R Cence
 HEFEL, CUST - Hong-Fang Chen, Zhong-Ping Chou, Yang-Mei Fan, Yong-Dian Han, Cheng Li, Zi-Yong Lin, Cuo-Rng Wang, X L Wang, Zi-Zong Xu, Bao-Zhong Yang, Zong-Ping Zhou
 JOHNS HOPKINS U - H Akbari, C Y Chien, A Pevsner, W P Xu
 LAUSANNE U - P Bachler, T Boehring, F Dopenberg, P Eberhard, P Furrer, M Gailloud, R Gonzales, J P Hertig, J Lebroussard, E Lejeune, D Reymond, M Rochat, P Rosselet, C Roth, L Vuilleumier, R Weill
 LENINGRAD, INP - Va Andreev, VI Andreev, G Gavrillov, V Khoze, A Krivshich, O Prokoviev, V Razmyslovich, V Schegelsky, A Schetkovsky, N Smirnov, V Suvorov, S Volkov, Al Vorobyov, An Vorobyov
 LYON, IPN - J P Burq, M Chemarin, J Fay, M Goyot, B Ille, M Lambert, P Lebrun, N Madjar, H El Mamouni, J P Martin
 MADRID, JEN - M Aguilar-Benitez, M Ariza, C Burgos, M Cerrada, N Colino, E Gonzalez, L Martinez, P Olmos, S Rodriguez, L Romero, C Willmott
 MICHIGAN U - T Azemoon, R C Ball, M Capell, S Goldfarb, R Gustafon, L W Jones, G Mills, B P R.
 MIT - J Pier Amory, P Berges, J Burger, Y H Chang, Min Chen, I Clare, R Clare, S Cooper, L Dai, R Dolin, J Donahue, I Duran, F Eppling, G Faber, M Fukushima, G Herten, D Luckey, T Matsuda, D Osborne, J Qian, P Reddick, H Rykaczewski,

CERN-LEP-L3 (1982) Approved Nov 1982.

L3 EXPERIMENT

SUMMARIES OF CERN EXPERIMENTS

M Steuer, J Tang, S Ting, S C C Ting (spokesperson), Zhong-Min Wang, T Venaus, M White, S X Wu, B Wyslouch
MOSCOW, ITEP - A Arefiev, V Bocharov, M Chumakov, V Dolgoshchein, Yu Galaktionov, A Gordenov, B Gordeev, Yu Gorkodov, Yu Kamyshkov, A Klimentov, V Koutseenko, V Krylov, A Kunin, A Malinin, V Morgunov, A Nikitin, V Plyaskin, V Pojidaev, A Savin, S Shevchenko, V Shevchenko, V Shoutko, E Shumilov, E Tarkovsky, V Tchudakov, I Veltitski, I Vorobyev
NAPLES U. IFS & INFN, NAPLES - M G Alviggi, D Campana, F Carbonara, G Chiefari, E Drago, V Innocente, L Merola, M Napolitano, G Paternoster, S Patricelli, C Sciacca
NIKHEF, AMSTERDAM - C Brouwer, F Bruins, T Driewer, W Kittel, P F Klok, A Konig, H Lubber, H M Merck, W Metzger, C Pols, D J Schotanus, C Timmermans, R Van de Walle, T Wynen
NORTHEASTERN U - M Gettner, A Grimes, C Hamilton, D Kaplan, I Leedom, S Reucroft, M Thuen, C Zabounidis
OHIO STATE U - J Dunlea, E Gother, J Kalen, G Oleynik, N Reay, K Reibel, R Sidwell, K Stanton
OKLAHOMA U - G Kalbfleisch
PRINCETON U - J A Bakken, P Denes, J Falk, A Heavey, P Kaaret, D Lea, P Piroue, K Read, D Rockland, R Sumner
ROME U - L Barone, G Basti, R Bizzarri, B Borgia, F Cesaroni, M Diemoz, C Dionisi, G De Dominicis, S Falciano, F Ferroni, S Gentile, S Guerra, E Longo, L Ludovici, L Luminari, G Lunadei, F Marzano, G Medici, S Morganti, F De Notaristefani, E Valente
SIEGEN U - U Biermann, D Mattern, E Niederbichler, H Walenta
SOFIYA, INST NUCL RES - A Angelov, I Angelov, L Antonov, I Atanasov, O Ayranov, B Betev, S Botev, P Boytchev, D Djambazov, G Filipov, P Georgiev, K Markov, V Russev, V Sokolov, S G Sultanov, K Yanev
UNION COLL - L Baksay, R Magaziah, L Sandor
UC, SAN DIEGO - J Branson, H Ma, I Soper
COAST WOOD LAB, BEIJING - N Ahmed, A Ali, R Ali, Q An, P V K S Bapa, B A Bambach, S Banerji, J Berggren, D Cai, U K Chaturvedi, A Contino, X Y Cui, W Q Feng, F Frascconi, Z F Gong, M Gordin, M Guanzirli, A Hasan, G Hu, D Kaul, V A Kumar, J F Li, Z D Li, R Liu, Y L, A Marchesini, Y Mi, Y Mir, I Mirza, K Nadeem, M Nazar, J Qian, T Rashid, Z L Ren, H A Rizvi, S Sankhyadar, S Sana, A A Syed, J Tang, P Vikas, L M Wang, Z M Wang, S Wu, X Wu, C G Yang, G Yang, C H Ye, Q H Ye, J M You, M Zhang, T R Zhang, A Zichichi
YALE U - M Zeller
BERLIN-ZEUTHEN ADW - K Deiters, A Donat, W Friebe, R Heller, K Lanius, R Leiste, W Lohmann, W D Nowak, Y Q Peng, T Riemann, U Roeser, M Sawitz, J Schreiber, F Tonisch, G Trowitzsch, K Truetschle, H Vogt
ZURICH, ETH - H Anderhub, A Biland, R Blunach, R Burel, G Chenevier, P Le Coulter, G Deceuse, M Dhina, M Dietrich, M Fabre, R Fabretti, J Fehrmann, K Freudenreich, J P Girod, H Von Gunten, C Haller, J Herrmann, Ha Hofer, He Hofer, U Horisberger, E Isiksal, G G Jongmanns, H Jung, W Kasli, P Lecomte, J Lettry, L Li, E Loftin, X Lue, M MacDermott, H Meier, M Pohl, M Razi, D Ren, P G Sailer, B Stoehr, H Suter, C Taylor-Denes, V L Teigdi, A Viertel, S Walmeir, L Zehnder

Accelerator CERN-LEP **Detector** L3

Reactions
 $e^+e^- < 120 \text{ GeV (Ecm)}$

Particles studied W^+ , W^- , Z^0 , hvy-lepton, higgs, hvy-flavor

Comments The detector consists of a high-volume low-field solenoid magnet, a small central tracking chamber with very high resolution, a high resolution electromagnetic calorimeter encapsulating the central detector, a hadronic calorimeter acting also as a muon filter, and high precision muon tracking chambers. In preparation.

Papers NIM 225 (1984) 493, NIM A251 (1986) 258, NIM A252 (1986) 304, CPC 45 (1987) 111, NIM A244 (1987) 335, NIM A257 (1987) 528, NIM A265 (1988) 252, and NIM A270 (1988) 397

CERN-LEP-OPAL (1982) Approved Nov 1982.

THE OPAL DETECTOR (AN OMNI PURPOSE APPARATUS FOR LEP)

OPAL COLLABORATION

BIRMINGHAM U - D C Colley, M Couch, D G Grant, P Hattersley, S Hillier, R J Homer, M Jobs, P Jovanovic, T McMahon, D Rees, T Smith, P Watkins, N Watson, J Wilson
BOLOGNA U - P Capiluppi, M Cuffiani, I D'Antone, M M Deninno, F Fabbri, G Giacomelli, G Mandrioli, S Marcellini, A Montanari, F Odorici, B Poli, A M Rossi, G P Siroli
BONN U - H M Fischer, M Hauschild, G Knop, T P K Kokott, H Kreutzmann, G Maringer, B Nellen, A Rolnik, S Schreiber, A Simon, B Wuensch
CAMBRIDGE U - J R Carter, P A Elcombe, M J Goodrick, J Hart, J C Hill, W J Murray, C M Roach, M Turner, C P Ward, D R Ward
CARLETON U - J C Armitage, R K Carnegie, P E Estabrooks, R J Hemingway, P Mattig, M O'Neill, M Ogg, J Pinfold, M Roney, J Waterhouse
CERN - R J Barlow, F Beck, F Bourgeois, H Breuker, R Brun, A Buijs, H Burckhardt, J L Chevalley, W Gleasing, R Hammarstrom, M Hansroul, D Hatzifotiadiou, R Heuer, L Koepke, A Lefrancques, G Linser, J Ludwig, M Mast, J Meijers, A Michelini (✓ Spokesperson), M Moriggio, S O'Neale, D Plane, J Raab, O Runolfsson, P Scharif-Hansen, D Sendall, A M Smith, F Verkerk, S Weisz, N Wermes, P Wicht, G Wilson, K Zankel
CHICAGO U - K J Anderson, A Belmonte, S Gensler, J Hobbs, J Kroll, G Makoff, M Mannelli, F S Merritt, H Nguyen, M J Oreglia, J E Pilcher, M W Redmond, W Schappert, D M Strom
FREIBURG U - H Hagedorn, D Joos, R Kolpin, J Ludwig, W Mohr, F Roehner, K Runge, A D Schaale, O Schaile, J Schwarz, H E Stier, C Wahl, H C Weber, M Weymann, V Winterer
HEIDELBERG U, IHEP - P Bock, H M Bosch, A Dieckmann, E Elsen, W Frauenfeld, J W Gary, J Heintze, P Igo-Kemenes, J Kojek, J von Krogh, M Lautscham, P Lennert, H Matsumura, D Menszner, R Rusniak, H von der Schmitt, G Tysarczyk, A Wagner, P von Walter, M Weber, J Zimmer
QUEEN MARY COLL - M Akrawy, G Barker, J R Batley, A A Carter, W R Gibson, R Jones, P Kyberd, M Laseta, S L Lloyd, T W Prichard, T R Wyatt
UNIVERSITY COLL, LONDON - B Anderson, D Attree, A Charalambous, J Conboy, R Cranfield, G Crone, G M Dallavalle, F F Heymann, T Hoare, C Howarth, B Kennedy, D J Miller, P Sherwood, L Spreadbury, N Wood
BIRKBECK COLL - K Ahmet, M Coupland, M Dryburgh
BRUNEL U - P Hobson, D C Imrie
MANCHESTER U - J Allison, J T M Baines, J Banks, J T M Chrin, O W Davies, I P Duerdoth, P S Hinde, R E Hughes-Jones, G D Lafferty, F K Loebinger, A A Macbeth, P G Murphy, A O'Dowd, K Stephens
MARYLAND U - A Ball, R Bard, C Y Chang, J D Colmer, P Desrosier, D Fong, R G Glasser, S Hou, H Jewahery, R Kellogg, D Naples, A Skuja, G A Snow, W Springer, G T Zorn
MONTREAL U - G Bavaria, A Granger, H Jeremie, L Lessard, B Lora, H El Manouni, J P Martin, M Regimbald
NATIONAL RESEARCH COUNCIL, OTTAWA - W Davidson, M S Dixit, C K Hargrove, D Hoffman, W Jack, D Klem, M J Losty, H Mes, R Neuheimer, F G Oakham, E Payne, J Stapledon, C Virtue
UC, RIVERSIDE - G Van Dalen, M Dittmar, W Gorn, E Jin, W Langeveld, W Larson, J G Layter, J Ma, B O'Neill, B C Shen, H Wang
RUTHERFORD - G T J Arnison, K W Bell, R M Brown, J F Connolly, L G Denton, M French, N I Geddes, C N P Gee, S Jaroslawski, P W Jeffreys, M Jeffs, J Lidbury, R P Middleton, R Milborrow, C N Patrick, R A Sansum, B J Saunders, K Souten, M Sproston, D J White
SACLAY - P Le Du, P Farthouat, F X Gentit, D Lascals, A Muller, S Zyllberg
TECHNION - S Dado, N Lupu
TEL AVIV U - G Alexander, G Bella, J Calo, J Cohen, J Grunhaus, A Levy, C Milstene

SUMMARIES OF CERN EXPERIMENTS

TOKYO U - C Fukunaga, M Imori, K Kawagoe, T Kawamoto, T Kobayashi, M Koshiba, T Mashimo, M Minowa, M Nozaki, S Orito, H Takeda, T Takeshita, T Takumoto, H Yamashita
WEIZMANN INST - E Duchovni, E Gross, D Hochman, D Lelouch, L Levinson, G Mikenberg, A Shapira, R Yaari, G Yekutieli

Accelerator CERN-LEP Detector OPAL

Reactions

$e^+ e^-$ < 120 GeV (E_{cm})

Particles studied W^+ , W^- , Z^0 , hvy-lepton, higgs, hvy-flavor

Comments A general-purpose detector. In preparation.

Papers NIM A242 (1986) 247, NIM A244 (1986) 416, NIM A252 (1986) 331, CPC 47 (1987) 55, IEEE TNS 34 (1987) 240, NIM A260 (1987) 329, and NIM A265 (1988) 11.

CERN-NA-001 Approved Mar 1975, Oct 1976, Jun 1982; Completed Jun 1984.

MEASUREMENT OF THE PHOTOPRODUCTION OF VECTOR AND SCALAR BOSONS

FRASCATI - F Celani, M Enorini, F L Fabbri, P Laurelli,

L Satta, P Spilantini, A Zallo

MILAN U - G Beilini, S Bonetti, P F Manfredi, D Menasce,

E Meroni, L Moroni, L Perasso, S Sala

PISA U - S R Amendolia, E Bertolucci, D Bettoni, L Bosio,

C Bradaschia, M Dell'Orso, L Foa (✓ Spokesperson), E Focardi,

A Giazzotto, M Giorgi, P S Marrocchesi, A Menzione, L Ristori,

A Scribano, R Turchini

TURIN U - G A Beck, H Bilocon, G Bologna, G Mannocchi,

B D'Ettore Piazzioli, P Picchi

TRIESTE U - G Batignani, M Budinich, F Liello, F Ragusa,

L Rolandi, A Stefanini

WESTFIELD COLL - E H Bellamy, F Fidecaro, G Heath,

M J Landon, P V March, J R Strong

Accelerator CERN-SPS Detector Spectrometer

Reactions

γ nucleon $\rightarrow$ meson hadrons 10-180 GeV/c

γ nucleon $\rightarrow$ meson nucleus "

Particles studied D^+ , D^- , D^0 , A_c^+

Comments Measurement of coherent photoproduction on nuclei to study (1) photoproduction of charmed particle pairs and determine the lifetimes of charmed particles, and (2) the spectroscopy of charmed particles in hadronic and radiative decay channels.

Papers NIM 147 (1977) 587, NIM 176 (1980) 449, NIM 176 (1980) 461, PL 110B (1982) 339, NIM 196 (1982) 351, NIM 204 (1983) 299, NIM 206 (1983) 367, NIM 226 (1984) 78, NIM 226 (1984) 117, NIM A247 (1986) 438, ZPHY C36 (1987) 513, and EPL 5 (1988) 407.

CERN-NA-002 (Jul 1974) Approved Mar 1975, Oct 1976, Feb 1979; Completed Aug 1985.

ELECTROMAGNETIC INTERACTIONS OF MUONS

THE EUROPEAN MUON COLLABORATION

AACHEN, TECH HOCHSCH, III PHYS INST - G Berghoff,

M Dueren, F J Hasert, D Lanske, K Schultze, L Urban

ANNECY - Y Bertsch, G Coignet, J Favler

CERN - J W Beaufays, P Grafstrom, T Niinikoski, A M Osborne,

J M Rieubland, E J Watson, S Wimpenny

FREIBURG U - T Dreyer, T Ernst, J Haas, H Hartenthaler,

H Jung, E M Kabuss, G Kroessen, U Landgraf, W Mohr, K Rith,

A Schlagboehmer, T Schroeder, H E Stier, E Tieck, W Wallucks

HAMBURG U - J Figiel, C Hoj, J E Fanata, H Schiemann,

M Studt, A De La Torre

HEIDELBERG, MAX PLANCK INST - D von Harrach, H Kniess,

B Povh, T A Shibata, T Walcher

LANCASTER U - I Bird, J Coughlan, N Dyce, T Sloan

(✓ Spokesperson)

LIVERPOOL U - S Brown, G R Court, D Frances, E Gabathuler,

R Gamet, P Hayman, J R Holt, T Jones, M Matthews

MAPSILLE U, LUMINY - J J Aubert, C Benchouk,

G D'Agostini, F Montanet, P Payre, B Pietrzyk

MONS U - R Windmolders

OXFORD U - N Geddes, V Gibson, J Gillies, J Loken, P Renton,

G Taylor, W S C Williams, J Womersey

RUTHERFORD - J Alner, C P Bee, D Botterill, S Chima,

R Clift, M Edwards, R Gray, P R Norton, G Oakham,

J C Thompson

SHEFFIELD U - F Combley, J Foster, D Salmon, S Wheeler

TURIN U - M Arneodo, M I Ferrero, P Guibellino, S Maselli,

C Peroni, A Staiano

U. ALA U - A Arnison, H Calen, S Dahlgren, E Hagberg,

S Kullander, F Lettenstrom, T Lindquist

WARSAW U, IEP - B Zadelek, J Ciborowski, J Gajewski,

J Nassalski, E Rondio, A Sandacz

K Hamacher, B Korzen, N Pavel, H Peaschel, U Pietrzyk,

A Schneider, W Stockhausen, H Wahlen

YALE U - G Baum, S Dhawan, V Hughes, R Oppenheim,

V Papavasiliou, M C Caputo di Piegala, R Piegala, P Schueler

BONN U - M Leenen

BUDAPEST, CRIP - G Eszes, G Jancso, E Nagy, P Ribarics,

J Toth, L Urban

Accelerator CERN-SPS Detector EMC

Reactions

$\mu^- p \rightarrow \mu^-$ hadrons 120-280 GeV/c

Comments See also NA-009 and NA-028. Studies deep-inelastic muon scattering.

Papers See NA-028 for papers.

CERN-NA-003 (Oct 1974, Sep 1980) Approved Mar 1975, Feb 1979, May 1979, Dec 1979, Nov 1980, Mar 1984; Completed Sep 1984.

DIRECT PHOTON PRODUCTION IN HADRON-HADRON COLLISIONS AT THE SPS.

CERN - M Hansroul, A Michelini (Spokesperson), G Rahal-Callot,

O Runolfsson

COLLEGE DE FRANCE - M Crozon, P Delpierre, P Espigat,

J Maillard, A Tilquin

ORSAY, IAL - M Bardadin-Otinowska, J Boucrot, O Callot,

M Cohen, D Decamp, M Moniez

ECOLE POLYTECHNIQUE - J Badier, H Bienvenue, J Bourotte,

Y Karyotakis, E Pare, S Weisz

PISA U & INFN, PISA - C Bemporad, A M Cnops, F Costantini,

G R Giannini, P Lariccia

SACLAY - P Charpentier, J F Detoeuf, P Le Du, B Gandois

Accelerator CERN-SPS Detector Spectrometer

Reactions

π^+ nucleus $\rightarrow \gamma$ X 150, 200, 280 GeV/c

π^+ nucleus $\rightarrow \mu^+ \mu^-$ X "

π^- nucleus $\rightarrow \gamma$ X "

π^- nucleus $\rightarrow \mu^+ \mu^-$ X "

p nucleus $\rightarrow \mu^+ \mu^-$ X 400 GeV/c

Comments Aims are (1) a measurement of the direct γ cross section and a search for the annihilation process $q\bar{q} \rightarrow \gamma\gamma$ from the charge asymmetry, (2) a determination of the gluon structure function of the pion and nucleon, and (3) use of the π^-/π^+ difference on carbon to get the gluon fragmentation from the γ -hadron correlations.

Papers PL 86B (1979) 98, PL 114B (1982) 477, ZPHY C18

(1983) 281, PL 122B (1983) 441, PL 124B (1983) 535, NIM 225

(1984) 463, PL 142B (1984) 446, PL 158B (1985) 85, PL 164B

(1985) 184, ZPHY C26 (1985) 489, ZPHY C30 (1986) 45, ZPHY

C31 (1986) 21, ZPHY C31 (1986) 341, and NIM A243 (1985)

140.

CERN-NA-004 Approved May 1975, May 1977, Feb 1979; Completed Aug 1985.

INCLUSIVE DEEP INELASTIC MUON SCATTERING

BOLOGNA U - G Bari, Benvenuti, D Bollini, G Bruni,

G Lorenzini, L Monari, F Navarra

CERN - A Argento, Y Jacquin, R Voss (✓ Spokesperson)

DUBNA - D Yu Bardin, I Cvach, N G Fadeev, I A Golutvin,

V Karzhavin, Yu T Kiryushin, V G Krivokhizhin, V V Kukhtin,

SUMMARIES OF CERN EXPERIMENTS

W Lohmann, J Nemecek, P Reimer, I A Savin, G I Smirnov, D A Smolin, J Strachota, G Sultanov, P Todorov, I Veress, A G Volodko
MUNICH U, EXP PHYS - D Jamnik, R Kopp, U Meyer-Berkhout, A Staude, K M Teichert, R Tirler, C Zupancic
SACLAY - M Cribier, J Feltesse, A Mistajin, A Ouraou, P Rich-Hennion, G Smadja, M Virchaux

Accelerator CERN-SPS Detector Spectrometer

Reactions

μ^- nucleus $\rightarrow \mu^-$ hadrons 100-280 GeV/c
 μ^- nucleus $\rightarrow \mu^-$ muon(s) hadrons "

Comments Aims include the study of nuclear structure functions and their dependence on atomic number, and of weak-electromagnetic interference phenomena.

Papers PL 104B (1981) 403, NIM 204 (1982) 333, NP B199 (1982) 27, NIM 212 (1983) 125, PL 120B (1983) 245, NIM 226 (1984) 330, PL 140B (1984) 142, ZPHY C28 (1985) 171, PL 158B (1985) 531, PL 163B (1985) 282, PL B189 (1987) 483, PL B195 (1987) 91, PL B185 (1987) 97, NIM A270 (1988) 477, PL B223 (1989) 485, and PL B223 (1989) 490.

CERN-NA-007 (1977) Approved Sep 1977; Completed Jun 1982.

MEASUREMENT OF THE ELECTROMAGNETIC FORM FACTORS OF π AND K MESONS AT THE SPS

CERN - P Laurelli
WESTFIELD COLL - E H Bellamy, M G Green, G Heath, E van Herwijnen, M Landon, P V March, C C Saltmarch, W Von Schluppe, A Soucha, J R Strong, R Terzhini
SOUTHAMPTON U - S G F Frank (Spokesperson), J Harvey, D Storey
FRASCATI - A Codino, F L Fabbri, P Laurelli, L Satta, P Spillantini, A Zallo
MILAN U - D Menasce, E Meroni, L Moroni
PISA U - S R Amendolia, B Badelek, G Batignani, F Bedeschi, E Bertolucci, D Bettoni, L Bosio, C Bradaschia, M Dell'Orso, F Fidecaro, L Foa, E Focardi, A Giazotto, M Giorgi, P S Marrochesi, A Menzione, L Ristori, A Scribano, G Tonelli
TURIN U - G A Beck, H Bilokon, G Bologna, G Mannocchi, B D'Ettorre Piazzoli, P Picchi
TRIESTE U - M Budinich, F Liello, E Milotti, F Ragusa, L Rolandi, A Stefanini

Accelerator CERN-SPS Detector Spectrometer

Reactions

$\pi^- e^- \rightarrow \pi^- \pi^0 e^-$ 300 GeV/c
 $\pi^- e^- \rightarrow \pi^- e^-$ 250, 300 GeV/c
 $K^- e^- \rightarrow K^- e^-$ 250 GeV/c
 $e^+ e^- \rightarrow \pi^+ \pi^-$ 100, 125, 150, 175 GeV/c

Particles studied pion, kaon

Comments Uses the forward spectrometer of CERN-NA-001.

Papers PL 138B (1984) 454, PL 146B (1984) 116, PL 155B (1985) 457, PL B178 (1986) 435, and NP B277 (1986) 168. No other papers expected.

CERN-NA-009 (Nov 1977) Approved Feb 1978, Mar 1979; Completed Dec 1983.

STUDY OF FINAL STATES IN DEEP INELASTIC MUON SCATTERING

THE EUROPEAN MUON COLLABORATION

AACHEN, TECH HOCHSCHULE PHYS INST - G Bergmann, M Duren, F Hasert, D Lanske, K Schultze, L Urban
ANNECY - Y Bertsch, X de Bouard, G Coignet, J Favier, G Jancso, M Maire, H Minisieux, M Moynot, H Pessard, M Schneegans, J M Thénard, M Vivargent
CERN - R Robinson, C Goessling, L Gustafsson, G von Hafele, G Kellner, H Muller, A M Osborne, L Osborne, T Sloan (Spokesperson), E Watson
FREIBURG U - T Dreyer, T Ernst, J Haas, H Hartenthaler, H Jung, E M Kabuss, G Kroesen, U Landgraf, W Mohr, K Rith, A Schlagbohrer, T Schroeder, R Smith, H E Stier, E Tierk, W Walluch

DESY - F W Brasse, W Flauger, J Gayler, V Korbel, J Nassalski, B Poengen
HAMBURG U - G Bucholtz, J Figiel, B Hoppe, F Janata, E Rondio, M Studd, A de la Torre
KIEL U - O C Allkofer, E Bohm, W Dau
LANCASTER U - G Bee, I Bird, J Coughlan
LIVERPOOL U - S Brown, G R Court, E Gabathuler, R Gamet, P Hayman, J R Holt, J Pettingale, S Wimpenny
MARSEILLE U, LUMINY - G d'Agostini, J P Albanese, J J Aubert, C Benchouk, M Mermet-Guyennet, F Montanet, P Payre, B Pietrzyk
MONS U - J Beaufays, D Callebaut, F Grard, J Hanton, R Windmolders
MUNICH, MAX PLANCK INST - F Dengler, I Derado, V Eckardt, A Manz, B Pawlik, N Schmitz, M Schouten, J Shiers, G Wolf

ORSAY, LAL - D Blum, P Heusse, A Jacholkowska, M Jaffre, C Pascaud

OXFORD U - N Geddes, A S Johnson, J Loken, K Long, P Renton, G Taylor, W S C Williams

RUTHERFORD - D Botterill, J Chama, R Clift, M Edwards, P R Norton, G Oakham, M Sproston, J C Thompson

SHEFFIELD U - F Combley, J Foster, S Wheeler

TURIN U - M Arneodo, F Costa, U Dosselli, M I Ferrero, P Giubellino, S Maselli, C Peroni, A Staiano

UPPSALA U - A Arvidson, B Badelek, H Calen, S Dahlgren, P Grafstrom, E Hagberg, S Kullander

WUPPERTAL U - K Becks, H Braun, H Bruck, J Drees, A Edwards, H Forsbach, K Hamacher, B Korzen, J Kruger, L Paul, N Pavel, H Peschel, U Pietrzyk, M Poetsch, H Preissner, A Schneider, W Stockhausen, H Wahlen

BUDAPEST, CRIP - G Eszes, E Nagy, P Ribarics, J Toth

Accelerator CERN-SPS Detector EMC

Reactions

$\mu^- p \rightarrow \mu^- X$ 120-280 GeV/c
Particles studied charm

Comments An extension of experiment NA-002, with addition of a vertex detector to see what accompanies the μ^- . Studies charm production, jets, and inclusive hadron distributions. See also NA-028.

Papers See NA-028 for papers.

CERN-NA-010 (Nov 1977) Approved Mar 1978, Jan 1980; Started Sep 1981; Completed Aug 1985.

HIGH RESOLUTION STUDY OF THE INCLUSIVE PRODUCTION OF MASSIVE MUON PAIRS BY INTENSE PION BEAMS

ANNECY - J J Blaising, A Degre, R Morand
CERN - K Freudenreich
NAPLES U, IFS & INFN, NAPLES - L Carotenuto, A Ereditato, E Gorini, P Strolin
ECOLE POLYTECHNIQUE - P Bordalo, S Borenstein, Ph Busson, L Kluberg (Spokesperson), A Romana, R Salmeron, C Vallee
STRASBOURG, CRN - P Juillot, M Winter
ZURICH, ETH - P Le Coultre, M Grossmann, M Guanzirio, H Hofer, P Lecomte, H Suter, V L Telegdi
SOFIYA U - B Betev

Accelerator CERN-SPS Detector Spectrometer

Reactions

π^- nucleus $\rightarrow \mu^+ \mu^- X$ 140-300 GeV/c

Particles studied T(unspec)

Comments Studies the differential cross section and angular and transverse-momentum distributions of muon pairs in the mass range 4-to-15 GeV.

Papers PL 104B (1981) 416, NIM 223 (1984) 26, ZPHY C28 (1985) 9, ZPHY C28 (1985) 15, PL 157B (1985) 463, PL 158B (1985) 92, ZPHY C31 (1986) 513, PL B179 (1986) 170, PL B193 (1987) 368, PL B193 (1987) 373, ZPHY C37 (1988) 545, and ZPHY C39 (1988) 7.

SUMMARIES OF CERN EXPERIMENTS

CERN-NA-011 (Feb 1978) Approved May 1978: Completed Dec 1982.

MEASUREMENT OF CHARMED PARTICLE PRODUCTION IN HADRONIC REACTIONS

ACCMOR COLLABORATION

NIKHEF, AMSTERDAM - C Daum, H Dijkstra, J Hardwick, W Hoogland, G De Rijk, W Spierenburg, H Tiecke, L Wiggers
BRISTOL U - R Gilmore, T Gooch, S Kwan, J Malos, R Tapper
CERN - R Bailey, T Boehringer, M Bosman, V Chabaud, B D Hyams, U Koetz, P Weilhammer
CRACOW - L Gorlich, H Palka, G Polok, M Rozanska, K Rybicki, M Turala
MUNICH, MAX PLANCK INST - H Becker, E Belau, Z Hajduk, R Klanner (✓ Spokesperson), G Lutjens, G Lutz, W Manner, E Neugebauer, H Seebrunner, U Stierlin, G Waltermann, A Wylie, T Zeludziewicz
MUNICH, TECH U - J Kemmer
RUTHERFORD - C Damerell, S Gill, A Gillman, M Pepe, J Richardson, S Watts, F J Wickens

Accelerator CERN-SPS Detector Spectrometer, Microstrip

Reactions

$\pi^- \text{ Be} \rightarrow \text{charm X}$ 100-200 GeV/c
 $p \text{ Be} \rightarrow \text{charm X}$ "

Particles studied D^+ , D^0 , D_s^+ , Λ_c^+

Comments Uses a single-electron trigger. In a second stage, a silicon microstrip vertex detector was added.

Papers PL 132B (1983) 230, PL 132B (1983) 237, ZPHY C18 (1983) 1, NIM 205 (1983) 99, NIM 205 (1983) 141, NIM 214 (1983) 253, NIM 217 (1983) 224, NIM 217 (1983) 361, ZPHY C22 (1984) 125, NP B239 (1984) 15, PL 139B (1984) 320, ZPHY C24 (1984) 111, NIM A226 (1984) 56, ZPHY C28 (1985) 357, ZPHY C29 (1985) 1, ZPHY C30 (1986) 51, ZPHY C31 (1986) 375, ZPHY C31 (1986) 391, ZPHY C32 (1986) 349, ZPHY C32 (1986) 353, ZPHY C35 (1987) 151, and PL B189 (1987) 238.

CERN-NA-012 (Aug 1978) Approved Nov 1978: Completed Jun 1984.

STUDY OF π^-p INTERACTIONS WITH NEUTRAL FINAL STATES

ANNECY - J Dufournaud, M Gouanere, D Lac, J P Peigneux, D Sillou, M Spighele
BRUSSELS U, IISN - F G Binon, C Bricman, J P Lagnaux, T Mouthuy, J P Stroot
LOS ALAMOS - D Alde, E A Knapp, R Martin, J Potter
SERPUKHOV - S V Donskov, A V Iynakin, D B Kakauridze, V A Katchanov, G V Khaustov, A V Kulik, A A Lednev, Yu V Mikhailov, V F Obraztsov, Yu D Prokoshkin (Spokesperson), Y V Rodnov, S A Sadovsky, P M Shagin, A V Singovsky, V P Sugonyayev
LOUVAIN U - A Possaz

Accelerator CERN-SPS Detector GAMS-4000

Reactions

$\pi^- p \rightarrow n \gamma's$ 100, 236 GeV/c
 $\pi^- p \rightarrow n \text{ meson}^0$ "
 $\pi^- p \rightarrow n \pi^0$ "
 $\pi^- p \rightarrow n \eta$ "
 $\pi^- p \rightarrow n \omega$ "
 $\pi^- p \rightarrow n \eta'$ "
 $\pi^- p \rightarrow n f_2(1270)$ "
 $\pi^- p \rightarrow n a_2(1320)^0$ "
 $\pi^- p \rightarrow n f_4(2050)$ "
 $\pi^- p \rightarrow n \eta_c(1S)$ "
 $\pi^- p \rightarrow n f_0(1590)$ "

Particles studied meson⁰, glueball

Comments Only some of the many reactions to be studied in detail are listed above.

Papers NC 71A (1982) 497, NIM 16 (1983) 373, NC 78A (1983) 313, NIM 214 (1983) 269, NP B26 (1986) 485, PL B177 (1986) 120, NIM A256 (1987) 444, PL B154 (1987) 286, NIM A269 (1988) 101, PL B201 (1988) 160, and PL B205 (1988) 397.

CERN-NA-012-2 (Aug 1985) Approved Feb 1986.

SEARCH FOR MESONS AND GLUEBALLS DECAYING INTO MULTIPHOTON FINAL STATES PRODUCED IN CENTRAL HADRON COLLISIONS AND STUDY OF INCLUSIVE PRODUCTION OF HEAVY QUARK MESONS

ANNECY - B Bencheikh, M Boutemur, M Gouanere, L Massonnet, J P Peigneux, M Poulet, M Spighele
BRUSSELS U, IISN - F Binon, C Bricman, J P Stroot (Spokesperson)
KEK - S Inaba, M Kobayashi, K Takamatsu, T Teuru
LOS ALAMOS - D Alde, R G Jeppeson, E A Knapp
MAZAKI U - T Nakamura
PISA U & INFN, PISA - R Bellazzini, A Brez, M M Massai, M R Torquati
SERPUKHOV - S V Donskov, A V Iynakin, V A Kachanov, G V Khaustov, A V Kulik, A A Lednev, V F Obraztsov, Yu D Prokoshkin (Spokesperson), V I Rykalin, S A Sadovsky, P M Shagin, A V Shtannikov, A V Singovsky
TOKYO INST TECH - H Shimizu

Accelerator CERN-SPS Detector GAMS-4000

Reactions

$\pi^- \text{ nucleus} \rightarrow \gamma's X$ 300 GeV/c

Particles studied glueball, meson⁰, $\eta_c(1S)$, $\chi_c(\text{unspec})$

CERN-NA-014 (Jun 1978, Oct 1982) Approved Dec 1978, Dec 1979: Completed Sep 1984.

PHOTOPRODUCTION AT HIGH ENERGY AND HIGH INTENSITY

ATHENS, TECH UNIV - A Filippas, E Fokitis, E Karpathopoulos, Th Papadapoulou, Ch Trakka
CERN - L Andersson, R Barate, H Burmeister, J Engelen, S Hancock, F James, E C Katsoulis, J C Lassalle, K Maeshima, J B Pattison, D Treille (✓ Spokesperson)
IMPERIAL COLL - P Astbury, A Duane, P Gregory, P Kyberd, D Miller, J W Morris, R Namjoshi, I Siotis, T S Virdee, D M Webdale
ORSAY, LAL - B Bouquet, B D'Almeida, A Ferrer, P Petroff, F Richard, P Roudeau, J Six, W Wojcik, G Wormser
ECOLE POLYTECHNIQUE - P Benkheiri, S Costa Ramos, A Rouge, J P Wuthrick
COLLEGE DE FRANCE - A de Bellefon, J M Brunet, B Lefevre, S Orenstein, D Poutot, G Tristram
SACLAY - P Bareyre, P Bonamy, M David, Y Lemoigne, J Mouchet, G Villet, Y Zolnierowski
SOUTHAMPTON U - G McEwen, H Shooshtari
STRASBOURG, CRN - D Bloch, J P Engel, J L Guyonnet, M Schaeffer
WARSAW U, IEP & WARSAW, INR - M Gorski, T Hofmokl, A Jacholkowska, C Sobczynski
INFN, MILAN - P G Rancoita

Accelerator CERN-SPS Detector Spectrometer

Reactions

γp < 200 GeV/c

Comments Studies the point-like behavior of the photon.

Deep-inelastic Compton scattering is observed at the level expected from fractionally charged quarks. QCD expectations are accurately verified.

Papers PL 152B (1985) 419, PL 168B (1986) 163, PL B174 (1986) 458, PL B182 (1986) 409, and ZPHY C33 (1987) 505.

CERN-NA-014-2 Approved Apr 1983; Completed Nov 1986.
A PROGRAM OF HEAVY FLAVOR PHOTOPRODUCTION

ATHENS, TECH UNIV - A Filippas, E Fokitis, E N Gazis, E C Katsoulis, A Maltezos, Th Papadapoulou, H Rahmani
BARCELONA, AUTONOMA U - M P Alvarez, F Calvino, J M Crespo
CERN - L Andersson, R Barate (✓ Spokesperson), H Burmeister, L di Caccio, Y Giomataris, A Lopez, B Pattison, D Treille, Y Zolnierowski

SUMMARIES OF CERN EXPERIMENTS

IMPERIAL COLL - G Barber, M Cattaneo, A Duane, R Forty,
M Koratzinos, D M Websdale
ORSAY, LAL - B D'Almagne, P Druet, C Kraft, P Roudeau,
J Six, M Wayne, G Wormser
COLLEGE DE FRANCE - J M Brunet, B Lefevre, D Poutot,
P Triscos, G Tristram, A Volpe
SACLAY - P Bonamy, P Borgeaud, M David, Y Lemoigne,
F Louis, C Magneville, J Poinisgnon, M Primout, J F Thomas,
G Villet
SOUTHAMPTON U - J G McEwen
STRASBOURG, CRN - D Bloch, J P Engel, P Foucault,
J P Gerber, M Schaeffer, R Strub
WARSAW U, IEP - T Hofmök

Accelerator CERN-SPS Detector Spectrometer

Reactions

γp 50-200 GeV/c

Particles studied D_s^+ , A_c^+ , charm, bottom

Comments Uses a silicon active target and microstrip hodoscopes.

CERN-NA-017 (Sep 1979) Approved Sep 1979; Completed Sep 1982.

MOMENTUM AND ANGULAR CORRELATIONS STUDY IN π^- NUCLEI JETS AT HIGH ENERGIES USING AN EMULSION TELESCOPE TECHNIQUE WITH MAGNETIC FIELD

LYON, IPN - R Schmitt
JADAVPUR U - M Basu, D Ghosh, S Naha, J Roy, K Sengupta
SANTANDER U - M Lopez-Quelle, R Niembro, A Ruiz, E Villar
(Spokesperson)

STRASBOURG, CRN - C Jacquot, J N Suren

Accelerator CERN-SPS Detector Emulsion

Reactions

π^- nucleus $\rightarrow$ jet(s) X 300 GeV/c

CERN-NA-020 Approved Nov 1979; Completed Dec 1983.

MEASUREMENTS OF π^+ , π^- , K^+ , K^- , p , AND $\bar{p}$ YIELDS IN 400 GeV PROTON BERYLLIUM AND COPPER COLLISIONS

CERN - H W Atherton, H Wachamuth ($\checkmark$ Spokesperson)
RUTHERFORD - W Venus

Accelerator CERN-SPS Detector Counter

Reactions

p Cu $\rightarrow \pi^+ X$ 400 GeV/c
 p Cu $\rightarrow \pi^- X$ "
 p Cu $\rightarrow K^+ X$ "
 p Cu $\rightarrow K^- X$ "
 p Cu $\rightarrow p X$ "
 p Cu $\rightarrow \bar{p} X$ "

CERN-NA-022 (Jun 1980) Approved Oct 1980; Completed Aug 1983.

THE INFLUENCE OF PARTON STRUCTURE ON HADRONIC INTERACTIONS IN EHS WITH A $K^+/\pi^+/\bar{p}$ BEAM AT 250 GeV/c

ANTWERP U & BRUSSELS U, IIHE - B Michalowska,
A De Roeck, F Verbeure, E A De Wolf
BERLIN-ZEUTHEN ADW - H Boettcher, C Dreher, W Friebe,
Th Naumann, H Roloff, R Wischniewski
HELSINKI U - R Poelaenen, H Saarikko, Y T M Saarikko
CRACOW - K Dziunikowska, A Eskreys, D Kisieleska,
K Olkiewicz, B Pawlik, W Zielinski
MOSCOW STATE U - P Ermolov, V G Gavryusev,
Y A Golubkov, B B Levchenko, F K Rizatdinova, E K Shabalik,
L N Smirnova, N A Sotnikova, L Tikhonova, Yu V Yarba,
S A Zotkin
NIJMEGEN U - L Albert, F Botterweck, F G H Crijns, M Eggen,
P van Hal, T Haupt, W Kitte ($\checkmark$ Spokesperson), F Meijers,
L Scholten, Ch Timmermans, R Verbist

RIO DE JANEIRO, CBPF - A M Freire-Endler.

F M L DeAlmeida Jr, L C S Oliveira
SERPUKHOV - I Ajinenko, Y Belokopytov, V A Bereznyoy,
P V Chliapnikov, Z C Garutshava, L N Gerdryukov,
E V Krutchenko, A I Kurmosenko, V I Nikolaenko,
L P Petrovich, V H Ronjin, A M Rybin, O G Tchikiev,
G A Tomaradze, B A Utchkin, V Uvarov
WARSAW U, IEP & WARSAW, INR - H Bialkowska,
J Stepaniak, A K Wroblewski

YEREVAN PHYS INST - N M Agababyan, V V Aivazyan,
M V Atayan, S G Badalyan, G V Gevorkyan, N G Grigoryan,
G R Gulikanyan, R Sh Hakobyan, Z A Kirakosyan, L P Kishn-
nievskaya, S S Megrabian, V V Shakhbazyan

Accelerator CERN-SPS Detector EHS

Reactions

$K^+ p$ 250 GeV/c
 $\pi^+ p$ "
 $p p$ "
 K^+ nucleus "
 π^+ nucleus "
 p nucleus "

Comments The aims are a good particle identification study of
(1) the influence of parton structure on low p_t hadron-hadron
collisions, (2) strangeness flow and correlations in fragmentation,
and (3) hadron-nucleus collisions.

Papers PL B177 (1986) 239, ZPHY C32 (1986) 475, ZPHY C35
(1987) 7, PL B183 (1987) 425, PL B185 (1987) 200, PL B186
(1987) 223, PL B197 (1987) 457, PL B198 (1987) 292, PL B198
(1987) 427, ZPHY C37 (1988) 215, ZPHY C37 (1988) 347, PL
B205 (1988) 401, ZPHY C39 (1988) 301, ZPHY C39 (1988) 311,
PL B209 (1988) 103, ZPHY C41 (1989) 539, ZPHY C42 (1989)
377, ZPHY C43 (1989) 15, ZPHY C43 (1989) 37, and PL B222
(1989) 306. Several other papers are in press.

CERN-NA-023 (Jun 1980) Approved Oct 1980; Completed Aug 1982.

STUDY OF DIFFRACTIVE DISSOCIATION ESPECIALLY INTO STRANGE AND CHARMED PARTICLES WITH EHS

TATA INST - S Banerjee, S Ganguli, A Gurtu, P Malhotra,
R Raghavan, K Shankar, A Subramanian, K Sudhakar
BUDAPEST, CRIP - T Gemesy, G Pinter
CERN - M Benot, F Bruyat, M Dykes, D Gusewell, A Herve,
J Hrubec, E Johansson, P Lecq, J C Marin, L Montanet,
B Pijlgroms, A Poppleton, S Reucroft, S Squarcia
GENOA U & INFN, GENOA - C Caso, R Contri, F Fontanelli,
R Monge, U Trevisan

INNSBRUCK U - B Epp, P Girtler, D Kuhn, J Weiss
JAPAN U GROUP COLLAB - Y Chiba, T Emura, R Hamatsu,
T Hirose, S Kaneko, I Kita, S Kitamura, H Kohno,
S Matsumoto, K Takahashi, T Yamagata
MADRID, JEN - A Ferrando, P Ladrón de Guevara,
M T Rodríguez, J A Rubio

MONS U - J L Bailey, J Beaufays, F Grard, P Herquet
MOSCOW STATE U - L A Tikhonova, S A Zotkin
PANJAB U - S Mitra, J B Singh
RUTGERS U - E B Brucker, P Jacques, E L Koller, P Miller,
R Plano, P Stamer, S Taylor, T L Watts
SERPUKHOV - Yu Fisjak, A G Kholodenko, E Kistenev,
N G Minaev, B S Poliakov, V Stophchenko, V A Yarba,
G Zholobov

TENNESSEE U - W M Bugg, H O Cohn, G T Condo, T Handler,
E I Hart, A H Rogers

VIENNA, OAW - W Bartl, B Buschbeck, H Diben, J Mac-
Naughton, M Markytan, G Neuhofer, P Porth ($\checkmark$ Spokesperson),
M Regler, H Rohringer

Accelerator CERN-SPS Detector EHS

Reactions

$p p$ 360 GeV/c
 $p p \rightarrow p$ strange strange "
 $p p \rightarrow p$ charm charm "

Comments Uses a rapid-cycling bubble chamber. A general
study of pp interactions at 360 GeV/c, particularly on diffractive
dissociation (especially into strange particles).

SUMMARIES OF CERN EXPERIMENTS

Papers NIM 219 (1984) 66, ZPHY C22 (1984) 119, ZPHY C23 (1984) 205, ZPHY C27 (1985) 11, ZPHY C28 (1985) 339, ZPHY C30 (1986) 381, ZPHY C31 (1986) 367, ZPHY C34 (1987) 429, PL B195 (1987) 609, ZPHY C35 (1987) 295, ZPHY C35 (1987) 301, ZPHY C35 (1987) 309, ZPHY C37 (1987) 7, ZPHY C40 (1988) 13, PL B206 (1988) 371, ZPHY C40 (1988) 215, and ZPHY C43 (1989) 341.

CERN-NA-024 (Aug 1980) Approved Nov 1980; Completed Aug 1985.

DEEP INELASTIC SCATTERING PROCESSES INVOLVING LARGE- p_t DIRECT PHOTONS IN THE FINAL STATE

BARI U - C Favuzzi, G Maggi, C De Marzo, E Nappi, M De Palma, F Posa, A Ramieri, G Selvaggi, P Spinelli
FREIBURG U - A Bamberger, M Fuchs, W Heck, R Marx, K Runge, E Skodzeck, H Ch Weber, M Wulker
MOSCOW, ITEP - V Artemiev, Y Galaktionov, A Gordeev, Y Gorodkov, Y Kanyshkov, M Kossov, V Lubimov, V Piyaskin, V Pojidaev, V Shevchenko, E Shoumilov, V Tchudakov
MUNICH, MAX PLANCK INST - J Bunn, J Fent, P Freund, H J Gebauer, M Glas, P Polakos, K P Pretzl (✓ Spokesperson), T E Schouten, P Seyboth, J Seyerlein, G Vesztorgombi

Accelerator CERN-SPS **Detector** Calorimeter

Reactions

$\pi^- p \rightarrow \gamma(s) X$	300 GeV c
$\pi^+ p \rightarrow \gamma \text{ jet } X$	"
$\pi^- p \rightarrow \gamma(s) X$	"
$\pi^- p \rightarrow \gamma \text{ jet } X$	"
$p p \rightarrow \gamma(s) X$	"
$p p \rightarrow \gamma \text{ jet } X$	"

Papers PR D36 (1987) 8, and PR D36 (1987) 16

CERN-NA-025 (Nov 1980) Approved Apr 1981; Completed Sep 1982

STUDY OF CHARM AND BOTTOM PARTICLE PRODUCTION USING A HOLOGRAPHIC BUBBLE CHAMBER

BARI U - N Armenise, M Calicchio, O Erriquez, M Muciaccia-Fogli, S Natali, S Nuzzo, F Romano, F Ruggieri
BRUSSELS U, IIHE - M Barth, R Roosen, S Tavernier (✓ Spokesperson)
CERN - H Drevermann, I Gjerpe, A Herve, K E Johansson, P Lecoq, P Olivier

UNIVERSITY COLL, LONDON - F W Bullock, M Coupland, R Cranfield, D H Davis, B G Duff, M J Esten, F F Heymann, P Hobson, D C Imrie, G Lush, D N Tovee, R Williams
MONS U - J F Baland, F Grard, V Henri, J Kesteman
PARIS, CURIE UNIV VI - M Boratav, M C Touboul, A M Touchard

STRASBOURG, CRN - R Arnold, G Maurer
VIENNA, OAW - J Hrubec, G Neuhofer, A Taurak

Accelerator CERN-SPS **Detector** HLBC-HOBC-HYB

Reactions

$p p \rightarrow \text{charm } X$ 200, 360 GeV c

Particles studied

charm

Comments A first attempt to study production and decay of charmed particles (and later on particles with beauty) using a small rapid-cycling holographic heavy-liquid bubble chamber. Also uses the muon filter from NA-019

Papers NIM 202 (1982) 417, NIM 214 (1983) 245, PS 33 (1986) 202, and ZPHY C36 (1987) 577

CERN-NA-027 (Nov 1981) Approved Dec 1981 Started Apr 1982 Completed Jun 1984

AN EXPERIMENT TO MEASURE ACCURATELY THE LIFETIMES OF THE D^0 , D^+ , D^- , F^+ , F^- , A_c CHARM PARTICLES AND TO STUDY THEIR HADRONIC PRODUCTION AND DECAY PROPERTIES

AACHEN, TECH HOCHSCH, III PHYS INST - M Deutschmann, G Otter, H Schlutetter, R Schulte, W Struczinski
BERLIN-ZEUTHEN ADW - W Friedel, U Gensck, D Knauss, T Naumann, H Nowak, R Wischniewski
BRUSSELS U, IIHE - G Bertrand-Coremans, J Lemonne, P Vilain, B Vonck, J H Wickens
TATA INST - S Gauguli, A Gurtu, P K Malhotra, R Raghavan, A Schrankar, K Shankar, A Subramanian, K Sudhakar
COLLEGE DE FRANCE - P Beilhe, J Dolbeau, M Laloum
CERN - J A Hernandez, H Leutz, L Montanet (✓ Spokesperson), A Poppleton

DUKE U - A T Goshaw, W Kowald, W J Robertson,

W D Walker, C Wild

GENOA U - C Caso, R Contri, F Fontanelli, R Monge,

S Squarcia, U Trevisan

JAPAN U GROUP COLLAB - Y Chiba, T Emura, R Hamatsu, S Hirose, S Kaneko, I Kita, S Kitamura, H Kono, S Matsumoto, N Oshima, K Takahashi, T Tsugurai, K Yamagata, F Yuasa
LIVERPOOL U - J R Fry, M A Houlden, G P Patel, K Roberts, B Whyman

MADRID U - M Aguilar-Benitez, B Castano, N Colino, F Diez, P Ladrón de Guevara

MONS U - J Bailey, J F Baland, F Grard, P Herquet, P Pilette

OXFORD U - W W M Allison, D Gibaut, L Lyons, P Wright

PADUA U - A De Angelis, A Bettini, P Checchia, M Cresti,

U Gasparini, M Mazzucato, L Peruzzo, C Pinori, P Rossi,

G Sartori, L Ventura, P Zotto, G Zumerle

PARIS, CURIE UNIV VI - L De Billy, H Briand, J Duboc,

J Dumarchez, J Laberrie, H K Nguyen, T P Yip

ROME U - R Bizzarri, E Di Capua, S Falciano, A Forni,

S Gentile, M Iori, G Maref, F Marzano, G Piredda, L Zanello

RUTGERS U - M Kalekar, R Di Marco, R J Plano, P Stamer

RUTHERFORD - D Crennell, C Fisher, P Hughes,

M MacDermott

SERPUKHOV - V Fisjak, E P Kistenov, V Knyazev, Y Petrovich,

V Stophenko, E Vlasov

STOCKHOLM U - L Haupt, S Hellman, S O Holmgren, T Moe,

S Nilsson, B Seldén

STRASBOURG, CRN - D Huss, E Jegham, A Michalon,

M Michalon, C Voltolini

TENNESSEE U - W M Bugg

TURIN U - G Borreani, F Marchetto, G Rinaudo

TRIESTE U - E Castelli, D Cauz, P Poropat, M Sessa, C Troncon

VIENNA, OAW - W Bartl, B Epp, J Hrubec, G Neuhofer,

M Pernika, P Porth, M Regler, H Rohringer, J Schmidmayer

Accelerator CERN-SPS **Detector** HBC-LEBC-HYB

Reactions

$\pi^- p$	360 GeV c
$p p$	400 GeV c

Particles studied

D^0 , D^+ , D^- , F^+ , F^- , A_c

Comments Uses the EHS. The sensitivity is 16 events/ μb for π^- , 40 events/ μb for p .

Papers PL 146B (1984) 266, PL 156B (1985) 444, PL 161B (1985) 400, PL 164B (1985) 404, PL 168B (1986) 170, PL 169B (1986) 106, ZPHY C31 (1986) 491, ZPHY C34 (1987) 143, ZPHY C34 (1987) 419, PL B189 (1987) 254, NIM A258 (1987) 26, PL B189 (1987) 476, ZPHY C36 (1987) 545, ZPHY C36 (1987) 551, ZPHY C36 (1987) 559, PL B193 (1987) 140, PL B199 (1987) 462, EPL 4 (1987) 1261, PL B201 (1988) 176, ZPHY C40 (1988) 321, and ZPHY C41 (1988) 191.

CERN-NA-028 (Jan 1982) Approved Feb 1982; Completed Dec 1983

STUDY OF SHADOWING AND HADRON PRODUCTION IN HIGH ENERGY MUON SCATTERING USING NUCLEAR TARGETS

THE EUROPEAN MUON COLLABORATION

AACHEN, TECH HOCHSCH, III PHYS INST - G Berghoff,

M Duren, F J Hasert, D Lanske, K Schultz, L Urban

ANNECY - Y Bertsch, X de Boudard, G Coignet, J Favier,

G Jancso, M Maire, H Minissieux, M Moynot, H Pessard,

M Schneegans, J M Thenard, M Vivargent

CERN - R W Dobinson, C Goessling, L Gustafsson,

G Kellner, H R Muller, A M Osborne, L Osborne, T Sloan

(✓ Spokesperson), E Watson

SUMMARIES OF CERN EXPERIMENTS

FREIBURG U - T Dreyer, T Ernst, J Haas, H Hartenthaler, H Jung, E M Kabuss, G Kroesen, U Landgraf, W Mohr, K Rith, A Schlagbohm, T Schroeder, R Smith, H E Stier, E Tieck, W Wallucka

DESY - F W Brasse, W Flauger, J Gayler, V Korbel, J Naszalski, B Poensgen

HAMBURG U - G Bucholtz, J Figiel, B Hoppe, F Janata, E Rondio, M Studd, A De la Torre

KIEL U - O C Altkofer, E Bohm, W Dau

LANCASTER U - C Bee, I Bird, J Coughlan

LIVERPOOL U - S Brown, G R Court, E Gabathuler, R Gamet, P Hayman, J R Holt, J Pettingale, S Wimpenny

MARSEILLE U, LUMINY - J P Albanese, J J Aubert, C Benchouk, G D'Agostini, M Mermet-Guyennet, F Montanet, P Payre, B Pietrzyk

MONS U - J Beaufays, D Callebaut, F Grard, J Hanton, R Windmolders

MUNICH, MAX PLANCK INST - F Dengler, I Derado, V Eckardt, A Manz, N Schmitz, J Shiers, G Wolf

ORSAY, LAL - D Blum, P Heusse, A Jacholkowska, M Jaffre, C Pascaud

OXFORD U - N Geddes, A S Johnson, J Loken, K Long, R Mount, P B Renton, G Taylor, M Villers, W S C Williams

RUTHERFORD - C Best, D Botterill, J Chima, R Clift, M Edwards, P R Norton, G Oakham, M Spruston, J C Thompson

SHEFFIELD U - F Combley, J Foster, S Wheeler

TURIN U - M Arneodo, F Costa, M I Ferrero, P Giubellino, S Maselli, C Peroni, A Staiano

UPPSALA U - A Arvidson, B Badelek, H Calen, S Dahlgren, P Grafstrom, E Hagberg, S Kullander

WUPPERTAL U - K H Becks, H Braun, H Bruck, J Drees, A Edwards, H Forsbach, K Hamacher, B Korzen, J Kruger, L Paul, N Pavel, H Peschel, U Pietrzyk, M Poetsch, H Preissner, A Schneider, W Stockhausen, H Wahlen

BUDAPEST, CRIP - G Eszes, E Nagy, P Ribarics, J Toth

Accelerator CERN-SPS Detector EMC

Reactions muon nucleus $\rightarrow$ muon X 280, 325 GeV/c

Comments See also the earlier EMC experiments NA-002 and -009. Studies the point- and hadron-like components of the photon shadowing, and the evolution of the elementary quark system into hadrons using the distribution of hadrons.

Papers This includes papers from the earlier EMC experiments NA-002 and NA-009. NIM 160 (1979) 23, NIM 165 (1979) 113, NIM 166 (1979) 541, PL 89B (1980) 267, NIM 177 (1980) 337, PL 94B (1980) 96, PL 94B (1980) 267, PL 95B (1980) 306, PS 23 (1981) 710, NIM 179 (1981) 445, PL 100B (1981) 433, NIM 187 (1981) 401, ZPHY C10 (1981) 101, PL 103B (1981) 388, PL 105B (1981) 315, PL 105B (1981) 322, PL 106B (1981) 419, PL 110B (1982) 73, PL 114B (1982) 291, PL 114B (1982) 373, PL 119B (1982) 233, NIM 193 (1982) 445, PL 121B (1983) 87, NP B213 (1983) 1, NP B213 (1983) 31, NIM 212 (1983) 111, PL 123B (1983) 123, PL 123B (1983) 275, ZPHY C18 (1983) 189, PL 130B (1983) 118, PL 133B (1983) 370, PL 133B (1983) 461, PL 135B (1984) 225, ZPHY C22 (1984) 341, PL 144B (1984) 302, PL 145B (1984) 156, PL 149B (1984) 415, NP B246 (1984) 381, PL 150B (1985) 458, PL 152B (1985) 433, PL 155B (1985) 461, NP B258 (1985) 249, NP B259 (1985) 189, PL 160B (1985) 417, PL 161B (1985) 203, PL 165B (1985) 222, ZPHY C30 (1986) 23, PL 167B (1986) 127, NP B264 (1986) 739, NP B272 (1986) 158, ZPHY C31 (1986) 1, ZPHY C31 (1986) 175, ZPHY C31 (1986) 275, ZPHY C31 (1986) 333, ZPHY C32 (1986) 1, ZPHY C33 (1986) 167, ZPHY C34 (1987) 277, ZPHY C34 (1987) 283, ZPHY C35 (1987) 1, ZPHY C35 (1987) 335, ZPHY C35 (1987) 417, ZPHY C35 (1987) 433, ZPHY C36 (1987) 527, NP B293 (1987) 740, PL B202 (1988) 603, PL B205 (1988) 364, PL B211 (1988) 493, ZPHY C39 (1988) 169, ZPHY C40 (1988) 347, and PL B218 (1989) 248.

Reactions $\pi^- \pi^0$ PRODUCTION VIA THE PRI-MAKOFF EFFECT ON NUCLEI

CLERMONT-FERRAND U - L Capraro, P Levy, M Querrou, J Verbeck, M Verbeke

FRASCATI - F Celani, M Enorini, F L Fabbri, P Laurelli, G Rivellini, L Satta, P Spillantini, A Zallo

MILAN U & INFN, MILAN - G Bellini ($\checkmark$ Spokesperson), S Bonetti, M Di Corato, P F Manfredi, E Meroni, L Moroni, C Palazzi-Cerrina, F Palombo, F Ragusa, S Sala

PISA U & INFN, PISA - S R Amendolia, E Bertolucci, D Bettoni, L Bosio, C Bradaschia, M Dell'Orso, F Fedararo, L Foa ($\checkmark$ Spokesperson), E Focardi, A Giazotto, M Giorgi, A Menzione, L Ristori, A Scribano, R Tenchini

TURIN U - G A Beck, H Blokon, G Bologna, G Mannocchi, B D'Estorre Piazzioli, P Picchi

TRIESTE U - G Batignani, M Budinich, F Liello, N Paver, M L Piazzi, L Rolandi, A Stefanini

WESTFIELD COLL - E H Bellamy, G Heath, M Landon, P V March, P S Marrocchesi, J R Strong

Accelerator CERN-SPS Detector Spectrometer

Reactions $\pi^- \text{Pb} \rightarrow \pi^- \pi^0 \text{Pb}$ 100-200 GeV/c

Particles studied ρ^-

Comments Measures the radiative decay width of the ρ^- and $\pi^- \pi^0$ production near threshold to test the number of quark colors. Uses the spectrometer of experiments NA-001 and NA-007, with modifications.

Papers NP B288 (1987) 659.

CERN-NA-030 (Apr 1982) Approved Jun 1982; Completed Jun 1984.

PRECISION DETERMINATION OF THE LIFETIME OF THE NEUTRAL PION

AMES LAB - E W Anderson

CERN - H Atherton, C Bovet, P Coet, R Desalvo, N Doble, R Mallebran

CHICAGO U - J W Cronin, B Milliken

LUND U - G von Dardel (Spokesperson), K Kulka

PARIS, CURIE UNIV VI - M Boratav

Accelerator CERN-SPS Detector Counter

Reactions $p \text{ nucleus} \rightarrow \pi^0 s X$ 400, 450 GeV/c

Particles studied π^0

Comments Measures positron flux (1) from a double-foil tungsten target as a function of foil separation, and (2) from three sets of from 1 to 30 gold foils of the same total thickness.

Papers PL 158B (1985) 81.

CERN-NA-031 (Dec 1981) Approved Sep 1982, Nov 1987.

MEASUREMENT OF $|\eta_{00}|^2/|\eta_{+-}|^2$

CERN - G Barr, R Carosi, D Cundy, N Doble, L Gatignon, V Gibson, P Grafstrom, R Hagelberg, G Kessler, J van der Lans, H Nelson, J Steinberger, H Wahl (Spokesperson)

EDINBURGH U - R Black, D J Candlin, J Muir, K J Peach

MAINZ U, INST PHYS - H Bluemer, R Heinz, K Kleinknecht, P Mayer, P Panzer, B Renk, H Rohrer

ORSAY, LAL - E Auge, L Fayard-Iconomidou, D Fournier, I Harrus, P Heusse, A C Schaffer

PISA U & INFN, PISA - L Bertanza, A Bigi, M Calvetti, R Carosi, R Casali, C Cerri, R Fantechi, I Mannelli, A Nappi, G Pierazzini

SIEGEN U - H Burkhardt, M Holder, A Kreutz, G Quast, M Rost, H G Sander, W Weihs, R Werthenbach, G Zech

Accelerator CERN-SPS Detector chamber

Reactions $K_L \rightarrow \pi^+ \pi^-$ 50-150 GeV/c

$K_L \rightarrow \pi^0 \pi^0$ "

$K_S \rightarrow \pi^+ \pi^-$ "

$K_S \rightarrow \pi^0 \pi^0$ "

Particles studied K_L, K_S

Comments Taking data.

SUMMARIES OF CERN EXPERIMENTS

Papers PL B199 (1987) 139, NIM A268 (1988) 116, PL B206 (1988) 169, and PL B214 (1988) 303

CERN-NA-031-2 (Mar 1986) Approved Jun 1986; Completed Sep 1987.

A MEASUREMENT OF THE PHASE DIFFERENCE OF η_{00} AND η_{+-} IN CP VIOLATING $K^0 \rightarrow 2\pi$ DECAYS

CERN - P Clarke, D Coward, D C Cundy, N Doble, L Gatignon, V Gibson, P Grafstrom, R Hagelberg, G Kessler, J Steinberger, H Taureg, H Wahl (Spokesperson)
EDINBURGH U - R Black, D J Candlin, J Muir, K J Peach
MAINZ U. INST PHYS - H Bluemer, M Kasemann, K Kleinknecht, P Mayer, B Panzer, B Renk, S Roehn, H Rohrer
ORSAY, LAL - E Auge, L Fayard-Iconomidou, D Fournier, P Heusse, A M Lutz, H G Sander, A C Schaffer
INFN, PISA - L Bertanza, A Bigi, M Calvetti, R Carosi, R Casali, C Cerri, G Gargani, I Mannelli, E Massa, A Nappi, G M Pierazzini
SIEGEN U - C Becker, H Burkhardt, M Holder, G Quast, M Rost, W Weiha, G Zech

Accelerator CERN-SPS **Detector** Calorimeter, Ionization chamber

Reactions

$K_L \rightarrow \pi^+ \pi^-$	50-150 GeV/c
$K_L \rightarrow \pi^0 \pi^0$	"
$K_S \rightarrow \pi^+ \pi^-$	"
$K_S \rightarrow \pi^0 \pi^0$	"

Particles studied K_L , K_S

Comments The phase of the ratio of the decay amplitudes η of CP conserving and CP violating decays is determined from the time dependence of the rate of $K \rightarrow \pi\pi$ decays with the K_S and K_L in interference.

CERN-NA-032 (Jul 1982) Approved Nov 1982; Completed Aug 1986.

INVESTIGATION OF CHARM PRODUCTION IN HADRONIC INTERACTIONS USING HIGH-RESOLUTION SILICON DETECTORS

ACCMOR COLLABORATION

NIKHEF, AMSTERDAM - C Daum, H Tiecke, L Wiggers
BRISTOL U - R Gilmore, T Gooch, J Malos
CERN - V Castillo, V Chabaud, P D Kelsey, S Kwan, V Lueth, P Weihammer (Spokesperson)
CRACOW - L Goerlich, Z Hajduk, H Palka, K Rybicki, M Turala, M Witek, T Zeludziejewicz
MUNICH, MAX PLANCK INST - S Barlag, H Becker, M Bosman, H Dietl, B Luecking, G Luetjens, G Lutz, W Maenner, E Neugebauer, H Seebrenner, U Stierlin, G Waltermann
RUTHERFORD - C Damerell, A Gillman, M Pepe, J Richardson, S Watts, F Wickens
VALENCIA U - P Gras, E Higon
DESY - R Klanner
LAUSANNE U - T Boehringer

Accelerator CERN-SPS **Detector** Spectrometer

Reactions

$\pi^- \text{ Si} \rightarrow \text{charm X}$	200 GeV/c
$K^- \text{ Si} \rightarrow \text{charm X}$	"
$p \text{ Si} \rightarrow \text{charm X}$	"
$\pi^- \text{ Cu} \rightarrow \text{charm X}$	230 GeV/c

Particles studied D^0 , D^+ , D_s^+ , Λ_c^+ , Ξ_c^+ , Ξ_c^0

Comments Uses the spectrometer from CERN-NA-011. The first stage used a silicon microstrip vertex detector together with an active target made from segmented silicon detectors and an interaction trigger. In a second stage, two CCD's were added to the microstrip detector and a trigger on $(K/p)^+ (K/p)^-$ pairs was used.

Papers NIM 213 (1983) 201, NIM A226 (1984) 56, NIM A235 (1985) 481, IEEE TNS 33 (1986) 51, PL B184 (1987) 277, PL B184 (1987) 283, ZPHY C37 (1987) 17, NIM A253 (1987) 460,

NIM A253 (1987) 478, ZPHY C39 (1988) 451, and PL B218 (1989) 374.

CERN-NA-033 (Oct 1983) Approved Feb 1984; Completed Jul 1985.

AN EXPERIMENTAL STUDY OF SINGLE-VERTEX (e^-e^+) PAIR CREATION IN A CRYSTAL

SUNY, ALBANY - N Cue, J Kimball, B Marsh, C R Sun
ANNECY - G Bologna, J P Peigneux, D Silou, M Spighel
LYON, IPN - A Belkacem, M Chevallier, M J Gaillard, R Genre, R Kirsch, J C Poizat, J Remillieux (Spokesperson)

Accelerator CERN-SPS **Detector** Spectrometer

Reactions

$e^\pm \text{ crystal} \rightarrow \gamma(s) e^\pm \text{ crystal}$	150 GeV/c
$\gamma \text{ crystal} \rightarrow e^+ e^- \text{ crystal}$	20-200 GeV/c

Comments Investigates a predicted enhancement in pair production and radiation by high-energy photons and electrons directed along an axis of a crystal. See also CERN-NA-042 for a continuation.

Papers PRL 53 (1984) 2371, PRL 54 (1985) 2667, NIM B13 (1986) 9, and PL B177 (1986) 211.

CERN-NA-034 (Aug 1983) Approved Mar 1984.

LEPTON PRODUCTION

HELIOS COLLABORATION

BARU U - M T Muciaccia, S Simone
BROOKHAVEN - V A Polychronakos, D C Rahm, I Stutner, C Woody
CERN - H Atherton, H Beker, H En'yo, C W Fabjan, V Hedberg, A Mazzoni, G Poulard, F Puiz, J Schukraft, H Sletten, R Veenhof, W J Willis (Spokesperson)
FERRARA U - D Bettoni, E Mazzucato
HEIDELBERG U. PHYS INST - L Olsen, A Pfeiffer
UNIVERSITY COLL. LONDON - J Dodd, M J Esten
LUND U - S Johansson
MCGILL U - C Leroy, P Yepes
MONTREAL U - P Aubry, G Beaudoin, P Depommier, J Gascon
LEBDEV INST - S Muraviev, A Shmeleva, V Tikhomirov
MOSCOW PHYS ENG INST - B Dolgoshein, A Kalinovsky, S Smirnov, V Tcherniatin
MUNICH U. EXP PHYS - K Doerlich
NIKHEF, AMSTERDAM - R Veenhof
NOVOSIBIRSK, IYF - S Eidelman, V Sidorov
PITTSBURGH U - M Clemen, Y M Park, P Pomianowski, E Stern, J Thompson
ROME U & INFN, ROME - F Meddi
RUTHERFORD - N A McCubbin
STOCKHOLM U - B Seldén
TEL AVIV U - O Benary, S Dagan, Y Oren
TURIN U & INFN, TURIN - P Giubellino

Accelerator CERN-SPS **Detector** HELIOS

Reactions

$p \text{ Be} \rightarrow e^\pm(s) X$	450 GeV/c
$p \text{ Be} \rightarrow \mu\text{on}(s) X$	"
$p \text{ Be} \rightarrow \nu(s) X$	"
$p \text{ Be} \rightarrow e^\pm \mu\text{on} X$	"
$p \text{ Be} \rightarrow e^\pm \nu X$	"
$p \text{ Be} \rightarrow \mu\text{on} \nu X$	"
$p \text{ Be} \rightarrow \gamma X$	"

Particles studied charm

Comments Investigates open questions in lepton production by hadrons, such as e/μ universality, anomalies in single-lepton production, the contribution of charm decay to lepton pair production, and 'anomalous' low-mass pair and low- p_T photon production.

Papers NIM A252 (1986) 272, NIM A252 (1986) 471, NIM A253 (1987) 500, NIM A262 (1987) 243, NP A461 (1987) 403c, and ZPHY C38 (1988) 397.

SUMMARIES OF CERN EXPERIMENTS

CERN-NA 334-2 (May 1984) Approved Nov 1984: Completed May 1988.

STUDY OF HIGH ENERGY DENSITIES OVER EXTENDED NUCLEAR VOLUMES VIA NUCLEUS-NUCLEUS COLLISIONS AT THE SPS

HELIOS COLLABORATION

BARI U - N Armenise, M T Muciaccia
CERN - T Akesson, U Goerlach
UNIVERSITY COLL. DUBLIN - A Breslin, A Montwill
HEIDELBERG U. PHYS INST - H W Bartels, A Drees, V Kroh,
H J Specht

JAPAN U GROUP COLLAB - K Chiba, T Hayashino,
K Hoshino, M Kazuno, K Kodama, Y Maeda, K Niu, K Niwa,
M Ohashi, M Okabe, Y Sato, S Tasaka, M Teranaka, I Tezuka,
M Ushida, J Yokota

LOS ALAMOS - H van Hecke, B Jacak, J W Sunier

LUND U - R Haglund

MCGILL U - A Angelis, F Lamarche, C Leroy

MONTREAL U - J M Beaulieu, L A Hamel, L Lessard, A Lounis,
P Taras

LEBEDEV INST - I Gavrilenko, S Mayburov, A Shmeleva

MOSCOW PHYS ENG INST - B Dolgoshein, V Kantserov,
A Sumarakov

PITTSBURGH U - M Murray

ROME U & INFN, ROME - G Baroni, S Dell'uomo, S DiLiberto,
G Rosa, C Sgarbi

SACLAY - A Gaidot, G W London ($\checkmark$ Spokesperson).

J P Pansart, G Vasseur

SALERNO U - G Romano

STOCKHOLM U - B Erlandsson

TURIN U & INFN, TURIN - V Bisi, F Martelli, A Marzari-
Chiesa, M Maserà, L Ramello, L Riccati

WEIZMANN INST - I Blevis, Z Fraenkel

Accelerator CERN-SPS Detector HELIOS

Reactions

^{16}O nucleus 200 GeV/c (P_{lab}/N)

Comments Uses a multiwire active target and combines 4π calorimeter coverage with measurements of inclusive spectra, 2-particle correlations, low- and high-mass muon pairs, and photons. The target wires are aluminum, silver, and tungsten.

Papers IEEE TNS 35 (1988) 432, EPL 6 (1988) 131, ZPHY C38 (1988) 15, ZPHY C38 (1988) 59, ZPHY C38 (1988) 73, ZPHY C38 (1988) 85, ZPHY C38 (1988) 383, ZPHY C38 (1988) 397, and PL B214 (1988) 295.

CERN-NA-034-3 (1988) Approved Nov 1988.

MEASUREMENT OF LOW MASS MUON PAIRS IN SULPHUR-NUCLEUS COLLISIONS WITH AN OPTIMIZED HELOIS MUON SPECTROMETER

BARI U & INFN, BARI - M Gallio, M T Muciaccia, S Simone
CERN - H Beker, C W Fabjan, U Goerlach, M A Mazzoni,
G Poulard

MCGILL U - A L S Angelis, C Leroy

MONTREAL U - J Gascon, L A Hamel, J P Martin, P Taras

MOSCOW PHYS ENG INST - B Dolgoshein, S Smirnov,
A Sumarakov, V Tcherniatin

LEBEDEV INST - I Gavrilenko, S Muraviev, A Shmeleva,
V Tikhomirov

ROME U & INFN, ROME - S Di Liberto, F Meddi

SACLAY - J Bystricky, A Gaidot, G W London ($\checkmark$ Spokesperson).

J P Pansart

STOCKHOLM U - S Nilsson, B Sellden

TURIN U & INFN, TURIN - G Dellacasa, P Giubellino,
F Martelli, M Maserà, L Ramello, L Riccati, E Scamparin,
E Vercellin

Accelerator CERN-SPS Detector HELIOS

Reactions

S nucleus $\rightarrow \mu^+ \mu^- X$

Comments Aims to improve in quantity and quality the low-mass low- p_T muon signal already observed in the NA-034-2 experiment. In preparation (July 89).

CERN-NA-035 (1982) Approved Feb 1983, Nov 1984.

STUDY OF RELATIVISTIC NUCLEUS-NUCLEUS COLLISIONS

ATHENS U - A Karabarounis, A Panagiotou, A Petridis,
G D Vassiliadis

BARI U - C Favuzzi, E Nappi, F Posa, P Spinelli

CERN - R Bouclier, G Charpak, W Dominik, Dupenloup, J Feyt,
N Zaganidis

CRACOW - J Bartke, E Gladysz, M Kowalski

DARMSTADT, GSI - R Bock, R Brockmann, M Fuchs, C Guerra,
A Sandoval

FRANKFURT U - J Eschke, M Gazdzichi, E Hartig, W Heck,
M Lahanas, S Margetis, J Pfennig, R Renfordt, D Roehrich,
I Schneider, R Stock ($\checkmark$ Spokesperson), H Stroebele, A Thomas,
S Wenig

FREIBURG U - K Runge, E Schmoetten

LBL - S Chase, J Harris, G Odyniec, H G Pugh, G Rai, W Rauch,
L S Schroeder, L Teitelbaum, S Toner

MARBURG U - R Keider, F Puelhofer, H Stege

MUNICH, MAX PLANCK INST - I Derado, V Eckardt, J Fendt,
P Freund, H J Gebauer, N Schmitz, P Seyboth, J Seyerlein,
G Vesztegombi

WARSAW U, IEP - H Bialkowska, E Skrzypczak

BOSKOVIC INST, ZAGREB - D Ferenc, K Kadija, K Kovaceic,
A Ljubicic, G Paic, D Vranic

Accelerator CERN-SPS Detector Streamer chamber,
Calorimeter

Reactions

^{16}O nucleus 60, 200 GeV (P_{lab}/N)
 ^{32}S nucleus "

Comments Determines for each event the charged-particle multiplicity, the proton and pion rapidity distributions, the charged-pion transverse momentum distribution, the energy flow, and strange-particle production. Studies the stopping power of nuclear matter with different nuclear targets, and searches for evidence of formation of quark matter or quark-gluon plasma. Taking data.

Papers PL B184 (1987) 271, NP A461 (1987) 465c, PL B203 (1988) 320, PL B205 (1988) 583, ZPHY C38 (1988) 19, ZPHY C38 (1988) 79, ZPHY C38 (1988) 89, ZPHY C38 (1988) 125, and ZPHY C43 (1989) 25.

CERN-NA-036 (Feb 1984) Approved Nov 1984.

THE PRODUCTION OF STRANGE BARYONS AND ANTIBARYONS IN RELATIVISTIC ION COLLISIONS

BERGEN U - E Andersen, L Csernai, T F Thorsteinsen

BIRMINGHAM U - P G Jones, G C Morrison, J M Nelson,
R Zybort

CARNEGIE MELLON U - P D Barnes, G Diebold, G Franklin,
B Quinn, R Schuhmacher

CERN - G Loyhoiden, B Powell

PANJAB U - V S Bhatia, J M Kohli, I Mittra, J Singh

CRACOW - Z Natkaniec, K Ryhicki, I Sakrejda

LBL - W M Geist, D Greiner, C R Gruhn (Spokesperson)

MADRID, JEN - P Ladrón de Guevara, C Perez de los Heros,
P Alvarez de Lanza

SANTIAGO DE COMPOSTELA U - C Fernandez, C Garabatos,
J Garzon, S Lopez-Ponte, J Mosquera, M Plo, A Ramil, A Yanez

STRASBOURG, CRN - R Blaes, H Braun, J M Brom,
B Escoubes, M Hafidouni, M Huss, J L Jacquet, E Jegham,
M Ladrem, A Michalon, M E Michalon, J L Riester, C Voltolini

VIENNA, OAW - D Liko, J McNaughton, G Neuhofer, P Porth,
H Rohringer, J Traxler

YORK U, ENGLAND - M Cohler, J P M Kuipers

Accelerator CERN-SPS Detector TPC, Ionization chamber,
Calorimeter

Reactions

^{16}O nucleus $\rightarrow A X$ 200 GeV/c (P_{lab}/N)
 ^{16}O nucleus $\rightarrow \Xi X$ "
 ^{16}O nucleus $\rightarrow \Omega^- X$ "
 ^{16}O nucleus $\rightarrow K_S^- X$ "

SUMMARIES OF CERN EXPERIMENTS

^{32}S nucleus $\rightarrow \text{A X}$ "
 ^{32}S nucleus $\rightarrow \Xi \text{ X}$ "
 ^{32}S nucleus $\rightarrow \Omega^- \text{ X}$ "
 ^{32}S nucleus $\rightarrow \text{K}_S^0 \text{ X}$ "

Comments Measures differential cross sections of K^0 's and strange baryons and antibaryons as a possible indicator of the quark-gluon plasma. Uses an active target. Targets are Al, Cu, Fe, Ag, and Pb.

Papers NP A461 (1987) 391c, PL B206 (1988) 146, and PL B220 (1989) 328.

CERN-NA-037 (Feb 1985) Approved Jun 1985; Completed Dec 1988.

DETAILED MEASUREMENTS OF STRUCTURE FUNCTIONS FROM NUCLEONS AND NUCLEI

BIELEFELD U - G Baun, F Sever, M Siebler
 FREIBURG U - A Bruell, H Engelin, G Friedrich, D Greiner,
 M Grosse-Perdekamp, P P Gschwind, W Gunther, R Kaiser,
 U Landgraf, G Schlumberger, W Wallucks
 HEIDELBERG, MAX PLANCK INST - I G Bird, W Brueckner,
 B Dierberger, H Doebbeling, M Dueren, D von Harrach
 (✓ Spokesperson), E Kabuss, Y Mizuno, A Mueller, B Mueller,
 D Nowotry, B Povh, K Rith, K Roehrich, C Scholz, N A Simon,
 M Treichel, F Zetsche
 INDIANA U - R Crittenden, A Dzierba, A Jacholkowska, K Welch
 MAINZ U, INST PHYS - F Klein, G Mallot, R Rieger,
 T A Shibata, T Walcher
 MONS U - R Windmolders
 NEUCHÂTEL U - C Broggini, L D Fluri, P Grettillat, E Schwarz,
 J L Vuilleumier
 NIKHEF, AMSTERDAM - J Beaufays, J Ciborowski,
 R von Dantzig, M v d Heijden, M de Jong, A Ketel,
 G von Middelkoop
 UC, SANTA CRUZ - J Drinkard, C Huesch
 PSI, VILLIGEN - P Amaudruz, M Botje, W Burger, J Domingo,
 Q Ingram, R Schumacher, U Sennhauser
 TURIN U & INFN, TURIN - D Allasia, M Arneodo, M I Ferrero,
 C Mariotti, C Peroni, A Staiano
 UPPSALA U - A Arvidson, P Grafstrom, E Hagberg, K Janson,
 S Kullander, F Lettenstrom, T Lindqvist
 WARSAW U, IEP - B Badelek, J Nassalski, E Rondio,
 L Ropelowski, A Sandacz
 WUPPERTAL U - B Korzen, U Krueener, N Pavel, H Peschel,
 U Pietrzyk
 OXFORD U - G Taylor

Accelerator CERN-SPS **Detector** EMC
Reactions
 $\mu\text{on p}$ 120, 280 GeV/c
 $\mu\text{on deut}$ "
 $\mu\text{on nucleus}$ 120, 160, 280 GeV/c

Accelerator CERN-SPS **Detector** EMC

Reactions

$\mu\text{on p}$ 120, 280 GeV/c
 $\mu\text{on deut}$ "
 $\mu\text{on nucleus}$ 120, 160, 280 GeV/c

Comments Deep inelastic muon scattering for Q^2 from 1 to 200 GeV^2 and x from 0.005 to 0.75. Investigates the structure function F_2^A on hydrogen, deuterium, and heavier nuclei, the ratio $R = \sigma_L/\sigma_T$, the cross section for J/ψ production, the EMC effect, etc.

CERN-NA-038 (Mar 1985) Approved Sep 1985.

STUDY OF HIGH-ENERGY NUCLEUS-NUCLEUS INTERACTIONS WITH THE ENLARGED NA10 DIMUON SPECTROMETER

ANNECY - C Baglin, A Baldisseri, A Bussiere, J P Guillaud,
 R Kossakowski, P Liaud, F Staley
 CERN - P Sonderegger
 CLERMONT-FERRAND U - A Baldit, J Castor, A Devaux,
 J Fargeux, X Felgerolles, P Force, J Fredj, G Landaud, F Vazeille
 LISBON, LIFEP - M C Abreu, P Bordoalo, R Ferreira,
 C Lourenco, L Peralta, M Pimenta, S Ramos, J Varela
 LYON, IPN - M Bedjidian, D Contardo, E Descroix, O Drapier,
 J Y Grossiord, A Guichard, R Haroutunian, J R Pizzi
 ORSAY, IPN - C Gerschel, D Jouan, S Papillon, X Tarrago
 ECOLE POLYTECHNIQUE - S Borenstein, P Bussion, C Charlot,
 B Chaurand, L Kluberg (✓ Spokesperson), A Romana,
 R Salmeron

STRASBOURG, CRN - P Gorodetzky, B Grosdidier, C Racca
 VALENCIA U - R Caes, P Gros

Accelerator CERN-SPS **Detector** Spectrometer

Reactions

$^{16}\text{O U} \rightarrow \mu^+ \mu^- \text{ X}$ 200 GeV/c (P_{lab}/N)
 $^{32}\text{S U} \rightarrow \mu^+ \mu^- \text{ X}$ "

Comments Aims to detect evidence for the quark-gluon plasma produced in collisions of ultrarelativistic ions on heavy nuclear targets. Signatures studied are thermal muon pairs in the 1-3 GeV mass range, and suppressed J/ψ production. Taking data. Next runs are scheduled in 1990.

Papers ZPHY C38 (1988) 117, ZPHY C38 (1988) 129, and PL B220 (1989) 471.

CERN-NA-039 (Feb 1986) Approved Apr 1986; Completed Oct 1987.

A SEARCH FOR QUARKS PRODUCED IN HEAVY-ION INTERACTIONS

UC, IRVINE - G Shaw (Spokesperson)
 LBL - H Matis, H Pugh
 SAN FRANCISCO STATE U - R Bland, C Hodges, J Huntington,
 M Savage, A Steiner

Accelerator CERN-SPS **Detector** Other

Reactions

$^{10}\text{Hg} \rightarrow \text{quark X}$ 225 GeV (T_{lab}/N)

Particles studied quark

Comments Free quarks produced in a mercury target (part of the beam stop for NA-038) are concentrated by distillation of the mercury and searched for using an automated Millikan-like apparatus.

CERN-NA-040 (Feb 1986) Approved Apr 1986; Completed Oct 1987.

ELECTROMAGNETIC DISSOCIATION OF TARGET NUCLEI BY ^{16}O AND ^{32}S PROJECTILES

AMES LAB - J C Hill (✓ Spokesperson), J A Winger, F K Wahn
 LBL - A R Smith

Accelerator CERN-SPS **Detector** Photon spectrometer

Reactions

$^{16}\text{O nucleus}$ 60, 200 GeV/c (P_{lab}/N)
 $^{32}\text{S nucleus}$ "

Comments The target nucleus is ^{197}Au . Measures in particular one-neutron-removal cross sections. A test of the energy dependence of the electromagnetic dissociation process.

Papers PRL 60 (1988) 999.

CERN-NA-041 (Feb 1986) Approved Jun 1986; Completed Oct 1987.

SEARCH FOR NUCLEI IN HEAVY ION COLLISIONS AT ULTRARELATIVISTIC ENERGIES

SACLAY - B Berthier, R Boigard, C Cerruti, J M Hisleur,
 J Julien, R Lucas, C Mazur, C Ngo (✓ Spokesperson), M Ribrag

Accelerator CERN-SPS **Detector** Counter

Reactions

$^{16}\text{O Au} \rightarrow \text{nucleus X}$ 226 GeV (T_{lab}/N)
 $^{32}\text{S Au} \rightarrow \text{nucleus X}$ "

Comments Studies whether nuclei survive the collision of heavy ions at ultrarelativistic energies. This is relevant for a better understanding of possible critical phenomena in nuclear matter (multifragmentation of nuclei).

Papers PL B193 (1987) 417.

CERN-NA-042 (Jul 1986) Approved Oct 1986; Completed May 1988.

STUDY OF UNEXPLAINED HARD PHOTON PRODUCTION BY ELECTRONS CHANNELLED IN A CRYSTAL

SUMMARIES OF CERN EXPERIMENTS

LYON, IPN - X Artru, A Belkacem, M Chevallier, M J Gaillard,
R Genre, R Kirsch, J-C Poizat, J Remillieux (Spokesperson)
ANNECY - G Bologna, M Gouanere, J-P Feigneux, D Sillou,
M Spighel
SUNY, ALBANY - N Cue, J C Kimball, B Marsh
Accelerator CERN-SPS Detector Counter, Calorimeter
Reactions
 $e^+ \text{ crystal} \rightarrow \gamma(s) e^\pm \text{ crystal}$ 20-200 GeV/c
Comments Continues studies of CERN-NA-033.
Papers PL B206 (1988) 561.

CERN-NA-043 (Sep 1987) Approved Feb 1988; Completed Aug 1988.

INVESTIGATIONS OF THE ENERGY AND ANGULAR DEPENDENCE OF ULTRASHORT RADIATION LENGTHS IN Si, Ge, AND W SINGLE CRYSTALS

AARHUS U - R Medenwaldt, S P Moller, J B B Petersen,
A H Sorensen, S Tang-Petersen, E Uggerhoj (✓ Spokesperson)
CERN - K Elsener
STRASBOURG, CRN - C Heitz, P Siffert, J Stokkurt
STUTTGART, MAX PLANCK INST - K Maier
Accelerator CERN-SPS Detector Calorimeter

Reactions
 $e^- \text{ crystal}$ > 30 GeV/c
 $e^+ \text{ crystal}$ "
Comments Following on CERN experiments NA-033 and WA-081, this experiment investigates the shower development in Si, Ge, and W crystals of different thickness for energies 30 GeV and up. The earlier experiments found remarkable enhancements in radiation energy loss for energetic $e^\pm$ incident along crystal axes.
Papers PL B212 (1988) 537.

CERN-NA-044 (Oct 1988) Approved Feb 1989.

A FOCUSING SPECTROMETER FOR ONE AND TWO PARTICLES

BROOKHAVEN - Y Miake, V Polychronakos, D Rahm
CERN - H Atherton, C W Fabjan, G Poulard, H I Sletten,
W J Willis
BOHR INST - H Boegveld (✓ Spokesperson), J Bondorf,
K Hansen
HIROSHIMA U - T Sugitate
KEK - T Kobayashi
LOS ALAMOS - H van Hecke, B Jacak, J W Sunier
LUND U - B Lorstad
PITTSBURGH U - T J Humanic
Accelerator CERN-SPS Detector Spectrometer

Reactions
 $p \text{ Be} \rightarrow \pi^+ \pi^- X$ 456 GeV (T_{lab})
 $p \text{ Be} \rightarrow K^+ K^- X$ "
 $p \text{ Be} \rightarrow p \bar{p} X$ "
 $p \text{ Pb} \rightarrow \pi^+ \pi^- X$ "
 $p \text{ Pb} \rightarrow K^+ K^- X$ "
 $p \text{ Pb} \rightarrow p \bar{p} X$ "
 $S S \rightarrow \pi^+ \pi^- X$ 200 GeV (T_{lab}/N)
 $S S \rightarrow K^+ K^- X$ "
 $S S \rightarrow p \bar{p} X$ "
 $S \text{ Pb} \rightarrow \pi^+ \pi^- X$ "
 $S \text{ Pb} \rightarrow K^+ K^- X$ "
 $S \text{ Pb} \rightarrow p \bar{p} X$ "

Comments A dedicated high precision intensity interferometer measurement for a better understanding of the space-time evolution of the interactions between hadrons and heavy ions.

CERN-NA-045 (Jun 1988) Approved Feb 1989.

STUDY OF ELECTRON PAIR PRODUCTION IN HADRON AND NUCLEAR COLLISIONS AT THE CERN SPS

HEIDELBERG, MAX PLANCK INST - U Faschingbauer,
M G Trauth, J P Wurm
HEIDELBERG U, PHYS INST - A Drees, P Fischer, P Glaessel,
M Guckes, D Irmischer, L H Olsen, A Pfeiffer, H Ries, A Schoen,
H Sickmueller, H J Specht (✓ Spokesperson), T S Ullrich
WEIZMANN INST - E F Barasch, A Breskin, R Chechik,
Z Fraenkel, D Sauvage, V Steiner, I Tseruya
Accelerator CERN-SPS Detector Spectrometer

Reactions
 $p \text{ nucleus} \rightarrow e^+ e^- X$ 60, 200 GeV/c (P_{lab}/N)
 $^{32}\text{S nucleus} \rightarrow e^+ e^- X$ "
Particles studied ρ, ω, ϕ

Comments Studies the e^+e^- pair continuum in the mass range 0.1-3 GeV and the vector mesons. Also can study production of real photons and high- $p_{\perp}$ pions. Uses a magnetic spectrometer based solely on ring-imaging Cherenkov techniques.

CERN-NA-046 (Oct 1988) Approved Apr 1989.

DARMSTADT HUNTING IN THE INTERACTION γ -CRYSTAL

ANNECY - G Bassompierre, J Dufournaud, M Gouanere,
L Massonet, J P Peigneux, D Sillou, M Spighel
LYON, IPN - M A Chevallier (✓ Spokesperson), B Farizon-Mazuy,
M J Gaillard, R Genre, B Ille, R Kirsch
TURIN U & INFN, TURIN - G Bologna, G Bonazzola,
M P Bussa, S Costa, A Feliciello, L Ferrero, R Garfagnini,
P Gianotti
UDINE U & INFN, UDINE - L Santi

Accelerator CERN-SPS Detector Calorimeter, Microstrip
Reactions
 $\gamma \text{ crystal} \rightarrow e^+ e^- X$ 100-150 GeV (E_{lab})

Particles studied Darmstadtton

Comments A search for evidence of the "darmstadtton" at 1.8 MeV mass in the e^+e^- spectrum. In preparation.

CERN-NA-047 (Dec 1988) Approved Apr 1989.

MEASUREMENT OF THE SPIN-DEPENDENT STRUCTURE FUNCTIONS OF THE NEUTRON AND PROTON

SPIN MUON COLLABORATION (SMC)
NIKHEF, AMSTERDAM - J Beaufays, J Ciborowski,
R van Dantzig, M van der Heijden, M de Jong, T J Ketel,
G van Middelkoop
BIELEFELD U - G Baum, F Sever, M Siebler
BUENOS AIRES U - R Piegaja
CERN - T O Niinikoski
DELFT UNIV TECH - H Postma
DUBNA - N Borisov, A Chernikov, G Genchev, I A Golutvin,
M Kadikov, I U T Kiryushin, Yu Kiselev, V Krivokhizhin,
V Kukhtin, T Kukhto, R Lednickiy, V N Lysakov, A Neganov,
B Neganov, S Nemechek, D Peshekhonov, D Pose, A Prokesh,
I Savin, N Shumeiko, A Sidorov, N Skachkov, G Smirnov,
G Sultanov, N I Zamyatin
FREIBURG U - A Bruell, H Engelen, U Landgraf, H E Stier
HOUSTON U - E Hungerford, K Lau, B Mayes, R Phelps,
L Pinsky, J Pyrluk, R Weinstein
UCLA - J Carroll, D Drake, E Gulmez, G Igo, S Trentalange,
C Whitten
MONS U - P Pilette, R Windmolders
NORTHEASTERN U - E von Goeler, J Moromisato, E Saletan
RICE U - D L Adams, B E Bonner, J Buchanan, J Clement,
M D Corcoran, J W Kruk, H E Miettinen, G S Mutchler,
M Ness, F Nessi-Tedaldi, J B Roberts
UPPSALA U - A Arvidson, B Badelek, S Kullander, T Lindqvist
VIRGINIA U - D Day, J Lichtenstadt, R Lindgren, R Marshall,
J McCarthy, B Norum, D Pocanic, R Sealock, S Thornton
WARSAW, INST NUCL STUDIES - J Nasalski, A Sandacz
WARSAW U - E Rondio, L Ropelewski
YALE U - S Dhawan, V W Hughes (Spokesperson),
V Papavasiliou, P Schueler
ZURICH, ETH - P Egun, W Gruebler

Accelerator CERN-SPS Detector EMC

SUMMARIES OF CERN EXPERIMENTS

Reactions Polarized beam and target

$\mu\text{on } p \rightarrow \mu\text{on } X$ 100 GeV (E_{lab})
 $\mu\text{on deut} \rightarrow \mu\text{on } X$ "

Comments Measures the spin-dependent asymmetries A_1 in deep inelastic scattering of longitudinally polarized muons by longitudinally polarized protons and deuterons. It is similar to the EMC polarization experiment. Tests models of the structure of the nucleus. Expected to run in 1991.

CERN-PS-162 (Feb 1978) Approved May 1978, May 1979, Nov 1979, Jan 1980, Mar 1980, Nov 1980; Completed Jul 1982.

STUDY OF THE STRUCTURE OF EXOTIC LIGHT NUCLEI PRODUCED AT THE PS

ORSAY, RENE BERNAS - G Audi, A Coc, M Epherre, P Guimbal, S K T Mark, A C Mueller, M de Saint-Simon, J M Serre, C Thibault (✓ Spokesperson), F Touchard
 ORSA*, AIME COTTON - H T Duong, P Jacquinet, P Juncar, S Liberman, J Pinard, J L Vialle
 ORSAY, IPN - C Detraz, M C Goffri, D Guillemaud, M Langevin, F Naulin, C Zaidins
 BONN U - S Buttgenbach
 CERN - R Klapisch

Accelerator CERN-PS Detector Combination

Reactions

$p \text{ U} \rightarrow \text{nucleus } X$ 20 GeV/c
 $p \text{ Ir} \rightarrow \text{nucleus } X$ "

Comments A further study of an 'island of deformation' around $N = 20$ for $Z = 11$ and 12 (Na and Mg).

Papers PL 94B (1980) 307, JPL 41 (1980) L459, NIM 186 (1981) 87, NIM 186 (1981) 193, NIM 186 (1981) 329, HFI 9 (1981) 127, NP A366 (1981) 449, PL 108B (1982) 169, JdeP 43 (1982) 509, PR C25 (1982) 2756, NP A394 (1983) 378, NP A402 (1983) 301, PL 125B (1983) 116, PL 130B (1983) 251, NP A414 (1984) 151, NP A426 (1984) 37, and HFI 24 (1985) 95. No other papers expected.

CERN-PS-166 Approved Nov 1979; Completed Nov 1982.

SEARCH FOR Σ HYPERNUCLEAR STATES USING THE STRANGENESS EXCHANGE REACTIONS (K^+ , π^-) AND (K^- , π^+)

HEIDELBERG, MAX PLANCK INST - K Braune, W Brueckner (Spokesperson), H Doebbeling, T J Ketel, H Kneis, B Povh, R Ransome, R Szwed, A Thiessen, M Trichel, M Uhrmacher, T Walcher

HEIDELBERG U, PHYS INST - J Ciborowski, R W Frey, A Majewski, T A Shibata
 SACLAY - R Bertini, P Birien, G Bruge, H Catz, A Chameaux, J M Durand, D Garreta, S Janouin, B Mayer, J C Peng, J Saudinos
 CERN - K Kilian

Accelerator CERN-PS Detector Spectrometer

Reactions

$K^- \text{ nucleus} \rightarrow \pi^- X$ 400, 450 MeV/c
 $K^- \text{ nucleus} \rightarrow \pi^+ X$ "

Particles studied hypernuc

Papers PL 136B (1984) 29, and PL (to be published).

CERN-PS-169 (Aug 1980) Approved Oct 1980; Completed Mar 1983.

SEARCH FOR NEUTRINO OSCILLATIONS

CERN - F Dydak, G Feldman, C Guyot, R Hagelberg, H J Meyer, F Ranjard, J R Rothberg, W von Rueden, J Steinberger, H Taureg, H Wachsmuth, H Wahl, J Wotschack (✓ Spokesperson)
 DORTMUND U - H Bluemer, P Buchholz, J Duda, F Eisele, K Kleinknecht, J Knobloch, D Pollmann, B Pszola, B Renk
 HEIDELBERG U, IHEP - R Belusevic, B Falkenburg, T Flottmann, C Geweniger, J G H de Groot, H Keilwerth, K Tittel

SACLAY - P Debu, J P Merlo, A Para, P Perez, B Peyaud, J Rander, J P Schuller, R Turley
 WARSAW, INR - H Abramowicz, J Krolkowski

Accelerator CERN-PS Detector CDHS

Reactions

$\nu_\mu \rightarrow \nu_\mu$ 0.5-3.0 GeV/c

Particles studied ν_μ

Comments Measures the disappearance rate of ν_μ 's between two points at 130 and 885 m from the target, using charged current events as the signature. Two detectors with identical structure are used simultaneously.

Papers PL 134B (1984) 281. No other papers expected.

CERN-PS-170 (Aug 1980) Approved Nov 1980, Feb 1987; Completed Aug 1988.

PRECISION MEASUREMENTS OF THE PROTON ELECTROMAGNETIC FORM FACTORS IN THE TIME-LIKE REGION AND VECTOR MESON SPECTROSCOPY

FERRARA U - R Calabrese, P Dalpiaz (Spokesperson), P F Dalpiaz, F Petrucci, M Savvie
 PADUA U - R Carlin, U Dosselli, F Gasparini, S Limentani, M Posocco, R Strocli, C Voci
 SACLAY - G Bardin, G Burgun, J Derre, J Duclos, J L Faure, M Huet, C Kochowsky, G Marel, N Zekri
 FRASCATI - G Capon
 TURIN U - L Tecchio
 CERN - E Mazzucato

Accelerator CERN-LEAR Detector Ionization chamber

Reactions

$\bar{p} p \rightarrow e^+ e^-$ 0-2 GeV/c
 $\bar{p} p \rightarrow e^+ e^- \text{ neutrals}$ 0 GeV/c

Particles studied v_{meson}^0

Comments The first reaction is for the form factors, the second is for the vector meson ($\rightarrow e^+ e^-$) mass spectrum from 1.0-1.7 GeV.

Papers NIM A259 (1987) 376, PL B182 (1987) 471, and PL B195 (1987) 292.

CERN-PS-171 (Aug 1980) Approved Nov 1980; Completed Jul 1986.

A STUDY OF $\bar{p}p$ INTERACTIONS AT REST IN A H_2 GAS TARGET AT LEAR

ASTERIX COLLABORATION

CERN - R Armenteros, D Bailey, S Barlag, J Butler, U Gastaldi
 MAINZ U, INST PHYS - K D Duch, M Heel, H Kalinowsky, F Kayser, E Klempf (✓ Spokesperson), R Landua, B May, P Weidenauer, M Ziegler
 MUNICH U, EXP PHYS - W Dahme, F Feld, U Schaefer, C Zupancic
 ORSAY, LAL - J C Bizot, B Delcourt, J Jeanjean, H Nguyen, N Prevot
 BRITISH COLUMBIA U - E G Auld, D A Axen, M Comyn, K L Erdman, B Howard, R Howard, G Marshall, B L White
 VICTORIA U - G A Beer, L P Robertson
 VIENNA, INST RADIUMFORSCH, KERNPHYS - M Botlo, C Laa, H Vonach
 ZURICH U - C Amsler, M Doser, J Riedelberger, U Straumann, P Truol
 GENEVA U - C Sabev

Accelerator CERN-LEAR Detector Combination

SUMMARIES OF CERN EXPERIMENTS

Reactions

$\bar{p} p \rightarrow \bar{p} p$ X-ray	0 GeV/c
$\bar{p} p \rightarrow \text{annihil}$	"
$\bar{p} p \rightarrow \pi^+ \pi^-$	"
$\bar{p} p \rightarrow K^+ K^-$	"
$\bar{p} p \rightarrow \text{pions } (\gamma)$	"
$\bar{p} p \rightarrow \pi^+ \pi^- \pi^0$	"
$\bar{p} p \rightarrow \pi^+ \pi^- K^+ K^-$	"
$\bar{p} p \rightarrow \pi^+ \pi^- \eta$	"
$\bar{p} p \rightarrow \pi^+ \pi^- \eta'$	"

Particles studied baryonium, exotic-meson, glueball, $f_1(1420)$

Papers PL 152B (1985) 135, PL 157B (1985) 333, PL B206 (1988) 151, PL B214 (1988) 325, PL B215 (1988) 792, and NP A486 (1988) 493.

CERN-PS-172 (Jul 1980) Approved Nov 1980; Completed Aug 1986.

$\bar{p}p$ TOTAL CROSS SECTIONS AND SPIN EFFECTS IN $\bar{p}p \rightarrow K^+ K^-, \pi^+ \pi^-, \bar{p}p$ ABOVE 200 MeV/c

NIKHEF, AMSTERDAM - K Bos, J Kluyver, R A Kunne, L Linszen
GENEVA U - E Heer, R Hess, C Lechanoine-Leluc, Y Onel, D Rapin
QUEEN MARY COLL - D Bugg (✓ Spokesperson), J Hall, A Hasan

SURREY U - R L Shypit
TRIESTE U & INFN, TRIESTE - R Birsá, F Bradamante, A Martin, A Penzo, P Schiavon, S Dalla Torre, A Villari

Accelerator CERN-LEAR Detector Ionization chamber

Reactions

$\bar{p} p \rightarrow \pi^+ \pi^-$	300-1550 MeV/c
$\bar{p} p \rightarrow K^+ K^-$	"
$\bar{p} p \rightarrow \bar{p} p$	"
$\bar{p} p \rightarrow X$	220-800 MeV/c
$\bar{p} p \rightarrow \text{neutrals}$	"

Particles studied baryonium

Papers PL 146B (1984) 299, PL 155B (1985) 437, NP A469 (1987) 726, PL B194 (1987) 563, NP A487 (1988) 563, and PL B206 (1988) 557.

CERN-PS-173 (Aug 1980) Approved Nov 1980; Completed May 1986.

MEASUREMENT OF $\bar{p}p$ CROSS SECTIONS AT LOW $\bar{p}$ MOMENTA

HEIDELBERG, MAX PLANCK INST - W Bruckner, H Doebbeling, K Dworschak, D von Harrach, S Paul, B Povh, M Treichel

HEIDELBERG U, PHYS INST - M Nomachi, T A Shibata

LAVAL U - B Cujec

MAINZ U, INST KERNPHYS - Th Walcher (✓ Spokesperson)

RUTGERS U - R Ransome

Accelerator CERN-LEAR Detector Combination

Reactions

$\bar{p} p \rightarrow \bar{p} p$	150-600 MeV/c
$\bar{p} p \rightarrow \bar{n} n$	"
$\bar{p} p \rightarrow \text{annihil}$	"
$\bar{p} p \rightarrow X$	"

Particles studied baryonium

Comments A search for baryonium and a measurement of differential cross sections.

Papers PL 158B (1985) 180, PL 166B (1986) 113, PL 169B (1986) 302, PL B197 (1987) 463, NIM A269 (1988) 527, and NP A478 (1988) 623c.

CERN-PS-174 (Aug 1980) Approved Dec 1980; Completed Jul 1986.

PRECISION SURVEY OF X-RAYS FROM $\bar{p}p$ ($\bar{p}d$) ATOMS USING THE INITIAL LEAR BEAM

NIKHEF, AMSTERDAM - E W A Lingeman
BIRMINGHAM U - J D Davies (Spokesperson), J Lowe, J M Nelson, G J Pyle, A Selvarajah, G T A Squier
DELFT UNIV TECH C Van Eijk, R Hollander, D Langerveld, W J C Ock, A Zoutendijk
RUTHERFORD - C A Baker, C J Batty, S Sakamoto
WILLIAM AND MARY COLL - R E Welsh, R Winter

Accelerator CERN-LEAR Detector Photon spectrometer

Reactions

$\bar{p} p \rightarrow \bar{p} p$ X-ray	0 MeV/c
$\bar{p} \text{ deut} \rightarrow \bar{p} \text{ deut}$ X-ray	"

Comments The detector is a Si(Li) crystal.

Papers PL 162B (1985) 71.

CERN-PS-175 (1980) Approved Dec 1980, Jun 1987; Completed Oct 1988.

MEASUREMENT OF THE ANTIPROTONIC LYMAN AND BALMER X-RAYS OF $\bar{p} \text{ H}$ AND $\bar{p} d$ ATOMS AT VERY LOW TARGET PRESSURES

CERN - K Elsener
KERNFORSCHUNGSANLAGE, JULICH - D Gotta
PSI, VILLIGEN - R Bacher, A Badertscher, J Egger, E Morenzoni, L M Simons (Spokesperson)
KERNFORSCHUNGSZENTRUM, KARLSRUHE & KARLSRUHE U - P Bluem, K Heitlinger

Accelerator CERN-LEAR Detector Photon spectrometer

Reactions

$\bar{p} p \rightarrow \bar{p} p$ X-ray	0 GeV/c
$\bar{p} \text{ deut} \rightarrow \bar{p} \text{ deut}$ X-ray	"

Comments The detectors are Si(Li) crystals.

CERN-PS-176 (Aug 1980) Approved Dec 1980; Completed Dec 1985.

STUDY OF X-RAY AND γ -RAY SPECTRA FROM ANTIPROTONIC ATOMS AT THE SLOWLY EXTRACTED $\bar{p}$ BEAM OF LEAR

BASEL U - G Backenstoss, L Tauscher
KERNFORSCHUNGSZENTRUM, KARLSRUHE & KARLSRUHE U - P Bluem, G Bueche, D Gotta, D Hancock, J Hauth, H Koch, T Koehler, H Poth (✓ Spokesperson), D Rohmann

STOCKHOLM, RES INST ATOMIC PHYS - L Adiels,

J Bergstrom, A Nilsson

STRASBOURG, CRN - M Suffert

THESSALONIKI U - S Charalambous, M Chardalas,

G Dedoussis, K Zioutas

CERN - A Kreissl, P Pavlopoulos, D Troester, A Wolf

Accelerator CERN-LEAR Detector Photon spectrometer

Reactions

$\bar{p} \text{ nucleus} \rightarrow \bar{p} \text{ nucleus}$ X-ray	0 MeV/c
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Comments The detectors are Ge and Si(Li) crystals.

Papers PL B176 (1986) 327, NP A466 (1987) 667, ZPHY A325 (1987) 261, ZPHY C37 (1988) 557, ZPHY A329 (1988) 235, and NP A478 (1988) 655c.

CERN-PS-177 (Jul 1980) Approved Dec 1980, Jun 1987; Completed Nov 1988.

STUDY OF THE FISSION DECAY OF HEAVY HYPERNUCLEI

NIKHEF, AMSTERDAM - J Konijn
CEBAF - J Mougey
DARMSTADT, GSI - S Polikanov
GRENOBLE, CEN - M Maurel, E Monnard, P Perrin, C Ristori
GRENOBLE, ILL - J P Bocquet
GRENOBLE U - H Nifenecker
WARSAW U, IEP - T Krogulski
PENN STATE U - T A Armstrong, R A Lewis, J Passaneau, G A Smith
UPPSALA U - G Eriksson, T Johansson, G Tibell

SUMMARIES OF CERN EXPERIMENTS

ORSAY, CSNSM - M Rey-Campagnolle (Spokesperson)

Accelerator CERN-LEAR Detector Ionization chamber

Reactions

$\bar{p}$ nucleus 0 GeV/c

Particles studied hypernuc

Comments Searches for heavy hypernuclei and measures their yields and lifetimes by using the fission mode as a decay signature. The reaction chain is as follows: $\bar{p}$'s stopping in heavy-element targets annihilate and occasionally produce kaons, and a K^+ then occasionally interacts to produce a Λ , which forms a hypernucleus. This was an extension of the original PS-177, running to increase the accuracy of the lifetime measurements and to add a strangeness signature.

Papers PL B182 (1986) 146, and PL B192 (1987) 312.

CERN-PS-178 (Aug 1980) Approved Dec 1980; Completed Aug 1986.

π PRODUCTION AT LEAR

CAGLIARI U - L Cugusi, M P Macciotta, S Marcello, A Masoni, G Puddu, S Serci

PADUA U - M Morandin, R A Ricci, C Voci

TURIN U - T Bressani ($\checkmark$ Spokesperson), G Della Casa, E Chivassava, S Costa, M Gallio, F Iazzi, B Minetti, A Musso

Accelerator CERN-LEAR Detector Calorimeter

Reactions

$\bar{p} p \rightarrow \pi n$ 0.1-0.6 GeV/c

$\pi Fe \rightarrow$ pions X "

$\pi C \rightarrow \bar{p}^{12}Ni$ "

$\pi Al \rightarrow \bar{p} Si$ "

$\pi Cu \rightarrow \bar{p} Zn$ "

$\pi Pb \rightarrow \bar{p} Bi$ "

Comments Studies π production near 0° , with an eye toward future experiments on πp , πn , and πd reactions. Studies the charge-exchange reaction at 0° in nuclei versus the mass number, measures π annihilation in iron versus the π momentum to compare with the analogous $\bar{p}$ reaction, and measures the charged-pion multiplicity distribution in the annihilation at low energy

Papers IEEE TNS 32 (1985) 733, IEEE TNS 33 (1986) 374, EPL 2 (1986) 587, NIM A270 (1988) 354, and EPL 7 (1988) 13.

CERN-PS-179 (Aug 1980) Approved Dec 1980; Completed Jul 1986.

STUDY OF THE INTERACTION OF LOW-ENERGY ANTIPROTONS WITH 2H , 3He , 4He , AND Ne NUCLEI USING A STREAMER CHAMBER IN A MAGNETIC FIELD

BERGEN U - A Haastuft, A Halsteinslid, K Myklebost, J M Olsen

BRESCIA U - E Lodi Rizzini

DUBNA - Y A Batusov, S A Bunyatov, I V Falomkin,

G B Pontecorvo, M G Sapozhnikov

FRASCATI - C Guaraldo, A Maggiora

OSLO U - F O Breivik, T Jacobsen, S O Sorensen

PADUA U - L Peruzzo, G Sartori, M Vascon

PAVIA U - G Bendiscioli, G Fumagalli, C Marciano, A Rotondi,

A Zenoni

TURIN U - F Balestra, S Bossolasco, M P Bussa, L Busso,

L Ferrero, R Garfagnini, A Grasso, D Panzieri, G Piragino

($\checkmark$ Spokesperson), F Tosello

Accelerator CERN-LEAR Detector Streamer chamber

Reactions

$\bar{p} p$ 0-200 MeV/c

$\bar{p} deut$ "

$\bar{p} ^3He$ "

$\bar{p} He$ 0-600 MeV/c

$\bar{p} Ne$ "

Papers NIM 188 (1981) 69, RNC 5 (1982) NO. 10, LNC 38

(1983) 83, LNC 38 (1983) 211, NC 79A (1984) 193, NIM 222

(1984) 524, LNC 41 (1984) 223, PL 149B (1984) 69, NIM 234A (1985) 30, PL 165B (1985) 265, NP A452 (1986) 573, EPL 2 (1986) 115, PL B194 (1987) 192, PL B194 (1987) 343, NIM A257 (1987) 114, NP A465 (1987) 714, NP A469 (1987) 669, NP A474 (1987) 651, NC A100 (1988) 323, PL B217 (1989) 43, NP A491 (1989) 541, and NP A491 (1989) 572.

CERN-PS-180 (Oct 1980) Approved Mar 1981; Completed Aug 1984.

SEARCH FOR NEUTRINO OSCILLATIONS AT CERN PS USING BEBC

ATHENS U - A Apostolakis, P Ioannou, P Kostarakis,

C Kourkoumelis, P Pramatiotis, L K Resvanis

PADUA U - M Baldo-Ceolin (Spokesperson), F Bobisut,

E Calimani, S Ciampolillo, H Huzita, M Loreti, G Miari,

G Puglierin, A Sconza

PISA U & INFN, PISA - C Angelini, A Baldini, L Bertanza,

A Bigli, R Fausti, E Flamini, R Pazzi, C Petri, G Saitta

WISCONSIN U - U Camerini, W Fry, R Loveless, R March,

M Procaro, D D Reeder

CERN - S Katsanevas

Accelerator CERN-PS Detector HLBC-BEBC

Reactions

ν_μ nucleus $\rightarrow \mu^- X$ 0.5-3.0 GeV/c

ν_e nucleus $\rightarrow e^- X$ "

Particles studied ν_e, ν_μ, ν_τ

Papers PL B179 (1986) 307

CERN-PS-181 (Feb 1981) Approved Mar 1981; Completed Mar 1983.

CONTRIBUTION OF THE CHARM COLLABORATION TO THE CERN NEUTRINO OSCILLATION PROGRAM

CHARM COLLABORATION

NIKHEF, AMSTERDAM - J Dorenbosch, C Nieuwenhuis

CERN - J V Allaby, U Amaldi, F Bergsma, A Capone, W Flegel,

L Lanceri, M Metcalf, J Panman, C Santoni, K Winter

($\checkmark$ Spokesperson)

HAMBURG U - I Abt, J Aspiazu, F W Busser, H Daumann,

P D Gali, F Niebergall, P Schutt, P Stahelin

MOSCOW, ITEP - E Grigoriev, V Kaftanov, V Khovansky,

A Rosanov

INFN, ROME - G Barbiellini, A Baroncelli, L Barone, B Borgia,

C Bosio, M Diemoz, U Dore, F Ferroni, E Longo, L Luminari,

P Monacelli, F de Notaristefani, L Tortora, V Valente

Accelerator CERN-PS Detector CHARM

Reactions

ν_μ nucleus $\rightarrow \mu^- X$ 0.5-1.5 GeV/c

Particles studied ν_μ

Comments Consists of two detectors, one at 150 m, the other at 880 m, from the target.

Papers PL 142B (1984) 103, and ZPHY C40 (1988) 171.

CERN-PS-182 (Jan 1981) Approved May 1981; Completed Jul 1986.

INVESTIGATIONS ON BARYONIUM AND OTHER RARE $\bar{p}p$ ANNIHILATION MODES USING HIGH-RESOLUTION π^0 SPECTROMETERS

BASEL U - G Backenstoss, M Hugi, U Mall, R Rickenbach,

A Schopper, L Tauscher ($\checkmark$ Spokesperson)

CERN - P Pavlopoulos, D Troester

STOCKHOLM, RES INST ATOMIC PHYS - L Adiels,

I Bergstrom, A Kerek

THESSALONIKI U - S Charalambous, D Hadjifotiadiou, K Pa-

pastefanou, K Zioutas

Accelerator CERN-LEAR Detector Spectrometer

Reactions

$\bar{p} p \rightarrow \pi^0 X$ 0 GeV/c

$\bar{p} p \rightarrow \eta X$ "

$\bar{p} p \rightarrow \gamma X$ "

SUMMARIES OF CERN EXPERIMENTS

Particles studied baryonium, meson⁰

Comments Measures inclusive spectra of π^0 's and η 's to search for new mesons. Uses high-resolution γ detectors, as well as scintillators for charged particles.

Papers NIM A244 (1986) 380, PL B182 (1986) 405, ZPHY C35 (1987) 15, and ZPHY C42 (1989) 49.

CERN-PS-183 (Aug 1980) Approved May 1981; Completed Aug 1986.

SEARCH FOR BOUND $N\bar{N}$ STATES USING A PRECISION γ AND CHARGED-PION SPECTROMETER AT LEAR

ATHENS U - A Angelopoulos, A Apostolakis, P Papailias, H Rozaki, L Sakelliou, M Spyropoulou-Stassinaki
UC, IRVINE - M Fero, M Y Gee, N Graf, M A Mandelkern, R Ray, J Schultz, T Usher
KERNFORSCHUNGSZENTRUM, KARLSRUHE & KARLSRUHE U - G Bueche, H Koch, W Rohrbach, D Walther
PENN STATE U - T A Armstrong, R A Lewis, S M Playfer, G A Smith ($\checkmark$ Spokesperson), M Soulliere
NEW MEXICO U - B Bassalleck, N Komninos, D M Wolfe

Accelerator CERN-LEAR Detector Spectrometer

Reactions

$\bar{p} p \rightarrow \gamma X$	0 GeV/c
$\bar{p} p \rightarrow \pi^+ X$	"
$\bar{p} p \rightarrow \pi^- X$	"
$\bar{p} p \rightarrow K^+ X$	"
$\bar{p} p \rightarrow K^- X$	"
$\bar{p} p \rightarrow \text{annihil}$	0-300 MeV/c

Particles studied baryonium, meson

Comments Continues studies of BNL-708.

Papers PL 159B (1985) 210, PL B178 (1986) 441, PL B205 (1988) 590, PL B212 (1988) 129, and ZPHY A331 (1988) 519.

CERN-PS-184 (Dec 1980) Approved May 1981; Completed Dec 1985.

STUDY OF $\bar{p}$ -NUCLEUS INTERACTION WITH A HIGH RESOLUTION MAGNETIC SPECTROMETER

GRENOBLE, CEN - M Berrada, J P Bocquet, E Monnard, J Mougey, P Perrin
SACLAY - P Birien, G Bruge, H Catz, A Chaumeaux, D Drake, D Garreta ($\checkmark$ Spokesperson), S Janouin, D Legendre, M C Mallet-Lemaire, B Mayer, J Pain, J C Peng, F Perrot
STRASBOURG, CRN - E Aalanas, O Bing
TEL AVIV U - J Lichtenstadt, A I Yavin

Accelerator CERN-LEAR Detector Spectrometer

Reactions

$\bar{p} \text{ nucleus} \rightarrow \bar{p} \text{ nucleus}$	300-600 MeV/c
$\bar{p} \text{ nucleus} \rightarrow p X$	"

Comments The nuclear targets are ^2H , ^6Li , ^{12}C , ^{16}O , ^{18}O , ^{40}Ca , ^{63}Cu , ^{209}Bi , and ^{208}Pb .

Papers PL 135B (1984) 266, PL 149B (1984) 64, PL 150B (1985) 95, PR C32 (1985) 1096, NP A451 (1986) 541, PL 169B (1986) 14, NP A456 (1986) 557, NP A470 (1987) 445, and PR C37 (1988) 1345.

CERN-PS-185 (Aug 1981) Approved Oct 1981, Feb 1987.

STUDY OF THRESHOLD PRODUCTION OF $\bar{p}p \rightarrow \bar{Y}\gamma$ AT LEAR

CARNEGIE MELLON U - P D Barnes, G Diebold, G Franklin, C Maher, B Quinn, R Schumacher, J Seydoux
KERNFORSCHUNGSANLAGE, JULICH - R Von Frankenberg
K Kilian ($\checkmark$ Spokesperson), W Oelert, G Sehl
ERLANGEN U - W Eyrych, R Geyer, A Hofmann, R Kraft, F Stinzinger
FREIBURG U - P Birien, W Dutty, H Fischer, J Franz, N Hamann, E Roessle, H Schliedermann, H Schmitt

ILLINOIS U, URBANA - R A Eisenstein, D Hertzog, R Tayloe
RICE U - B Bonner
UPPSALA U - G Ericsson, T Johansson, S Ohlsson
VIENNA, INST RADUMFORSCH, KERNPHTS - W Breunlich, N Naeglele

Accelerator CERN-LEAR Detector Ionization chamber

Reactions

$\bar{p} p \rightarrow \bar{\Lambda} \Lambda$	1.2-2.0 GeV/c
$\bar{p} p \rightarrow \bar{\Lambda} \Sigma^0$	"
$\bar{p} p \rightarrow \bar{\Sigma}^- \Sigma^+$	"
$\bar{p} p \rightarrow \bar{\Sigma}^+ \Sigma^-$	"
$\bar{p} p \rightarrow K_S^0 K_S^0$	"

Particles studied baryonium, $X(2220)$

Comments Measures cross sections, polarizations, and spin correlations. Emphasis is on the $\bar{\Lambda}\Lambda$ channel. Investigates the $\gamma\gamma$ final-state interaction and decays and compares Λ and $\bar{\Lambda}$ decay asymmetries and lifetimes. Taking data.

Papers PL B189 (1987) 249, and PL B199 (1987) 147.

CERN-PS-186 (Aug 1980) Approved Oct 1981; Completed Jul 1986.

NUCLEAR EXCITATIONS BY ANTIPROTONS AND ANTIPROTONIC ATOMS

MUNICH, TECH U - H Daniel, T von Egidy ($\checkmark$ Spokesperson), H Hagn, F J Hartmann, W Kanert, E Moser, H Plendl, G Schmidt
MISSISSIPPI U - J J Reidy
KERNFORSCHUNGSANLAGE, JULICH - H Machner, G Riepe

Accelerator CERN-LEAR Detector Photon spectrometer

Reactions

$\bar{p} \text{ nucleus} \rightarrow \gamma \text{ charged } X$	0 GeV/c
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Comments Uses Ge and Si(Li) γ spectrometers, and Ge and Si telescopes for charged particles. Studies antiprotonic atoms, especially the E2 resonance effect. Measures charged-particle emission after $\bar{p}$ annihilation in nuclei from C to U. Determines the distribution of residual nuclei after $\bar{p}$ annihilation in ^{92}Mo , ^{95}Mo , ^{98}Mo , ^{136}Ba , ^{165}Ho , and ^{238}U .

Papers PRL 56 (1986) 2368, PL B176 (1986) 327, PL B179 (1986) 25, ZPHY A325 (1986) 261, ZPHY A326 (1987) 523, Nature 328 (1987) 773, NP A466 (1987) 667, ZPHY A329 (1988) 235, ZPHY C37 (1988) 557, and NP A485 (1988) 445.

CERN-PS-187 (May 1981, Sep 1981) Approved Oct 1981; Completed Jun 1984.

A GOOD STATISTICS STUDY OF $\bar{p}$ INTERACTIONS WITH NUCLEI

LOS ALAMOS - M Clover, R DeVries, N DiGiacomo ($\checkmark$ Spokesperson), J Kapustinsky, P McGaughey, W Sondheim, J Sunier
GRENOBLE U - M Buenerd, J Chauvin, D Lebrun, P Martin, P De Saintigon

Accelerator CERN-LEAR Detector Spectrometer

Reactions

$\bar{p} \text{ nucleus} \rightarrow \text{annihil}$	600 MeV/c
$\bar{p} \text{ nucleus} \rightarrow p \text{ nucleus}$	"

Comments Measures the overall characteristics of $\bar{p}$ annihilations in nuclei. Studies inclusive and multiparticle correlation yields for π , K , p , d , ... ejectiles. Also searches for $\bar{p}$ -nucleus bound or resonant states using the $A(\bar{p}, p)A^*$ reaction.

Papers NIM A249 (1986) 361, and PRL 56 (1986) 2156.

CERN-PS-188 (Oct 1981) Approved Dec 1981; Completed Aug 1985.

MEASUREMENTS OF CHANNELING RADIATION AND ITS POLARIZATION, X-RAY EXCITATION, TOGETHER WITH DEVIATIONS FROM LANDAU DISTRIBUTIONS

SUMMARIES OF CERN EXPERIMENTS

AARHUS U - J Bak, J A Ellison, F Meyer, S P Moller, K Ostergaard, J Pedersen, R Stensgaard, E Uggerhøj
(✓ Spokesperson)

CERN - A Sorensen

STRASBOURG, CRN - R Regali, P Siffert, M Siffert

Accelerator CERN-PS Detector Ionization chamber

Reactions

e^+ crystal	1-10 GeV/c
e^- crystal	"
p crystal	"
π^+ crystal	"
π^- crystal	"

Comments Continues studies of experiments PS-164 and WA-064.

Papers PL 110B (1982) 162, PL 112B (1982) 83, PRL 51 (1983) 1163, NP B242 (1984) 1, NP B254 (1985) 491, PS 33 (1986) 147, CAMP 17 (1986) 285, PS 33 (1986) 147, PR A36 (1987) 3125, NP B288 (1987) 681, and NP B302 (1988) 525.

CERN-PS-189 (Nov 1981) Approved Feb 1983.

HIGH PRECISION MASS MEASUREMENTS WITH A RADIOFREQUENCY MASS SPECTROMETER — APPLICATION TO THE MEASUREMENT OF THE $p\bar{p}$ MASS DIFFERENCE

CERN - E Haebel, H Herr, R Klapisch, G Lebee, G Petrucci, M de Saint-Simon, G Stefanini
ORSAY, CSNSM - A Coc, R Le Gac, C Thibault
(✓ Spokesperson), F Touchard

Accelerator CERN-LEAR Detector Spectrometer

Reactions

$\bar{p}$ 20 MeV/c

Particles studied $\bar{p}$

Comments Uses a radiofrequency spectrometer. The $\bar{p}$ mass is compared with that of the H^- ion in order to check the CPT theorem. In preparation.

Papers NIM A271 (1988) 512.

CERN-PS-191 (Feb 1983) Approved Mar 1983; Completed Aug 1984.

SEARCH FOR DECAYS OF HEAVY NEUTRINOS WITH THE PS BEAM

DEMOCRITOS NUCLEAR RESEARCH CENTER - M Dris, D Lukas

CERN - M Ferro-Luzzi, J M Perreau, Ch Peyrou
PARIS, CURIE UNIV VI - G Bernardi, J M Levy, Y Pons, M Rivoal, F Vannucci (✓ Spokesperson)

ROME U - F Di Carlo, G Carugno
COLLEGE DE FRANCE - J Chauveau

Accelerator CERN-PS Detector Calorimeter

Reactions

ν	0-5 GeV/c
$\bar{\nu}$	"

Particles studied $\nu, \bar{\nu}$

Comments Aims to detect an e^+e^- or $\gamma\gamma$ pair originating from a point in an empty volume exposed to a flux of neutrinos.

Papers PL 166B (1986) 479, PL B181 (1986) 173, and PL B203 (1988) 332. No other papers expected.

CERN-PS-192 (Mar 1983) Approved Mar 1983; Completed Aug 1983.

STUDY OF THE ENERGY DEPENDENCE OF THE ANOMALOUS MEAN FREE PATH EFFECT BY MEANS OF HIGH-ENERGY (> 12 GeV/NUCLEON) HELIUM NUCLEI

LBL - E M Friedlander (Spokesperson), H H Heckman, Y J Karant

FRANKFURT U - B Baican, H G Baumgardt, E Schopper
MARBURG U - R Beckmann, R Brandt, G Dersch, H Mollzahn, R M Weiner

Accelerator CERN-PS Detector Combination

Reactions

He nucleus > 45 GeV/c

Particles studied anomalon

Comments Effects detected in emulsion, in AgCl crystals, and by radiochemical methods.

CERN-PS-194 (Nov 1952) Approved Nov 1984; Completed Jul 1986.

MEASUREMENTS OF THE RATIO BETWEEN DOUBLE AND SINGLE IONIZATION OF HELIUM FOR ANTI-PROTONS

AARHUS U - J Bak, P Hvelplund, H Knudsen, E Uggerhøj
(✓ Spokesperson)

CERN - S P Moller, A H Sorensen
STOCKHOLM, RES INST ATOMIC PHYS - G Astner, I Bergstrom, L Liljebj

Accelerator CERN-LEAR Detector Spectrometer

Reactions

$\bar{p}$ He 0.5-4 MeV (T_{lab})

Comments See also CERN-PS-194/2.

Papers PRL 57 (1986) 2147, and PR A36 (1987) 3612.

CERN-PS-194-2 (1986) Approved Feb 1987.

NEW MEASUREMENTS OF p -ATOM COLLISIONS: IONIZATION, dE/dx , X-RAYS, AND CHANNELLING

AARHUS U - L H Andersen, P Hvelplund, H Knudsen, S P Moller, E Uggerhøj (✓ Spokesperson)

CERN - K Elsener
PSI, VILLIGEN - E Morenzoni
STOCKHOLM, RES INST ATOMIC PHYS - K G Rensfelt

Accelerator CERN-LEAR Detector Counter

Reactions

$\bar{p}$ He	30, 200 MeV/c
$\bar{p}$ nucleus	"
$\bar{p}$ crystal	"

Comments Investigates (1) the double ionization of helium by antiprotons, (2) the Barkas effect (different dE/dx for particle and antiparticle with the same speed), (3) K-shell excitation by antiprotons, and (4) channeling of MeV antiprotons by crystals. Taking data.

CERN-PS-195 (Jan 1985) Approved Sep 1985.

TEST OF CP VIOLATION WITH $\bar{K}^0$ AND K^0 AT LEAR

ATHENS U - A Angelopoulos, A Apostolakis, E Rozaki, L Sakelidou, K Sarigiannis

BASEL U - G Backenstoss, C Felder, H Krause, U Mall, R Ricklenbach, O Sacker, C Santoni, L Tauscher, D Trostler
BOSTON U - E K McIntyre, J Miller, W Van Riper, B L Roberts, D Warr

CERN - P Bloch, P Dechelette, G Fesuella, M Fidecaro, C Fuglesang, D Grun, W G Heyes, C Jacobs, G Kesseler, C Marin, C Millerin, F Montanet, F Nanni, A Osborne, P Pavlopoulos (✓ Spokesperson), A Schopper, E Watson, H Wendler

COIMBRA U - J Carvalho, J Pinto da Cunha, R Ferreira-Marques, E Machado, A Onofre, A Policarpo
DELFT UNIV TECH - C W E Van Eijk, R W Hollander, H Postma, M Van den Putte
FRIBOURG U - J C Dousse, H U Johner, J Kern, C Rheme, L Schaller

JOANNINA U - P Kokkas, F Triantis
LIVERPOOL U - C Bee, M Dodgson, J R Fry, E Gabathuler, P F Harrison, P Hayman, L Sachs, P M Sanders
LJUBLJANA U - M Mikuz, D Zavrtanik

SUMMARIES OF CERN EXPERIMENTS

MARSEILLE, CPP - E Aslames, A Calzas, B Dinkespieler, P Fastnacht, T Gerdis
PSI, VILLIGEN - A Dijkman, P Kettle, K Kontek, T Nakada
SACLAY - A Barakat, J P Bard, G Burgun, M De Jardin, J Derre, J L Faure, G Francinet, D Garreta, C Guyot, C Kochowski, F Louis, G Marel, J C Michau, J Tartas
STOCKHOLM, RES INST ATOMIC PHYS - L Adiels, P Carlson, D Francis, T Francke, K Gronvik, K Jansson, K Jon-and, A Kerek
THESSALONIKI U - M Chaldaras, S Charalambous, D Damianoglou, S Dedousis, C Touramanis
ZURICH, ETH - C Bula, M Droeger, W Fetscher, H J Gerber, P Grumplinger, C Witzig

Accelerator CERN-LEAR Detector Spectrometer, Calorimeter

Reactions

$\bar{p} p \rightarrow K^0 X$ 0 GeV, c

$\bar{p} p \rightarrow \bar{K}^0 X$ "

Particles studied $K^0, \bar{K}^0$

Comments In preparation.

CERN-PS-196 (Mar 1985) Approved Nov 1985.

PRECISION COMPARISON OF $\bar{p}$ AND p MASSES IN A PENNING TRAP

FERMILAB - W Kelis
HARVARD U - G Gabrielse (✓ Spokesperson), L Orozco, R Tjoekler, Fei Xiang

MAINZ U, INST PHYS - J Haas, H Kalinowsky
WASHINGTON U, SEATTLE - T A Trainor

Accelerator CERN-LEAR Detector Other

Reactions

$\bar{p}$ 0.0005 eV (T_{lab})

Particles studied $\bar{p}, p$

Comments Aims to compare p and $\bar{p}$ masses to an accuracy of one part in 10^9 within the small volume of an ion trap. Antiprotons have been trapped below 3 keV. Electron cooling from keV to < 1 eV has been observed in a trap.

Papers PRL 57 (1986) 2504, RSI 58 (1987) 2197, PL A129 (1988) 38, and PR A (in press).

CERN-PS-197 (Oct 1985) Approved Apr 1986.

THE CRYSTAL BARREL: MESON SPECTROSCOPY AT LEAR WITH A 4π NEUTRAL AND CHARGED DETECTOR

CERN - S Keh, H Koch (✓ Spokesperson), U Meyer-Berkhout, L Montanet, J Zoll
HAMBURG U - R Beckmann, F H Heinsius, T Kiel, B Lewendel, C Pegel, U Strohbuch

KARLSRUHE U - P Bluem, S Cierjacks, D Engelhardt, M Kunze, H Matthae, W Rohrbach, W Schott, C Sutton, D Walther, N Winter

LBL - J Bistirlich, R Bossingham, H Bossy, K M Crowe, A Miller
QUEEN MARY COLL - D V Bugg, A Sanjari
MAINZ U, INST PHYS - J Beden, H Kalinowsky, E Klemp, M Merkel, K Peters, G Reifenoether, R Weidenauer, U Wiedner
MUNICH U, EXP PHYS - P Birien, K Braune, M Faessler, G Folger, D Jannik, K Koenigsmann, A Staud, C Zupancic
RUTHERFORD - C A Baker, C J Batty, N Hessey
STRASBOURG, CRN M Suffert

UCLA - R P Haddock

ZURICH U - E Aker, C Amsler, C A Meyer, B Schmid

Accelerator CERN-LEAR Detector CRYST-BARREL

Reactions

$\bar{p} p \rightarrow \text{annihil}$ 0-2000 MeV, c

Particles studied glueball, meson

Comments High detection efficiency for both neutral and charged particles at nearly all angles means nearly all annihilation channels are accessible. In preparation.

CERN-PS-198 (Oct 1985) Approved Apr 1986, Completed May 1988.

MEASUREMENT OF SPIN-DEPENDENT OBSERVABLES IN $\bar{p}N$ ELASTIC SCATTERING FROM 300 TO 700 MeV/c

CERN - R Bertini (✓ Spokesperson), F Perrot
KERNFORSCHUNGSZENTRUM, KARLSRUHE & KARLSRUHE U - E Boschitz, W Gyles, W List, R Olszewski, C R Ottermann, T Tacik, M Wessler

LYON, IPN - E Descroix, J Y Grossiord, A Guichard
PSI, VILLIGEN - B Van den Brandt, D R Gill, J Konter, S Mango, G D Wait

SACLAY - J Arvieux, H Catz, A Chameaux, J C Faivre, Y T-rien, E Vercellin, J Yonnet

Accelerator CERN-LEAR Detector Spectrometer, SPES-II

Reactions Polarized target

$\bar{p} p \rightarrow \bar{n} p$ 300-700 MeV/c

$\bar{p} \text{ deut} \rightarrow \bar{p} \text{ deut}$ "

CERN-PS-199 (Nov 1985) Approved Apr 1986.

STUDY OF THE SPIN STRUCTURE OF THE $\bar{p} p \rightarrow \bar{n} n$ CHANNEL AT LEAR

CAGLIARI U - M P Maciotta, A Masoni, G Puddu, S Serici
CERN - F Perrot

GENEVA U - A Ahmidouch, E Heer, R Hess, R A Kunne, C Lechanoine-Leluc, D Rapin

SACLAY - J Arvieux, R Bertini, H Catz, J C Faivre
TRIESTE U & INFN, TRIESTE - R Birs, F Bradamante

(Spokesperson), M Giorgi, A Martin, A Penzo, P Schiavon, F Tessarotto, S Dalla Torre, A Villari, A M Zanetti

TURIN POLYTECHNIC & INFN, TURIN - M Agnello, F Iazzi, B Minetti

TURIN U & INFN, TURIN - T Bressani, E Chiavassa, M Gallo, N De Marco, A Musso, A Piccotti

Accelerator CERN-LEAR Detector Counter

Reactions Polarized target

$\bar{p} p \rightarrow \bar{n} n$ 500-1500 MeV/c

Particles studied meson

Comments Measures over the whole angular range the polarization parameter P and the polarization transfer parameter D in 100 MeV/c steps. Searches for resonances in the s channel. Uses a frozen-spin polarized target. In preparation.

CERN-PS-200 (Jan 1986) Approved Apr 1986.

A MEASUREMENT OF THE GRAVITATIONAL ACCELERATION OF THE ANTIPROTON

CERN - J Eades, K Elsener, P Lefevre, M Weiss
GENOA U - V Lagomarsino, G Manuzio, G Testera
LOS ALAMOS - R E Brown, J Camp, P Dyer-Robertson, T Goldman, D B Holtkamp, M H Holzschelter, R J Hughes, M V Hynes (Spokesperson), N Jarmie, N S King, J Moss, M M Nieto

NASA, AMES - F C Witteborn

PISA U - N Beverini, L Bracci, R Poggiani, G Torelli

RICE U - B E Bonner

TEXAS A AND M - D A Church, R A Kenefick

UDINE U & INFN, UDINE - A De Angelis, F Scuri, F Waldner

Accelerator CERN-LEAR Detector Other

Reactions

$\bar{p}$ "

Comments Measures time of flight of ultra-low-velocity $\bar{p}$'s up a vertical drift tube. In preparation.

CERN-PS-201 (Jan 1986) Approved Sep 1986.

STUDY OF ANTINUCLEON ANNIHILATIONS AT LEAR WITH OBELIX, A LARGE-ACCEPTANCE AND HIGH-RESOLUTION DETECTOR, BASED ON THE OPEN AXIAL FIELD SPECTROMETER

OBELIX COLLABORATION

SUMMARIES OF CERN EXPERIMENTS

BOLOGNA U & INFN, BOLOGNA - A Bertin, M Bruschi, M Capponi, S De Castro, V Marconi, L Massa, M Morganti, M Piccinini, M Poli, N Semprini-Cesari, A Vitale, A Zoccoli
 BRESCIA U - E Lodi Rizzini
 CAGLIARI U - L Cugusi, M P Macciotta, S Marcello, A Masoni, G Puddu, S Serci
 CERN - J Butler, U Gastaldi (Spokesperson), R Landua, M de Saint Simon
 FRASCATI - B Dulack, C Guaraldo, A Maggiora, F Sgammma
 GENEVA U - C Sabev
 DUBNA - Yu Batusov, S A Bunyatov, I V Falomkin, F Nichitui, G B Pontecorvo, M G Sapozhnikov
 LEGNARO - P Boccaccio, R Cherubini, F Gramegna, G Maron, G Moschini, R A Ricci, L Vannucci
 ORSAY, RESE BERNAS - A Coc, R Le Gac, M Rey, Campagnolle, C Thibault, F Touchard
 PADUA U - M Morando, L Peruzzo, G Sartori
 PAVIA U - P Salvini, G Bendiscioli, V Filippini, C Marciano, A Rotondi, P Salvini, A Zenoni
 TRIESTE U - G Margagliotti, G Pauli
 TURIN U - F Balestra, G C Bonazzola, S Bossolasco, T Bressani, M P Bussa, L Busso, S Costa, D D'Isip, L Fava, A Feliciello, L Ferrero, R Garfagnini, A Grasso, D Panzieri, G Piragino, B Tencone, F Tosello, V Tricomi, B Zosi
 TURIN POLYTECHNIC - M Agnello, D Calvo, F Iazzi, B Minetti
 UDINE U - L Santi

Accelerator CERN-LEAR Detector Spectrometer

Reactions

$\bar{p} p \rightarrow$ annihl	0-1.8 GeV/c
$\bar{p} \text{ deut} \rightarrow$ annihl	"
$\bar{p} \text{ nucleus} \rightarrow$ annihl	"
$\bar{n} p \rightarrow$ annihl	"
$\bar{n} \text{ deut} \rightarrow$ annihl	"

Comments Studies (1) spectroscopy of $q\bar{q}$, exotic, glueball, and hybrid mesons, (2) dynamics of NN interactions, (3) strong-interaction effects on $p\bar{p}$ atoms, (4) quark-gluon aspects of nuclear matter, (5) possible highly excited states of nuclear matter, and (6) $\bar{p}$ annihilations with two nucleons. In preparation.

Papers NIM A252 (1986) 321, and PL B215 (1988) 247.

CERN-PS-202 (1986) Approved Feb 1987.

JETSET: PHYSICS AT LEAR WITH AN INTERNAL GAS JET TARGET AND AN ADVANCED GENERAL PURPOSE DETECTOR

CERN - R K Bock, E Chesi, R Dobinson, T Fearnley, M Ferro-Luzzi, R Haefield, D Jeffery, B Mouellic, G Muratori, J M Perreau, M J Price
 FREIBURG U - P Birien, J Franz, N Hamann, A Klett, E Roessle, H Schmitt
 GENOA U & INFN, GENOA - D Bassi, A Buzzo, K Kirsebom, M Macri, M Marinelli, P Martinengo, L Matterna, B Osculati, M G Pia, A Santroni, S Terreni
 ILLINOIS U, URBANA - P Debevec, R A Eisenstein ($\checkmark$ Spokesperson), M Graham, D Hertzog, S Hughes, P Reimer, R Taylor
 KERNFORSCHUNGSANLAGE, JULICH - T Anderl, R von Frankenberg, K Kilian, W Oelert
 OSLO U - A Lundby, B Stugu
 UPPSALA U - A Johansson, T Johansson, S Ohlsson

Accelerator CERN-LEAR Detector JETSET

Reactions

$\bar{p} p \rightarrow \phi \phi$	0.6-1.9 GeV/c
$\bar{p} p \rightarrow K^+ K^- K^+ K^-$	"
$\bar{p} p \rightarrow K_S K_S$	"

Particles studied glueball

Comments Uses an internal gas-jet target surrounded by an advanced, compact general-purpose detector. Initial aim is a search for glueballs (gg or $g\bar{g}$) and hybrids ($gq\bar{q}$) over the mass range 0.6 to 1.9 GeV. In preparation.

CERN-PS-203 (Jan 1988) Approved Apr 1988.

ANTIPROTON INDUCED FISSION AND FRAGMENTATION OF NUCLEI

BOONN U - P David
 FLORIDA STATE U - E P Gavathas, H S Plendl
 KERNFORSCHUNGSANLAGE, JULICH - H Machner, G Riepe
 MUNICH, TECH U - H Daniel, T von Egidy ($\checkmark$ Spokesperson), F J Hartmann, P Hofmann, Y S Kim, E F Moser
 MISSISSIPPI U - J J Reidy
 VIRGINIA U - K Ziolk

Accelerator CERN-LEAR Detector Semiconductor

Reactions

$\bar{p}$ nucleus 0 GeV/c

Comments Studies fission and fragmentation processes induced by the large, highly localized deposition of energy when an antiproton annihilates with a nucleus. Taking data.

CERN-PS-204 (Nov 1987) Approved Jun 1989.

MEASUREMENTS OF WAKE-RIDING ELECTRONS IN ANTIPROTON-CARBON-FOIL COLLISIONS

TOKYO INST TECH - F Fujimoto, K Kuroki, Y Yamazaki (Spokesperson)

AARHUS U - L H Anderson, P Hvelplund, H Knudsen, S P Moller, E Uggerhoj
 CERN - K Elsener

Accelerator CERN-LEAR Detector Counter

Reactions

$\bar{p}$ C 100 MeV/c

Comments The target is a carbon foil. A charged particle passing through a dielectric produces an oscillating wake. The experiment searches for electrons riding the moving wake. It also measures the number distribution of multiply emitted secondary electrons.

CERN-R-110 (1979) Approved Mar 1979; Completed Dec 1983.

STUDY OF HIGH MASS ELECTRON PAIRS AND HIGH p_t PHENOMENA

BROOKHAVEN - C Chasman, P Hausteim, J Olness, M Tanaka, M J Tannenbaum, P Thieberger
 CERN - H J Besch, L Carnillieri ($\checkmark$ Spokesperson), P T Cox, Ch von Gargen, C Grosso-Pilcher, C Newman-Holmes
 OXFORD U - A L S Angelis, R Nickerson, N Phinney, K J Powell, A M Segar, J M Yelton
 ROCKEFELLER U - R Breedon, T J Chapin, R L Cool, D S Hanna, J T Linnemann, S H Pordes, R W Rusack
 MICHIGAN STATE U - B M Humphries, B G Pope, C W Salgado, S Stampke
 FRASCATI - G Basini

Accelerator CERN-ISR Detector Spectrometer

Reactions

$p p \rightarrow$ neutrals X	30-62 GeV (Ecm)
$p p \rightarrow e^+ e^- X$	"
$p p \rightarrow \pi^0 X$	"
$p p \rightarrow e^+ e^- \gamma X$	"
$p p \rightarrow \gamma(s) X$	"
$\bar{p} p$	"
$p \text{ He}$	"
He He	"

Comments Uses modified apparatus of and extends studies of CERN-R-108. The listed final states are also studied in the $p\bar{p}$, $p\text{-He}$, and He-He reactions.

Papers PL 116B (1982) 379, 1 L 118B (1982) 217, PL 126B (1983) 132, PL 141B (1984) 140, NP B244 (1984) 1, PL 147B (1984) 472, PL 147B (1984) 477, PL 168B (1986) 158, NP B263 (1986) 228, PL B185 (1987) 213, and NP B363 (1988) 569.

SUMMARIES OF CERN EXPERIMENTS

Comments Studies elastic, total, and topological cross sections, inclusive spectra, and 2-body correlations.

Papers NP B248 (1984) 253, PRL 54 (1985) 2180, and PL 162B (1985) 400. No other papers expected.

CERN-R-421 (Jun 1980) Approved Jul 1980, Dec 1980; Completed Dec 1983.

STUDY OF pp AND $\bar{p}p$ COLLISIONS AT THE SFM FACILITY OF THE CERN ISR

BOLOGNA U - M Basile, L Cifarelli, G D'Ali, G Sartorelli
INFN, BOLOGNA - G Bonvicini, P Giusti, T Massam,
F Palmronari, G Cara Romeo

CERN - A Contini, R Nania, G Susinno, A Zichichi
(Spokesperson)

FRASCATI - M Curatolo, B Esposito, M Spinetti, L Votano

Accelerator CERN-ISR **Detector** SFM

Reactions

pp 30, 44, 62 GeV (E_{cm})

$\bar{p}p$ "

Comments A comparison of pp and $\bar{p}p$ multiparticle events, suitably adjusted, with e^+e^- inelastic events.

Papers LNC 32 (1981) 210, NC 65A (1981) 414, NC 65A (1981) 421, NC 67A (1982) 53, NC 67A (1982) 244, LNC 36 (1983) 303, LNC 36 (1983) 555, LNC 36 (1983) 563, NC 73A (1983) 329, LNC 37 (1983) 246, LNC 37 (1983) 289, LNC 38 (1983) 289, LNC 38 (1983) 359, LNC 38 (1983) 367, NC 79A (1984) 1, LNC 41 (1984) 293, LNC 41 (1984) 298, and NIM A235 (1985) 74.

CERN-R-422 (Oct 1981) Approved Feb 1982; Completed Dec 1983.

STUDY OF HEAVY FLAVORS PRODUCTION IN pp INTERACTIONS AT $E_{cm} = 62$ GeV

CERN - A Contini, R Nania, G Susinno, A Zichichi
(Spokesperson)

BOLOGNA U - M Basile, L Cifarelli, G D'Ali, F Palmronari,
G Sartorelli

INFN, BOLOGNA - G Bonvicini, P Giusti, T Massam,

C Del Papa, G Cara Romeo

FRASCATI - M Curatolo, B Esposito, M Spinetti, L Votano

Accelerator CERN-ISR **Detector** SFM

Reactions

$pp \rightarrow e^- X$ 62 GeV (E_{cm})

$pp \rightarrow e^+ X$ "

Particles studied charm, bottom

Comments Continues studies of experiment R-415.

CERN-R-501 Approved Jan 1978; Started Sep 1978; Completed Dec 1983.

SEARCH FOR MAGNETIC MONOPOLES

ANNECY - B Aubert

CERN - P Musset (Spokesperson), M Price

ORSAY, LAL - J P Vialle

Accelerator CERN-ISR **Detector** Emulsion

Reactions

$pp \rightarrow$ monopole X 30-62 GeV (E_{cm})

$\bar{p}p \rightarrow$ monopole X "

Particles studied monopole

Comments The detectors are inside the vacuum pipe.

CERN-R-608 (Jun 1978) Approved Nov 1978, Mar 1979, Oct 1980; Completed Dec 1983.

LARGE- z HADRON PHYSICS AND CORRELATIONS WITH CENTRAL REGION PHENOMENA

CERN - S Erhan, A Smith

CLERMONT-FERRAND U - L Meritet, M Reyrolle, F Vazeille

SACLAY - J Alitti, B Bloch-Devaux, J B Cheze, J Mallet,
A Montag, J Zsembery

UCLA - R Bonino, A Castellina, M Medinnis, P Schlein

($\checkmark$ Spokesperson), P Sherwood, S Vernetto, J Zweig

Accelerator CERN-ISR **Detector** Spectrometer

Reactions

pp 30, 53, 62 GeV (E_{cm})

$\bar{p}p$ "

Particles studied Λ_c^+ , $f_1(1285)$, $f_1(1420)$, $f_2(1270)$

Comments Extends the program of CERN-R-603, to study Cerenkov-identified multiparticle systems in the forward direction and at 90° . The main studies are of (1) diffractive excitation of glueball candidates, (2) inclusive excitation of charmed particles, (3) differences in leading-baryon production in pp and $\bar{p}p$ interactions, (4) Λ and $\bar{\Lambda}$ polarization, both inclusively and diffractively, and (5) evidence for pomeron-single quark scattering and the longitudinal structure of diffraction.

Papers PL 127B (1983) 384, PL 148B (1984) 382, PL 152B

(1985) 131, PL 163B (1985) 267, PL 163B (1985) 273, PL 167B

(1986) 248, PL B184 (1987) 293, PL B195 (1987) 209, and PL

B199 (1987) 304.

CERN-R-704 (Apr 1980) Approved Oct 1980; Completed Jul 1984.

CHARMONIUM SPECTROSCOPY AT THE ISR USING A $\bar{p}$ BEAM AND A HYDROGEN JET TARGET

ANNECY - C Baglin, G Bassompierre, J C Brient, C Broll,
C Girard, J P Guillaud, M Poulet

CERN - R Cester, L Leistam, A Lundby, M Macri

($\checkmark$ Spokesperson), B Mouellic

GENOA U - A Buzzo, S Ferroni, V Gracco, L Mattera, M G Pia,

A Pozzo, A Santroni, F Tomasini, U Valbusa

LYON, IPN - J P Burg, M Chemarin, M Chevallier, J Fay, B Ille,

M Lambert, J P Martin

OSLO U - L Bugge, T Buran, T Fearnley, K Kirsebom,

G Skjeving, S O Sorensen

ROME U - L Pettrillo, M Severi

TURIN U - G Borreani, F Marchetto, E Menichetti, N Pastrone,

G Rinaudo

STRASBOURG, CRN - J M Brom, B Escoubes

Accelerator CERN-ISR **Detector** Combination

Reactions

$\bar{p}p \rightarrow \gamma \gamma$ 3.5-7.5 GeV/c

$\bar{p}p \rightarrow e^+ e^-$ "

$\bar{p}p \rightarrow e^+ e^- \gamma$ "

$\bar{p}p \rightarrow \bar{p}p$ "

$\bar{p}p \rightarrow \pi^+ \pi^-$ "

$\bar{p}p \rightarrow K^+ K^-$ "

Particles studied $\eta_c(1S)$, $\chi_{c1}(1P)$, $\chi_{c2}(1P)$

Comments Studies formation of charmonium states not accessible in the s channel of e^+e^- , and measures 2-body hadron channels at 90° in the c.m.

Papers PL 163B (1985) 400, PL B171 (1986) 135, PL B172

(1986) 455, PL B187 (1987) 191, PL B195 (1987) 85, and NP

B286 (1987) 592.

CERN-R-807 (Jan 1977) Approved Apr 1977, Jun 1977, Jul 1979, Nov 1979, Oct 1981; Completed Dec 1983.

A STUDY OF LARGE TRANSVERSE MOMENTUM PHENOMENA

AXIAL FIELD SPECTROMETER COLLABORATION

BROOKHAVEN - H Gordon, T Ludlam, I Stumer, M Winik,
C Woody

CERN - T Akesson, R Batley, H Bruker, V Burkert, Ch Fabjan,

U Goerlach, S Katsanevas, G Kessler, J van der Lans,

B S Nielsen, L H Olsen, E Rosso, A Rudge, J Schukraft,

H Specht, W J Willis, W Witzeling

COPENHAGEN U - H Boggild ($\checkmark$ Spokesperson), O Botner,

E Dahl-Jensen, J Dahl-Jensen, P Dam, G Dangaard,

K H Hansen, J E Hooper, R Moller, H H Thodberg

SUMMARIES OF CERN EXPERIMENTS

LUND U - S Almedeh, G von Dardel, V Hedberg, G Jarliskog, K Kulka, B Lorstad, U Mjornmark, A Nilsson, G Thorstenson
 PENN U - H Brody, B Callen, S Frankel, W Frati, W Molzon, E Vella, W Zajc
 RUTHERFORD - M G Albrow, W M Evans, N A McCubbin, J Williamson
 TEL AVIV U - O Benary, S Dagan, D Lissauer, Y Oren
 QUEEN MARY COLL - A A Carter
 CAMBRIDGE U - J R Carter, P Cecil
 PITTSBURGH U - Y Choi, W Cleland, R Kroeger, M Sullivan, J Thompson

Accelerator CERN-ISR Detector AFS

Reactions

$p p$ 31-62 GeV (Ecm)
 $\bar{p} p$ "
 He He "

Particles studied charm, quark, glueball, gluon

Comments A study of the structure of pp and $\bar{p}p$ collisions having a very high transverse momentum flow (> 30 GeV/c) in the central region. Studies high p_T jets, and direct photons and leptons. Searches for glueballs and other new states.

Papers PL 91B (1980) 301, NIM 196 (1982) 303, NIM 196 (1982)

315, IEEE TNS 29 (1982) 373, PL 108B (1982) 58, NP B203 (1982) 27, PL 110B (1982) 344, NP B209 (1982) 309, NP B209 (1982) 321, PL 118B (1982) 178, PL 118B (1982) 185, PL 118B (1982) 193, PL 119B (1982) 464, PL 121B (1983) 439, PL 123B (1983) 133, ZPHY C18 (1983) 5, PL 123B (1983) 367, PR D28 (1983) 2736, PL 128B (1983) 354, PL 129B (1983) 269, NP B228 (1983) 408, PL 133B (1983) 268, NP B246 (1984) 1, NP B246 (1984) 408, ZPHY C25 (1984) 13, PR D31 (1985) 976, PL 152B (1985) 140, PL 152B (1985) 411, PL 155B (1985) 128, PL 158B (1985) 282, PRL 55 (1985) 2535, NIM A241 (1985) 17, NIM A242 (1985) 75, ZPHY C30 (1986) 27, NP B264 (1986) 154, PS 34 (1986) 106, PL B178 (1986) 447, ZPHY C32 (1986) 317, ZPHY C32 (1986) 491, ZPHY C34 (1987) 163, ZPHY C34 (1987) 293, PL B187 (1987) 420, ZPHY C36 (1987) 517, PL B192 (1987) 463, PR D36 (1987) 517, and PR D38 (1988) 2687.

CERN-R-808 (Jun 1981) Approved Jul 1981; Completed Dec 1983.

A STUDY OF DIRECT PHOTON PRODUCTION

ATHENS U - P Ioannou, A Karabarbounis, C Kourkoulamis, T Markou, L Reavanis, S Tzamaras
 BONN U - V Burkert
 BROOKHAVEN - R Palmer, D Rahm, I Stumer
 CERN - R Batley, Ch Fabjan, U Goerlach, I Mannelli, W J Willis ($\sqrt{\text{Spokesperson}}$)
 LEBEDEV INST - I Gavrilenko, A Shmeleva, P Vasiljev
 MOSCOW PHYS ENG INST - V Chernyatin, B Dolgoshein, V Kantserov
 NOVOSIBIRSK, IYF - S Eidelman, M Minakov, G Piskounov, V Sidorov
 PISA U & INFN, PISA - R Carosi, G M Pierazzini
 PITTSBURGH U - W Cleland, M Sullivan, J Thompson

Accelerator CERN-ISR Detector Calorimeter

Reactions

$p p \rightarrow \gamma(s) X$ 30-62 GeV (Ecm)
 $p p \rightarrow e^+ e^- X$ "
 $\bar{p} p \rightarrow \gamma(s) X$ "
 $\bar{p} p \rightarrow e^+ e^- X$ "
 He He $\rightarrow \gamma(s) X$ "
 He He $\rightarrow e^+ e^- X$ "

Comments Uses two arrays of NaI blocks together with the CERN-R-807 calorimeter. Studies both single and double direct photon production, and electron pair production.

Papers ZPHY C34 (1987) 293, PL B192 (1987) 463, and PR D36 (1987) 2615. No other papers expected.

CERN-SC-094 (Sep 1980) Approved Oct 1981; Completed Nov 1982.

STUDY OF THE PRODUCTION OF SINGLE PIONS IN πp COLLISIONS NEAR THRESHOLD

AMSTERDAM, VRIJE U - H Verheul
 BIRMINGHAM U - J D Davies, J Lowe, S M Playfer
 CERN - E G Michaels
 DELFT UNIV TECH - C W E van Eijk, R Hollander, W Lourens
 LJUBLJANA U - G Kernel ($\sqrt{\text{Spokesperson}}$), D Korbar,
 P Krizan, M Mikuz, F Sever, A Stanovnik, M Staric,
 D Zavrtanik
 OXFORD U - N W Tanner
 MANITOBA U - J V Jovanovich
 RUTHERFORD - A S Clark

Accelerator CERN-SC Detector OMICRON

Reactions

$\pi^- p \rightarrow \pi^- \pi^+ n$ 300-460 MeV/c
 $\pi^- p \rightarrow \pi^- \pi^0 \pi^-$ "
 $\pi^+ p \rightarrow \pi^+ \pi^+ n$ "
 $\pi^+ p \rightarrow \pi^+ \pi^0 \pi^+$ "

Comments A full-kinematics experiment. The transformation properties of the chiral-symmetry-breaking part of the $\pi\pi$ Lagrangian are obtained from the data at threshold.

Papers NIM 214 (1983) 273, NIM 216 (1983) 67, NIM 227 (1984) 237, NIM A239 (1985) 202, NIM A244 (1986) 367, NIM A248 (1986) 451, PL B216 (1989) 244, and PL B225 (1989) 198.

CERN-UA-001 (Jan 1978) Approved Jun 1978, Jun 1983, Sep 1983, Feb 1984, Nov 1984.

A 4π SOLID ANGLE DETECTOR FOR THE SPS USED AS A $\bar{p}p$ COLLIDER AT A C.M. ENERGY OF 630 GeV

AACHEN, TECH HOCHSCH, III PHYS INST - P Erhard, H Faisner, A Geiser, H Grassmann, H Moser, A Moulin, T Redelberger, H Reithler, E Tcheslog, H Tuchscherer, K Wacker
 NIKHEF, AMSTERDAM - K Bos, J Dorenbosch, A Van Dyk, W Van de Guchte, D Holthuizen, M Schroeder, I Ten-Have, I Zacharov
 ANNECY - B Aubert, F Cavanna, J Colas, P Ghez, C Ghiglino, J-P Lees, D Linglin, M N Minard, B Mours, J P Vialle, M Yvert
 BIRMINGHAM U - N Bains, D G Charlton, M Corden, G Cox, J Dowell, N Ellis, J Garvey, D Grant, J Gregory, S J Haywood, M Jimack, I Kenyon, M Nikitas
 BOSTON U - M Felcini, J Rohlf
 CERN - A Bezaguet, G Bouquet, P Cennini, S Citolin, M Demoulin, A DiCiaccio, K Eggert, A Ferrando, J Feyt, A Givernaud, A Gonidec, W Jank, W Kienzle, F Lacava, G Maurin, T Meyer, T Muller, R Munoz, L Naumann, M Della Negra, A Norton (Spokesperson), F Paus, A Placci, J P Porte, E Radermacher, C Rubbia (Spokesperson), D Samyn, D Schinzel, V Vuillemin, I Wingerter
 HARVARD U - G Bauer, E Buckley, S Geer, C Jessup, J Kroll, S Pavlon, J Rohlf, A Schwartz
 HELSINKI U - V Karimaki, R Kinnunen, T Oksakivi, E Pietarinen, M Pimia, J Tuominiemi
 KIEL U - O C Altkofer, H G Boerst, H Bohn, D Dau, R Leuchs, S Levergren, D Ohlendorf, M Preischel
 IMPERIAL COLL - T Bacon, E Clayton, A Khan, C Markou, S McMahon, C Seez, I Siotis, L Taylor, T S Virdee, A Wildish
 QUEEN MARY COLL - R Batley, P Biddulph, D Clarke, E Eisenhandler, I Fensome, P Kalmus, M Landon, D Robinson, W Von Schlippe, G Thompson, C Topping
 MADRID, JEN - F Diez-Hedo, I Josa, M Marquina, T Rodrigo, J Salicio, E Torrente
 MIT - T Fuess, J P Revol, P Spichas, K C T O Sumorok, S Tether, X Wu
 PADUA U - A Bettini, A Braggiotti, G Busetto, S Calvani, A Canner, P Casoli, S Centro, R Conte, M De Giorgi, A Meneguzzo, M Nicoletto, R Pavanello, P Rossi, P Zatti, Y Zolnirowski, P L Zotto
 COLLEGE DE FRANCE - B Andrieu, L Dobrzynski, G Fontaine, C Ghesquier, Y Giraud-Heraud, D Kryn, D Marchand, J-P Mendiburu, P Nedelec, G Sajot, J Vrana
 UC, RIVERSIDE - M Ikeda, D Joyce, A Kernan, M Lindgren, J P Merlo, K Morgan, I Sheer, D Smith
 ROME U - C Bacci, R Bonino, V Cecconi, F Ceradini, G Ciapetti, M Moricca, A Nisati, E Petrollo, G Piano-Mortari, G Salvini, M Torelli, A Tusi, S Veneziano, C Zacardelli, L Zanello

SUMMARIES OF CERN EXPERIMENTS

RUTHERFORD - M Albrow, R Apsimon, J Coughlan, P Flynn, V O'Dell, T Shah
 SACLAY - J P De Brion, C Cochet, P Colas, D Denegri, C Stubenrauch, N Zaganidis
 VICTORIA U - A Astbury, S Beingsner, M Keeler, R Keeler, S Li, R Sobie
 VIENNA. OAW - M Botlo, B Buschbeck, H Dibon, M Krammer, P Lipa, M Markytan, M Neururer, J Strauss, F Szoncos, A Taurok, G Walzel, C Wulz
 UCLA - K Anokviak, C Buchanan, D Cline, H Evans, L Fortson, B Gonzalez, J Gronberg, T Kubie, M Mohammadi, J Rhoades, T Smart, D Stork, D Summers, M Vargas, L Villaseñor
 MADRID. AUTONOMA U - C Albajar

Accelerator CERN-PBAR/P Detector UA1

Reactions

$\bar{p} p$ 540, 630 GeV (Ecm)

Particles studied W^+ , W^- , Z^0 , higgs, s-particle

Comments Has discovered the W and Z bosons and also found a few events compatible with the existence of the top quark. The present program includes a search for various high-mass particles such as new quarks and supersymmetric particles, and an investigation of quark and gluon interactions, etc. Taking data.

Papers NIM 176 (1980) 217, NIM 176 (1980) 225, NIM 176 (1980) 233, PL 118B (1982) 167, PL 118B (1982) 173, PL 121B (1983) 77, PL 122B (1983) 103, PL 122B (1983) 189, PL 123B (1983) 108, PL 123B (1983) 115, PL 126B (1983) 398, PL 128B (1983) 336, PL 129B (1983) 273, PL 132B (1983) 214, PL 132B (1983) 223, NP B224 (1983) 523, IEEE TNS 30 (1983) 71, PL 134B (1984) 469, PL 135B (1984) 250, PL 136B (1984) 294, PL 139B (1984) 115, PL 147B (1984) 222, PL 147B (1984) 241, PL 147B (1984) 493, NIM 224 (1984) 153, PL 155B (1985) 442, PL 158B (1985) 494, LNC 44 (1985) 1, PL 166B (1986) 484, PL B172 (1986) 461, PL B177 (1986) 244, EPL 1 (1986) 327, NIM A243 (1986) 45, NP B276 (1986) 253, IEEE TNS 33 (1986) 163, NIM A252 (1986) 387, PL B185 (1987) 233, PL B185 (1987) 241, PL B186 (1987) 237, PL B186 (1987) 247, PL B193 (1987) 389, ZPHY C36 (1987) 33, PL B198 (1987) 261, PL B198 (1987) 271, NIM A253 (1987) 179, NIM A256 (1987) 23, NIM A257 (1987) 552, PL B200 (1988) 380, ZPHY C37 (1988) 489, ZPHY C37 (1988) 505, NP B309 (1988) 405, PL B209 (1988) 127, PL B209 (1988) 385, PL B209 (1988) 397, NIM A263 (1988) 26, NIM A263 (1988) 174, NIM A265 (1988) 303, PL B213 (1988) 405, and PL B226 (1989) 410.

CERN-UA-002 (Jan 1978) Approved Dec 1978, Sep 1984, Feb 1985: Started Nov 1981.

STUDY OF $\bar{p} p$ INTERACTIONS AT 630-GeV C.M. ENERGY

BERN U - K Borer, A Federspiel, K Hara, E Hugentobler, L Mueller, K P Pretzl, J Schacher
 CAMBRIDGE U - R Ansorge, R S DeWolf, S Katvars, M Lefebvre, D J Munday, M Pentney, S Singh, P Wells, T White, S Wotton
 CERN - G Blaylock, M Bonesini, M Borghini, P Dariulat, G Egan, K Einsweiler, G Fumagalli, O Gildemeister, C Gosseling, V Goggi, J R Hansen, S Hellman, K Hultqvist, J Incandella, K Javrobs, P Jenni, L Di Lella (✓ Spokesperson), L Linssen, B Lisowski, P Lubrano, L Mapelli, K H Meier, C Onions, T Pal, A Parker, A Poppletton, L Rasmussen, V Simak, S Stappes, S Tovey, V Vercesi, A Weidberg, D Wood
 HEIDELBERG U, IHEP - S Gruenendahl, E E Kluge, T Koch, N Kurz, H Plotow-Besch, K Tittel
 MILAN U & INFN, MILAN - D Cavalli, G Costa, F Gianotti, L Mandelli, M Mazzanti, L Perini, G Polesello
 ORSAY, LAL - R Ansari, D Buskulic, J C Chollet, L Fayard, D Froidevaux, J M Gaillard, B Merkel, M Moniez, G Parrouir, P Petroff, J P Repellin
 PAVIA U & INFN, PAVIA - C Conta, R Ferrari, M Fraternali, M Livan, B De Lotto, F Pastore, A Rimoldi
 PERUGIA U & INFN, PERUGIA - P Cenci, P Lariccia, M S Pepe, P Scampolli
 PISA U & INFN, PISA - G Carboni, V Cavasinni, F Costantini, E Iacopini, S Lami, M Morganti, C Petridou, T Del Prete, M Valdata-Nappi

ROME U & INFN, ROME - P Bagnaia
 SACLAY - J Alitti, P Bareyre, P Bonamy, C Magneville, J P Meyer, A V Stirling, H Zaccone

Accelerator CERN-PBAR/P Detector UA2

Reactions

$\bar{p} p \rightarrow e^+ X$ 630 GeV (Ecm)
 $\bar{p} p \rightarrow \text{jet}(s) X$ "

Particles studied W^+ , W^- , Z^0 , top

Comments The main aims are a study of the W and Z bosons and a search for the top quark. Taking data.

Papers PL 115B (1982) 59, PL 118B (1982) 203, PL 121B (1983) 187, PL 122B (1983) 322, PL 122B (1983) 476, ZPHY C20 (1983) 117, PL 129B (1983) 130, PL 138B (1984) 430, PL 139B (1984) 105, NIM 224 (1984) 65, NIM 224 (1984) 380, ZPHY C24 (1984) 1, PL 144B (1984) 283, NIM 227 (1984) 29, PL 144B (1984) 291, PL 154B (1985) 338, PL 156B (1985) 129, PL 160B (1985) 349, PL 165B (1985) 441, ZPHY C25 (1985) 329, ZPHY C27 (1985) 329, PL B176 (1986) 239, ZPHY C30 (1986) 1, ZPHY C30 (1986) 341, NIM A252 (1986) 590, ZPHY C36 (1987) 175, PL B186 (1987) 440, PL B186 (1987) 452, PL B194 (1987) 158, PL B195 (1987) 613, NIM A253 (1987) 548, PL B215 (1988) 175, ZPHY C41 (1988) 395, NIM A263 (1988) 31, NIM A265 (1988) 33, and NIM A273 (1988) 826.

CERN-UA-003 (Feb 1978) Approved Dec 1978: Completed Dec 1983.

SEARCH FOR MAGNETIC MONOPOLES AT THE $\bar{p} p$ COLLIDING RING

ANNECY - B Aubert, J P Vialle
 CERN - P Musset (Spokesperson), M Price

Accelerator CERN-PBAR/P Detector Emulsion

Reactions

$\bar{p} p \rightarrow \text{monopole } X$ 540 GeV (Ecm)

Particles studied monopole

Papers PL 120B (1983) 465.

CERN-UA-004 (Oct 1978) Approved Jan 1979, Mar 1984: Completed Jun 1985.

MEASUREMENT OF ELASTIC SCATTERING IN THE COULOMB INTERFERENCE REGION AT THE CERN $\bar{p} p$ COLLIDER

NIMHEF, AMSTERDAM - B Koene, R Van Swol, J Timmermans
 CF RN - D Bernard

INFN, GENOVA & GENOA U - M Bozzo, G Sette
 NAPLES U, IFS & INFN, NAPLES - F Carbonara, G Chiefari, E Drago, S Lanzano, G Matthiae (Spokesperson), L Merola, M Napolitano, V Palladino, C Sciacca, F Visco
 ECOLE POLYTECHNIQUE - J Badier, M Hagenauer, V Innocente

PISA U & INFN, PISA - P L Braccini, R Castaldi, F Cervelli, G Sanguinetti, S Scappellato, C Vannini, P G Verdini
 VALENCIA U - J Velasco

Accelerator CERN-PBAR/P Detector Ionization chamber

Reactions

$\bar{p} p \rightarrow X$ 100-540 GeV (Ecm)
 $\bar{p} p \rightarrow \bar{p} p$ "

Papers PL 115B (1982) 333, PL 117B (1982) 126, PL 127B (1983) 472, NIM 207 (1983) 365, PL 136B (1984) 217, PL 147B (1984) 385, PL 147B (1984) 392, NC 81A (1984) 737, PL 155B (1985) 197, PL 166B (1986) 459, PL B171 (1986) 142, PL B186 (1987) 227, and PL B198 (1987) 563.

CERN-UA-005 (May 1978, Oct 1982) Approved Feb 1979, Feb 1983: Completed Sep 1982.

INVESTIGATION OF $\bar{p} p$ EVENTS AT 540-GeV C.M. ENERGY WITH A STREAMER CHAMBER DETECTION SYSTEM

SUMMARIES OF CERN EXPERIMENTS

BONN U - P Anderer, K Boeckmann, L Burow, B Eckart, A Eyring, C Geich-Gimbel, K von Holt, R Hospes, T P K Kokott, M Langer, R Meinke, Th Mueller, H Schmickler
BRUSSELS U - C De Clercq, J Gaudaen, M Gijzen, D Johnson, G Wilquet
CAMBRIDGE U - R E Ansorge, C N Booth, K French, V P Kenney, D J Munday, J Owens, J G Rushbrooke (Spokesperson), C P Ward, D R Ward, T O White, R S De Wolf
CERN - G J Alner, J L Chevalley, I Evangelou, J P Fabre, J Gareyte, G von Holtey, R Mackenzie, F Triantis, L Vos, G Weber
STOCKHOLM U - K Alpgard, B Asman, P Carlson, G Eksping, K Jonand, F Lotse, C Walck, N Yamdagni

Accelerator CERN-PBAR/P Detector Streamer chamber

Reactions

$\bar{p} p$ 540 GeV (Ecm)
 $\bar{p} p \rightarrow$ centauro "

Comments A brief visual survey, with emphasis on a search for centauro events. See UA-005/2 for the second phase.

Papers PS 23 (1981) 642, PL 107B (1981) 310, PL 107B (1981) 315, PL 115B (1982) 65, PL 115B (1982) 71, PL 121B (1983) 209, PL 123B (1983) 361, PL 138B (1984) 304, PL 151B (1985) 309, PL 160B (1985) 193, PL 160B (1985) 199, ZPHY C33 (1986) 175, PRPL 154 (1987) 247, NP B291 (1987) 445, PL B199 (1987) 311, and NP A461 (1987) 145c. See also CERN-UA-005/2

CERN-UA-005-2 Approved Feb 1983; Completed Apr 1985.
AN EXPLORATORY INVESTIGATION OF $\bar{p} p$ INTERACTIONS AT 800-900 C.M. ENERGY AT THE SPS COLLIDER

BONN U - K Boeckmann, L Burow, A Drees, B Eckart, A Eyring, L Froebel, C Geich-Gimbel, B Hall, R Hospes, T P K Kokott, M Langer, R Meinke, W Pelzer, H Schmickler
BRUSSELS U - C De Clercq, J Gaudaen, L van Hamme, G Wilquet
CAMBRIDGE U - R E Ansorge, D J Munday, J Owens, J G Rushbrooke (Spokesperson), C P Ward, D R Ward, C J S Webber, T O White, R S De Wolf
CERN - G J Alner, J L Chevalley, I Evangelou, J P Fabre, J Gareyte, G von Holtey, R Mackenzie, F Triantis, L Vos, G Weber
STOCKHOLM U - K Alpgard, K Jon And, B Asman, P Carlson, G Eksping, C Fuglesang, F Lotse, C Walck, N Yamdagni

Accelerator CERN-PBAR/P Detector Streamer chamber

Reactions

$\bar{p} p$ 800-900 GeV (Ecm)

Comments A second phase at higher energies of UA-005.

Papers ZPHY C32 (1986) 153, PL 167B (1986) 476, PL B180 (1986) 415, ZPHY C33 (1986) 1, ZPHY C41 (1988) 179, ZPHY C43 (1989) 75, and ZPHY C43 (1989) 357.

CERN-UA-006 (Aug 1980) Approved Apr 1981, Feb 1987.
AN INTERNAL HYDROGEN JET TARGET IN THE SPS TO STUDY INCLUSIVE ELECTROMAGNETIC FINAL STATES AT LARGE TRANSVERSE MOMENTA AND A PRODUCTION IN $\bar{p} p$ AND pp INTERACTIONS AT $E_{cm} = 24.3$ GeV

CERN - L Camilleri (✓ Spokesperson), W Kubiachta, C Pilcher-Grosso

LAUSANNE U - A Ebongue, F Gaille, C Joseph, J F Loude, C Morel, P Oberson, J Pages, J P Perroud, D Ruegger, G Sozzi, L Studer, M T Tran, M Wehrli

MICHIGAN U - E C Dukes, D B Hubbard, O E Overseth, G A Snow, G Valenti

MILAN U & INFN, MILAN - L Dick

ROCKEFELLER U - R E Breedon, P T Cox, P Giacomelli, P Petersen, R Russack, A Vacchi

LUND U - G Von Dardel

Accelerator CERN-PBAR/P Detector Double-arm spectrometer

Reactions

$\bar{p} p \rightarrow e^+ e^- X$ 24.3 GeV (Ecm)
 $\bar{p} p \rightarrow \pi^0 X$ "
 $\bar{p} p \rightarrow \gamma X$ "
 $\bar{p} p \rightarrow \Lambda X$ "
 $\bar{p} p \rightarrow \bar{\Lambda} X$ "
 $\bar{p} p \rightarrow \bar{p} p$ "
 $\bar{p} p \rightarrow X$ "
 $pp \rightarrow e^+ e^- X$ "
 $pp \rightarrow \pi^0 X$ "
 $pp \rightarrow \gamma X$ "
 $pp \rightarrow \Lambda X$ "
 $pp \rightarrow \bar{\Lambda} X$ "
 $pp \rightarrow p p$ "
 $pp \rightarrow X$ "

Particles studied $J/\psi(1S)$

Comments The $\bar{p}$ and p beams in the collider are in turn incident upon a gas jet target. In the reactions above, the emphasis is on high e^+e^- masses, the π^0 and γ inclusive cross sections at high p_t , the Λ and $\bar{\Lambda}$ polarizations at high p_t , and the elastic and inelastic cross sections at low t . Taking data.

Papers HPA 59 (1986) 584, NIM A252 (1986) 498, PL B194 (1987) 568, PL B206 (1988) 163, NIM A273 (1988) 865, and PL B216 (1989) 459.

CERN-UA-007 (Jan 1985) Approved Apr 1985; Completed May 1986.

MEASUREMENT BY SILICON SHOWER DETECTORS OF THE INVARIANT CROSS SECTION OF PHOTONS AND π^0 's EMITTED CLOSE TO 0°

NAPLES U, IFS & INFN, NAPLES - V Innocente, S Lanzano
TOKYO U, COSMIC RAY LAB - K Kasahara, Y Muraki (✓ Spokesperson), T Nakada, T Yuda
RIKKYO U - H Murakami, A Nakamoto
WASEDA U - T Doka, T Kashiwagi, J Kikuchi, K Masuda
ECOLE POLYTECHNIQUE - J Bourotte, M Hagenauer, E Pare

Accelerator CERN-PBAR/P Detector Calorimeter

Reactions

$\bar{p} p \rightarrow \gamma X$ 630 GeV (Ecm)
 $\bar{p} p \rightarrow \pi^0 X$ "
 $\bar{p} p \rightarrow K_S X$ "
 $\bar{p} p \rightarrow \eta X$ "

Comments Measures the invariant cross section and the transverse momentum distribution of π^0 's produced at large Feynman x . Uses finely segmented silicon shower calorimeters placed inside the Roman pots of CERN-UA-004.

Papers NIM A274 (1989) 129, and PRL (submitted).

CERN-UA-008 (Oct 1984) Approved Apr 1985.

STUDY OF JET STRUCTURE IN HIGH MASS DIFFRACTION AT THE SPS COLLIDER

UCLA - A Brandt, J B Cheze, S Erhan, A Kusucu, D Lynn, M Medinnis, N Ozdes, P Schlein (Spokesperson), M Zeyrek, J Ziemberg, J Zweizig

Accelerator CERN-PBAR/P Detector UA2, Ionization chamber

Reactions

$\bar{p} p \rightarrow \text{jet(s)} X$ 630 GeV (Ecm)

Particles studied pomeron

Comments Studies jet structure in high-mass diffraction to investigate the pomeron and its possible parton structure. Uses a fast trigger processor. Works in collaboration with CERN-UA-002. Taking data.

Papers PL B211 (1988) 239.

CERN-WA-001 (Jul 1973) Approved Apr 1974, Dec 1975, Feb 1979, May 1979; Completed Dec 1983.

HIGH-ENERGY NEUTRINO INTERACTIONS

SUMMARIES OF CERN EXPERIMENTS

CERN - F Dydak, R Hagelberg, M Krasny, J May, A Para, F Ranjard, W von Rueden, J Steinberger (Spokesperson), H Taureg, H Wachsmuth, H Wahl, J Wotschack
DORTMUND U - H Bluemer, H Brummel, P Buchholz, J Duda, F Eisele, B Kampschulte, K Kleinknecht, J Knobloch, D Pollmann, B Pszola, B Renk
HEIDELBERG U, IHEP - R Belusevic, B Falkenburg, M Fiedler, R Geiges, C Geweniger, V Hepp, H Keilwerth, K Tittel
SACLAY - P Debu, C Guyot, J P Merlo, P Perez, F Perrier, J Rander, J P Schuller, R Turlay, B Vallage
WARSAW, INR - H Abramowicz, J Krolkowski, A Lipniacka

Accelerator CERN-SPS Detector CDHS

Reactions

$\nu_\mu \text{ Fe} \rightarrow \mu^- \text{ X}$	0-260 GeV/c
$\nu_\mu \text{ Fe} \rightarrow \nu_\mu \text{ X}$	"
$\bar{\nu}_\mu \text{ Fe} \rightarrow \mu^+ \text{ X}$	"
$\bar{\nu}_\mu \text{ Fe} \rightarrow \bar{\nu}_\mu \text{ X}$	"
$\nu_\mu \text{ p} \rightarrow \mu^- \text{ X}$	"
$\bar{\nu}_\mu \text{ p} \rightarrow \mu^+ \text{ X}$	"
$\nu_\mu \text{ deut} \rightarrow \mu^- \text{ X}$	"
$\bar{\nu}_\mu \text{ deut} \rightarrow \mu^+ \text{ X}$	"

Particles studied W^+ , W^- , Z^0 , hvy-lepton

Comments Studies inclusive neutrino reactions in iron, including rare processes such as muilepton production, and compares neutrino interactions in hydrogen and iron.

Papers ZPHY C12 (1982) 225, ZPHY C12 (1982) 289, PL 109B (1982) 115, ZPHY C13 (1982) 179, ZPHY C13 (1982) 199, ZPHY C15 (1982) 19, IEEE TNS 29 (1982) 360, ZPHY C17 (1983) 2², ZPHY C25 (1984) 29, and ZPHY C35 (1987) 443.

CERN-WA-001-2 (1983) Approved Sep 1983; Completed Aug 1984.

MEASUREMENT OF $\sin^2(\theta_W)$ IN SEMILEPTONIC ν -Fe INTERACTIONS WITH HIGH PRECISION

CDHSW COLLABORATION

CERN - A Blondel, P Boeckmann, H Burkhardt, F Dydak (Spokesperson), A Grant, R Hagelberg, E Hughes, M Krasny, A Para, F Ranjard, H Taureg, H Wachsmuth, J Wotschack
DORTMUND U - H Bluemer, H Brummel, P Buchholz, J Duda, B Kampschulte, K Kleinknecht, J Knobloch, E Mueller, D Pollmann, B Renk
HEIDELBERG U, IHEP - R Belusevic, B Falkenburg, M Fiedler, R Geiges, C Geweniger, V Hepp, H Keilwerth, N Kurz, K Tittel
SACLAY - P Debu, C Guyot, J P Merlo, P Perez, F Perrier, J P Schuller, R Turlay, B Vallage
WARSAW, INR - H Abramowicz, J Krolkowski, A Lipniacka

Accelerator CERN-SPS Detector CDHS

Reactions

$\nu_\mu \text{ Fe}$	0-160 GeV/c
$\bar{\nu}_\mu \text{ Fe}$	"

Papers PRL 57 (1986) 298, ZPHY C28 (1985) 51, and ZPHY C31 (1986) 39.

CERN-WA-007 (Mar 1974) Approved Sep 1974, Oct 1976, Jan 1979; Completed May 1982.

TWO-BODY REACTIONS AT LARGE TRANSVERSE MOMENTUM

ANNECY - C Baglin, J P Guillaud, M Poulet
CERN - R Bock, L Bugge, T Buran, A Lundby, B Mouellic
COPENHAGEN U - J Myhrheim
GENOA U - A Buzzo, S Ferroni, V Gracco (Spokesperson), M Macri, A Santroni

UNIVERSITY COLL, LONDON - Z Asa'd, M Coupland, D Davis, B G Duff, F F Heymann, D C Imrie, G J Lush, M H Phillips
OSLO U - K Brobakken, A Eide, T Fearnley, I Gjerpe, J Halvorsen, T Jacobsen, K Kirsebom, G Skjeving, S O Sorensen

Accelerator CERN-SPS Detector Double-arm spectrometer

Reactions

$\pi^- \text{ p} \rightarrow \pi^- \text{ p}$	20, 40, 60, 80 GeV/c
$\text{p p} \rightarrow \text{p p}$	"
$K^- \text{ p} \rightarrow K^- \text{ p}$	"
$\bar{\text{p}} \text{ p} \rightarrow \bar{\text{p}} \text{ p}$	"
$\bar{\text{p}} \text{ p} \rightarrow \pi^- \pi^+$	"
$\bar{\text{p}} \text{ p} \rightarrow K^- K^+$	"

Papers PL 108B (1982) 51, PL 118B (1982) 442, PL 123B (1983) 265, PL 128B (1983) 124, PL 130B (1983) 335, and NP B216 (1983) 1.

CERN-WA-018 (Oct 1975) Approved Jul 1978; Completed Dec 1983.

STUDY OF SEMILEPTONIC AND LEPTONIC NEUTRAL-CURRENT PROCESSES AND OF MUON POLARIZATION PRODUCED IN ν AND $\bar{\nu}$ INTERACTIONS USING COUNTER TECHNIQUES

CHARM COLLABORATION

CERN - J V Allaby, U Amaldi, L Barone, A Capone, W Flegel, L Lancieri, M Metcalf, J Panman, K Winter (Spokesperson)
HAMBURG U - I Abt, J A. Piazzi, F W Busser, H Daumann, F D Gall, F Niebergall, P Schutt, P Stahelin
NIKHEF, AMSTERDAM - F Bergsma, J P Dorenbosch, C Nieuwenhuis

ROME U - G Barbiellini, A Baroncelli, B Borgia, C Bosio, M Diemoz, U Dore, F Ferrari, E Longo, L Luminari, P Monacelli, F de Noteristefani, C Santoni, L Tortora, V Valente

MOSCOW, ITEP - P Gorbunov, E A Grigoriev, V S Kaftanov, V D Khovansky, A Rosanov

Accelerator CERN-SPS Detector CHARM

Reactions

$\nu_\mu \text{ nucleus} \rightarrow \nu_\mu \text{ hadrons}$	0-260 GeV/c
$\nu_\mu \text{ nucleus} \rightarrow \mu^- \text{ hadrons}$	"
$\nu_\mu \text{ nucleus} \rightarrow \mu^- \mu^- \text{ X}$	"
$\bar{\nu}_\mu \text{ nucleus} \rightarrow \bar{\nu}_\mu \text{ hadrons}$	"
$\bar{\nu}_\mu \text{ nucleus} \rightarrow \mu^+ \text{ hadrons}$	"
$\bar{\nu}_\mu \text{ nucleus} \rightarrow \mu^+ \mu^+ \text{ X}$	"
$\nu_\mu e^- \rightarrow \nu_\mu e^-$	"
$\nu_\mu e^- \rightarrow \mu^- \nu_e$	"
$\bar{\nu}_\mu e^- \rightarrow \bar{\nu}_\mu e^-$	"
$\bar{\nu}_\mu \text{ Fe} \rightarrow \mu^+ \text{ hadrons}$	"

Particles studied charm, hvy-lepton

Comments Both narrow and wide band beams are used. Measures total cross sections and x and y distributions of neutral and charged current interactions. Several rare processes have been seen. This apparatus follows behind that of experiment WA-001, and part of this experiment is to measure the polarization of μ^+ 's produced in that one (these latter reactions have Fe as target). The upgraded detector incorporates 78 planes of streamer tubes.

Papers PL 86B (1979) 229, PL 93B (1980) 203, NIM 176 (1980) 189, NIM 178 (1980) 27, PL 96B (1980) 435, PL 99B (1981) 265, PL 102B (1981) 67, PL 105B (1981) 242, PL 107B (1981) 241, PL 109B (1982) 133, NIM 200 (1982) 183, PL 117B (1982) 272, PL 121B (1983) 429, PL 122B (1983) 185, PL 122B (1983) 465, PL 123B (1983) 269, ZPHY C17 (1983) 211, PL 128B (1983) 117, PL 128B (1983) 361, NIM 215 (1983) 361, NIM 217 (1983) 291, IEEE TNS 30 (1983) 122, IEEE TNS 30 (1983) 138, PL 141B (1984) 129, PL 147B (1984) 481, ZPHY C24 (1984) 217, PL 153B (1985) 111, PL 157B (1985) 469, PL 166B (1986) 473, PL B180 (1986) 303, PL B197 (1987) 281, and ZPHY C41 (1989) 567.

CERN-WA-018-2 (1983) Approved Feb 1984; Completed Sep 1984.

HIGH-PRECISION MEASUREMENT OF THE RATIO $\sigma_\nu(\text{n.c.})/\sigma_\nu(\text{c.c.})$ AND OF TOTAL AND DIFFERENTIAL CROSS SECTIONS OF NEUTRAL CURRENT REACTIONS

CHARM COLLABORATION

SUMMARIES OF CERN EXPERIMENTS

CERN - J V Allaby, U Amaldi, M Baubillier, W Flegel, F Grancagnolo, L Lanceri, M Metcalf, C Nieuwenhuis, J Panman, R Plunkett, C Santoni, K Winter (✓ Spokesperson);
HAMBURG U - I Abt, J Aspiazu, F W Buesser, H Daumann, P D Gall, T Hebbeker, F Niebergall, P Schuett, P Stahelin
NIKHEF, AMSTERDAM - F Bergsma
MOSCOW, ITEP - P Gorbunov, E Grigoriev, V Khovansky, A Rosanov
INFN, ROME - G Barbiellini, A Baroncelli, L Barone, B Borgia, C Bosisio, A Capone, M Diemoz, C Dionisi, U Dore, F Ferroni, E Longo, P Loverre, L Luminari, P Monacelli, S Morganti, F de Notaristefani, L Tortora, V Valente

Accelerator CERN-SPS Detector CHARM

Reactions

ν_μ nucleus 0-160 GeV/c
 $\bar{\nu}_\mu$ nucleus "

Comments A high-precision measurement of the ratio of neutral and charged currents on an isoscalar target to determine the electroweak mixing $\sin^2 \theta$.

Papers PL B177 (1986) 446, PL B179 (1986) 301, NIM A260 (1987) 368, ZPHY C36 (1987) 611, ZPHY C38 (1988) 403, and PL B213 (1988) 554.

CERN-WA-021 (Nov 1974) Approved Aug 1976: Completed Dec 1983.

HIGH-ENERGY ν AND $\bar{\nu}$ INTERACTIONS IN BEBC FILLED WITH H_2

BIRMINGHAM U - D C Colley, G T Jones, S W O'Neale, F Votruba
BONN U - C Geich-Gimbel, T P K Kokott, B Nellen
CERN - A Graessle, D R O Morrison, L Pape, C Peyrou, P Schmid, H W Wachsmuth
IMPERIAL COLL - E F Clayton, D B Miller, M Mohayyen
UNIVERSITY COLL, LONDON - J Bartley, F W Bullock, M Esten, D J Miller
MUNICH, MAX PLANCK INST - M Aderholz, N Schmitz, W Wittek
OXFORD U - G Myatt (✓ Spokesperson), D Radojicic

Accelerator CERN-SPS Detector HBC-BEBC-HYB

Reactions

$\nu_\mu p \rightarrow \mu^- X$ 0-150 GeV/c
 $\nu_\mu p \rightarrow \mu^- \Delta(1232 P_{33})^{++}$ "
 $\nu_\mu p \rightarrow \mu^- \pi^+ p$ "
 $\nu_\mu p \rightarrow \mu^- \Delta(\text{unspec})^{++}$ "
 $\nu_\mu p \rightarrow \mu^- \pi^+ \pi^0 p$ "
 $\nu_\mu p \rightarrow \mu^- \pi^+ \pi^- n$ "
 $\nu_\mu p \rightarrow \mu^- \pi^+ \pi^- \pi^- p$ "
 $\nu_\mu p \rightarrow \mu^- \rho^+ p$ "
 $\nu_\mu p \rightarrow \nu_\mu p$ "
 $\nu_\mu p \rightarrow \nu_\mu \pi^+ n$ "
 $\nu_\mu p \rightarrow \text{charm } X$ "
 $\nu_\mu e^- \rightarrow \mu^- \nu_e$ "
 $\bar{\nu}_\mu p \rightarrow \mu^+ X$ "
 $\bar{\nu}_\mu p \rightarrow \mu^+ \pi^- p$ "
 $\bar{\nu}_\mu p \rightarrow \mu^+ \Delta(1232 P_{33})^0$ "
 $\bar{\nu}_\mu p \rightarrow \mu^+ N^*(\text{unspec})^0$ "
 $\bar{\nu}_\mu p \rightarrow \mu^+ \pi^- \pi^0 p$ "
 $\bar{\nu}_\mu p \rightarrow \mu^+ \pi^- \pi^+ n$ "
 $\bar{\nu}_\mu p \rightarrow \mu^+ \pi^- \pi^- \pi^- p$ "
 $\bar{\nu}_\mu p \rightarrow \mu^+ \rho^- p$ "
 $\bar{\nu}_\mu p \rightarrow \bar{\nu}_\mu p$ "
 $\bar{\nu}_\mu p \rightarrow \bar{\nu}_\mu \pi^- n$ "
 $\bar{\nu}_\mu p \rightarrow \text{charm } X$ "
 $\bar{\nu}_\mu p \rightarrow \mu^+ n$ "
 $\bar{\nu}_\mu p \rightarrow \mu^+ \Lambda$ "

Particles studied charm

Comments Most of the flux is below 50 GeV/c. Uses the EMI and the IPF. The principal aims are (1) the study of

charmed particle production in fully constrained events, (2) the study of neutral current interactions on free protons, (3) the measurement of N^* and Δ production cross sections, (4) studies of hadronic final states in charged and neutral current reactions, and (5) the measurement of inclusive charged-current cross sections and structure functions.

Papers PL 86B (1979) 108, PL 87B (1979) 281, PL 88B (1979) 381, PL 96B (1980) 209, NP B176 (1980) 269, NP B176 (1980) 333, PL 99B (1981) 159, PL 103B (1981) 71, NP B181 (1981) 385, NP B188 (1981) 1, PL 112B (1982) 88, NP B194 (1982) 1, NP B194 (1982) 373, PL 109B (1982) 234, NP B214 (1983) 369, NP B223 (1983) 269, ZPHY C25 (1984) 121, ZPHY C27 (1985) 43, ZPHY C28 (1985) 23, PL B173 (1986) 211, PL B178 (1986) 329, NP B264 (1986) 221, NP B272 (1986) 253, ZPHY C36 (1987) 593, and ZPHY C37 (1987) 25

CERN-WA-025 (Jun 1974) Approved Aug 1976: Completed Dec 1983.

NEUTRINO AND ANTINEUTRINO INTERACTIONS IN DEUTERIUM

NIKHEF, AMSTERDAM - G van Apeldoorn, S Barlag, P van Dam, B Jongejans, A Tenner (Spokesperson), C Visser, M Wigmans
BERGEN U - A G Frødesen, B Grung, A Haatuft, A Halsteinslid, K Myklebust, A Rønebakke, O Skjeggstad, R Time
BOLOGNA U - P Capiluppi, G Giacomelli, G Graziani, P Serra Lugaresi, G Mandrioli, A Rossi
PADUA U - M Baldo-Ceolin, P Bobisut, E Calimani, S Ciampolillo, J Derkaoui, H Huzita, M Loreti, G Puglierin, A Sconza
PISA U & INFN, PISA - C Angelini, L Bertanza, A Bigi, R Casali, R Fantechi, E Flaminio, A Nappi, R Pazzi, C Petri, G Pierazzini
SACLAY - T Bolognese, A Borg, M L Faccini-Turluer, C Louedec, D Vignaud
TURIN U - D Allasia, F Bianchi, V Bisi, D Gamba, A Marzari-Chiesa, L Riccati, A Romero

Accelerator CERN-SPS Detector DBC-BEBC

Reactions

$\nu_\mu p \rightarrow \mu^-$ hadrons 0-260 GeV/c
 $\nu_\mu p \rightarrow \nu_\mu$ hadron(s) "
 $\nu_\mu n \rightarrow \mu^- p$ "
 $\nu_\mu n \rightarrow \mu^-$ hadrons "
 $\nu_\mu n \rightarrow \nu_\mu$ hadrons "
 ν_μ deut "
 $\bar{\nu}_\mu p \rightarrow \mu^+ n$ "
 $\bar{\nu}_\mu p \rightarrow \mu^+$ hadrons "
 $\bar{\nu}_\mu p \rightarrow \bar{\nu}_\mu$ hadron(s) "
 $\bar{\nu}_\mu n \rightarrow \mu^+$ hadrons "
 $\bar{\nu}_\mu n \rightarrow \bar{\nu}_\mu$ hadrons "
 $\bar{\nu}_\mu$ deut "

Particles studied charm

Comments The main aim is a comparison of cross sections and structure functions on protons and neutrons.

Papers PL 117B (1982) 262, ZPHY C24 (1984) 119, ZPHY C27 (1985) 239, PR D31 (1985) 2996, ZPHY C28 (1985) 321, PL 154B (1985) 231, PL B174 (1986) 450, PR D37 (1988) 219, and ZPHY C37 (1988) 527.

CERN-WA-038 (Apr 1977) Approved Jun 1977: Completed Dec 1983.

MAGNETIC MONOPOLE SEARCH AT THE SPS

CERN - P Lazeyras
KURCHATOV INST, MOSCOW - I I Gurevich, S Kh Khakimov, V P Martemianov (Spokesperson), A P Mishakora, V V Ogurtsov, V G Tarasenko
NOVOSIBIRSK, IYF - I Barkov
SERPUKHOV - A P Bugorsky
BOLOGNA U - G Giacomelli

Accelerator CERN-SPS Detector Other

SUMMARIES OF CERN EXPERIMENTS

Reactions

p nucleus $\rightarrow$ monopole X 400 GeV/c

Particles studied

monopole

Comments Targets are bombarded and the monopoles (if produced) are to be pulled out by a pulsed magnetic field and detected in emulsion and plastic.

CERN-WA-042 (Mar 1977) Approved Nov 1977; Completed Jun 1982.

AN EXPERIMENT ON THE STRONG INTERACTIONS AND RADIATIVE DECAYS OF HYPERONS

BRISTOL U - W M Gibson, R Owen, V J Smith, A Wood
GENEVA U - M Bourquin, P Extermann (Spokesperson),
T Modis, P Muhlenmann, J Perrier, K Ragan, P Schirato
HEIDELBERG U, PHYS INST - H Burckhart, H W Siebert,
K P Streit
LAUSANNE U - C Dore, M Gailloud, P Jacot, P Rosselet,
R Weill
QUEEN MARY COLL - S Biagi
RUTHERFORD - R M Brown, C N P Gee, R Gray, P W Jeffreys,
B Saunders, J J Thresher, C Yanagisawa

Accelerator CERN-SPS **Detector** Spectrometer

Reactions

$\Sigma^- p \rightarrow X$	74, 137 GeV/c
$\Sigma^- p \rightarrow \Lambda \pi^- p$	"
$\Sigma^- p \rightarrow \Sigma^0 \pi^- p$	"
$\Sigma^- p \rightarrow \Sigma^+ \pi^- \pi^- p$	"
$\Sigma^- p \rightarrow \Sigma^- \pi^+ \pi^- p$	"
$\Sigma^- \text{deut} \rightarrow X$	"
$\Xi^- p \rightarrow X$	"
$\Xi^- p \rightarrow \Xi^- p$	"
$\Xi^- p \rightarrow \Lambda K^- p$	"
$\Xi^- p \rightarrow \Sigma^0 K^- p$	"
$\Xi^- p \rightarrow \Xi^- \pi^+ \pi^- p$	"
$\Xi^- \text{deut} \rightarrow X$	"
$\bar{p} p \rightarrow X$	"
$\bar{p} \text{deut} \rightarrow X$	"
$\Xi^- \text{Be} \rightarrow \Xi^- X$	116 GeV/c
$\Xi^- \text{Be} \rightarrow \Omega^- X$	"
$\Xi^- \text{Be} \rightarrow Y^*(\text{unspec}) X$	"
$\Xi^- \text{Be} \rightarrow \Xi^*(\text{unspec}) X$	"
$\Xi^- \text{Be} \rightarrow \Omega^*(\text{unspec}) X$	"

Particles studied Λ , Σ^+ , $\Sigma(\text{unspec})^-$, $\Xi(\text{unspec})^-$

Comments The main aim is to study Σ^+ , Ξ^+ , and Ω^+ production in $\Xi^- N$ collisions. Hyperon radiative decays, mainly $\Lambda \rightarrow n\gamma$ and $\Sigma^+ \rightarrow p\gamma$, are also studied.

Papers NP B186 (1981) 1, ZPHY C9 (1981) 305, PL 112B (1982) 265, PL 112B (1982) 277, ZPHY C17 (1983) 113, PRPL 114 (1984) 100, ZPHY C28 (1985) 495, ZPHY C30 (1986) 201, ZPHY C31 (1986) 33, ZPHY C34 (1987) 15, ZPHY C34 (1987) 175, ZPHY C34 (1987) 187, and ZPHY C35 (1987) 143.

CERN-WA-044 (Feb 1977, Aug 1977) Approved Dec 1977; Completed Dec 1983.

SEARCH FOR QUARKS IN HIGH-ENERGY NEUTRINO INTERACTIONS

INFN, BOLOGNA - G Bonvicini, P Giusti, T Massam,
C Del Papa, G Cara Romeo
BOLOGNA U - M Basile, G D'Alì, F Palmonari, G Sartorelli
CERN - L Cifarelli, A Contin, R Nania, F Rohrback, A Zichichi
(Spokesperson)
FRASCATI - M Curatolo, B Esposito, M Spinetti, G Susinno,
L Votano
INFN, ROME & ROME U - I Laasus

Accelerator CERN-SPS **Detector** Combination

Reactions

$\nu_\mu \text{Pb} \rightarrow$ quark X 0 200 GeV/c

Particles studied quark

Papers LNC 29 (1980) 251.

CERN-WA-065 (Apr 1980) Approved May 1980; Completed Sep 1982.

FURTHER STUDIES OF PROMPT NEUTRINO PRODUCTION IN 400 GeV PROTON NUCLEUS COLLISIONS

CHARM COLLABORATION

CERN - J V Allaby, U Amaldi, L Barone, A Capone, W Flegel,
L Lanceri, M Metcalf, J Panman, K Winter ($\checkmark$ Spokesperson)
HAMBURG U - J Aspiazu, F W Busser, H Daumann, P D Gall,
F Niebergall, P Schutt, P Stahelin
NIKHEF, AMSTERDAM - F Bergsma, J P Dorenbosch,
M Jonker, C Nieuwenhuis, F Udo
ROME U - G Barbiellini, A Baroncelli, B Borgia, C Bosio,
M Diemoz, U Dore, F Ferroni, E Longo, L Luminari,
P Monacelli, F de Notaristefani, C Santoni, L Tortora,
V Valente
MOSCOW, ITEP - P Gorbunov, E A Grigoriev, V S Kaftanov,
V D Khovansky, A Rosanov

Accelerator CERN-SPS **Detector** CHARM

Reactions

p nucleus $\rightarrow \nu X$ 400 GeV/c

Particles studied longlived

Comments Continues studies of CERN-WA-018 on properties of prompt neutrino production. A first run with Cu beam dumps of densities 1 and 1/3 and 2.5×10^{18} protons finished in September 82. The dump-to-detector distance is 480 m in a new facility. Also made in parallel a search for penetrating neutral particles in a second detector at 10 mrad to the incident proton beam viewing a 40-m-long decay length.

Papers PL 128B (1983) 361, PL 157B (1985) 458, PL 166B (1986) 473, PL B180 (1986) 303, NIM A253 (1987) 203, and ZPHY C40 (1988) 497.

CERN-WA-066 (Apr 1980) Approved May 1980; Completed Sep 1982.

FURTHER STUDY OF PROMPT NEUTRINO PRODUCTION IN PROTON-NUCLEUS COLLISIONS USING BEBC

AACHEN, TECH HOCHSCH, III PHYS INST - H Grassler
DEMOCRITOS NUCLEAR RESEARCH CENTER - M Driis,
E Simopoulou, A Vayaki
BONN U - W Droge, U Idschok, H Kreutzman, B Nellen,
B Wuensch
CERN - A M Cooper-Sarkar, D C Cundy, H Foeth, A Grant,
G G Harigel, H Klein, D R O Morrison, M Nikolic, L Pape,
A Parker, P Schmid, H W Wachsmuth
IMPERIAL COLL - K W J Barnham, D B Miller,
M M Mobayyen, M Talebzadeh
MUNICH, MAX PLANCK INST - M Aderholz, L Deck,
N Schmitz, W Wittek
OXFORD U - P Bostock, J Kristic, G Myatt, D Radojicic
SACLAY - T Bolognese, M L Faccini-Turler, D Vignaud
STOCKHOLM U - K Hultquist, P O Hultth ($\checkmark$ Spokesperson),
C Walck
RUTHERFORD - J Guy, W Venus

Accelerator CERN-SPS **Detector** HLBC-BEBC-HYB

Reactions

p nucleus $\rightarrow \nu X$ 400 GeV/c

Comments Continues studies of CERN-WA-052. A beam dump experiment.

Papers PL 160B (1985) 207, PL 160B (1985) 212, NP B273 (1986) 253, and NP B291 (1987) 503. No other papers expected.

CERN-WA-068 (Aug 1980) Approved Mar 1981; Completed Sep 1982.

FURTHER STUDY OF PROMPT NEUTRINO PRODUCTION IN A PROTON BEAM DUMP EXPERIMENT

SUMMARIES OF CERN EXPERIMENTS

CERN - F Dydak, R Hagelberg, J Knobloch, J Krolkowski,
J May, F Ranjard, W von Rueden, J Steinberger
(Spokesperson), H Taureg, H Wahl, J Wotschack
DORTMUND U - P Buchholz, J Duda, F Eisele, K Kleinknecht,
D Pollmann, B Pszola, B Renk
HEIDELBERG U, IHEP - T Flottmann, C Geweniger,
J G H de Groot, R Herden, H Keilwerth, N Magnussen, K Tittel
SACLAY - P Debu, C Guyot, J P Merlo, P Perez, J Rander,
J P Schuller, R Turley
WARSAW, INR - H Abramowicz, A Para, M Szczekowski,
M Szeptycka
FERMILAB - J P Berge

Accelerator CERN-SPS Detector CDHS

Reactions

p nucleus $\rightarrow \nu X$ 450 GeV/c

Particles studied charm

Comments An extension of CERN-WA-054 to investigate with much better accuracy the equality of prompt ν_e and ν_μ fluxes.

CERN-WA-069 (Mar 1980) Approved Apr 1981, Jun 1982, Jun 1985; Completed Jul 1986.

PHOTOPRODUCTION IN THE ENERGY RANGE 70-200 GeV

BONN U - F D Behert, B Diekmann, C Gapp, F D Gebert,
K Heinoth, C Hoeger, S Holtkamp, H-P Jakob, D Joseph,
M Jung, J Kinglev, G Koersgen, E Pauli (✓ Spokesperson),
H Rotscheid, S Soeldner-Rembold, A Tetzner-Voigtlaender,
A S Weigend
CERN - D Barberis, M Davenport, J Eades, R H McClatchey
YEREVAN PHYS INST - L S Bagdasaryan, S Danagulian,
P I Galumyan, A G Oganessyan
LANCASTER U - T J Brodbeck, T Charity, A B Clegg,
R C W Henderson, M T Hickmann, N Keemer, D Newton,
A O'Connor, G W Wilson
MANCHESTER U - N Brook, P Coyle, B Dickinson,
A Donnachie, A T Doyle, R J Ellison, J M Foster, R E Hughes-Jones,
M Ibbotson, S D Kolya, G D Lafferty, H McCann,
C McManus, D Mercer, P J Ottewill, D Reid, R J Thompson,
J Waterhouse, M F Worsell
RUTHERFORD - R Apsimon, P S Flower, G Halliwell,
J S Hutton, J A G Morris, J V Morris, C N Patterson,
P H Sharp, C Uden
SHREFFIELD U - S Danaher, W Galbraith, N A Thacker,
L Thompson

Accelerator CERN-SPS Detector OMEGA

Reactions

$\gamma p \rightarrow$ hadrons 65-180 GeV/c
 $\pi^+ p \rightarrow$ hadrons 80, 140 GeV/c
 $\pi^- p \rightarrow$ hadrons "
 $K^+ p \rightarrow$ hadrons "
 $K^- p \rightarrow$ hadrons "

Comments Continues photoproduction studies of WA-004 and WA-057 to higher energies, with comparison to hadronic beam data. Topics include photoproduction of charmed particles, vector mesons, and high-mass multiparticle states, and a search for events due to lowest order QCD processes giving evidence of point-like interactions of the photon.

Papers IEEE TNS 30 (1983) 35, IEEE TNS 33 (1986) 122, IEEE TNS 34 (1987) 504, NIM (to be published), and ZPHY C43 (1989) 63.

CERN-WA-070 (Aug 1980) Approved Oct 1981; Completed Nov 1986.

STUDY OF DIRECT PHOTON EVENTS IN HADRONIC COLLISIONS

GENEVA U - R Bopp, S U Chung, M Donnat, P A Dorsaz,
E Durieux, J Fischer, M Izicki, M N Kienzle, M Martin
(✓ Spokesperson), L Mathys, L Rosselet, N Solomey, M Werlen
GLASGOW U - S Jack, J G Lynch, A Maxwell, P J Negus,
A S Thompson, R M Turnbull, J Wells
LIVERPOOL U - P S L Booth, L J Carroll, A J Cass,
D N Edwards, J N Jackson, R Poulitney, W H Range, S Snow

MILAN U - M Bonesini, D Cavalli, G Costa, E Galluzzi,
F Gianotti, L Mandelli, M Mazzanti, L Perini, G Polesello
NEUCHÂTEL U - E Bonvin, L Fluri, A Jornd

Accelerator CERN-SPS Detector OMEGA

Reactions

$\pi^+ p \rightarrow \gamma X$ 200, 280 GeV/c
 $\pi^- p \rightarrow \gamma X$ "
 $\pi^- p \rightarrow \gamma \gamma X$ "
 $p p \rightarrow \gamma X$ "

Comments Uses a fine-grained γ detecting calorimeter (lead plates and liquid scintillator in teflon tubes) together with the Omega spectrometer.

Papers NIM A271 (1987) 471, ZPHY C37 (1987) 39, ZPHY C37 (1988) 535, NIM A263 (1988) 325, NIM A264 (1988) 205, NIM A270 (1988) 21, NIM A270 (1988) 32, ZPHY C38 (1983) 371, and ZPHY C41 (1989) 591.

CERN-WA-071 (Feb 1981) Approved Oct 1981; Completed Sep 1984.

AN EXPERIMENT TO STUDY BEAUTY PRODUCTION AND LIFETIME IN THE UPGRADED OMEGAPRIME SPECTROMETER

CERN - G Darbo, J Garcia, E Higon, L Rossi, G Vanderhaeghe
GENOA U - M Dameri, B Ocualiti, M Sannino, G Tomasini,
S Vitale
MILAN U & INFN, MILAN - P F Manfredi, D Marioli, C Meroni,
S Micheletti, G Vegni
LEBEDEV INST - M I Adamovich, Y A Alexandrov,
M M Chernyavsky, S G Gerasimov, V G Lariionova,
N G Menjail-Perezadko, G I Orlova, N A Salmanaova,
L N Shtarkov, M I Tret'yakova, M V Vnukova
PARIS, CURIE UNIV VI & PARIS, UNIV VII, LPNH -
M M Cloarec, F Levy, J Lory, D Schiune, Tsai-Chu, B Willot
INFN, ROME & ROME U - G Baroni, G Diambri-Palazzi
(Spokesperson), P Ginobbi, E Lamanna, M A Mazzoni,
F Meddi, S Pettera
SANTANDER U - R Niembro, A Ruiz, E Villar
VALENCIA U - J M Bolta, J Cabrera, R Llosa, M A Sanchis,
F Senet
GENEVA U - S Tentindo

Accelerator CERN-SPS Detector OMEGAPRIME

Reactions

π^- nucleus 350 GeV/c

Particles studied bottom, charm

Comments Detects beauty particles produced in emulsion targets using a charm decay detector or a high- p_t electron trigger. A total of 50 liters of emulsion exposed.

Papers NIM 217 (1983) 194, NIM 225 (1984) 661, NIM 226 (1984) 63, and PL B187 (1987) 437.

CERN-WA-072 (Jun 1981) Approved Oct 1981; Completed Mar 1982.

A STUDY OF FAST PROTON PRODUCTION IN $\pi^\pm$ NUCLEUS INTERACTIONS USING THE OMEGA SPECTROMETER

CERN - W Beusch, A Burns, K Knudson, A Palano, E Quercigh,
R Zitoun
PARIS, CURIE UNIV VI - T A Armstrong, M Baubillier,
N Er Schaidat
NEUCHÂTEL U - D Perrin
WARSAW U, IEP - A Jacholkowski, S Otwinowski, M Szeptycka
(Spokesperson), S Tkaczyk, R Walczak
LISBON, IFM - M C Abrell, J Gago, M Pimenta
Accelerator CERN-SPS Detector OMEGA

Reactions

π^+ nucleus $\rightarrow p X$ 30 GeV/c
 π^- nucleus $\rightarrow p X$ "

Comments Measures the inclusive cross sections of fast (> 11 GeV/c) protons produced by π^+ and π^- on H, C, Al, Cu, Sn, and Pb.

SUMMARIES OF CERN EXPERIMENTS

Papers ZPHY C25 (1984) 115, and ZPHY A324 (1986) 1.

CERN-WA-074 (Dec 1981) Approved Feb 1982; Completed May 1982.

pp GLORY SCATTERING

CERN - P Sonderegger, R Zitoun
LISBON, IFM - J Dias de Deus, J M Gago (Spokesperson),

M Pimenta
NEUCHÂTEL U - D Perrin
PARIS, CURIE UNIV VI - T Armstrong, M Baubillier,
J C Briant, M Sene, Z Strachman
COLLEGE DE FRANCE - J Kahane, R Sene
MOSCOW, ITEP - Yu Galaktionov

Accelerator CERN-SPS Detector OMEGA

Reactions

$\bar{p} p \rightarrow \bar{p} p$ 8-12 GeV/c
 $\pi^- p \rightarrow \pi^- p$ "
 $K^- p \rightarrow K^- p$ 8-16 GeV/c

Comments Studies backward elastic scattering, and Λ polarization in the K^- fragmentation region.

Papers NP B262 (1985) 356, and NP B284 (1987) 643.

CERN-WA-075 (Sep 1981) Approved Apr 1982; Completed Jun 1984.

AN EXPERIMENT TO OBSERVE DIRECTLY BEAUTY PARTICLES SELECTED BY MUONIC DECAY IN EMULSION AND TO ESTIMATE THEIR LIFETIMES

BARI U - N Armenise, O Erriquez, M T Muciaccia, S Natali,
S Nuzzo, F Romano, F Ruggieri
BRUSSELS U, IIHE - M Barth, G Bertrand-Coremans, R Roosen
CERN - E Chesì, P Musset, F Piuze, G Poulard, G Rosa,
H Sletten
UNIVERSITY COLL, DUBLIN - A Breslin, A Montwill
JAPAN U GROUP COLLAB - M Hazama, K Hoshino, Y Isogane,
Y Maeda, M Miyaniishi, M Nakamura, K Niu, K Niwa,
M Ohashi, Y Sato, H Shibuya, Y Tsuneko, N Ushida,
O Yamakawa, Y Yanagisawa
UNIVERSITY COLL, LONDON - J H Bartley, D H Davis,
B G Duff, M J Eaten, F F Heymann, D C Imrie, G J Lush,
D N Tovee

ROME U - G Baroni, S Dell'Uomo, A Frenkel, S Di Liberto,
A Manfredini, G Marini, G Martellotti, A Nigro, G Penso,
E Petrolo, P Pistilli, G Romano (✓ Spokesperson), A Sciubba,
G Sgarbi, M De Vincenzi

TURIN U - D Allaia, V Bisi, D Gamba, A Marzari-Chiesa,
L Ramello, L Riccati, A Romero
MARSEILLE U, LUMINY - J P Albanese
STRASBOURG, CRN - R Arnold
BIRKBECK COLL - M Coupland, P Trent

Accelerator CERN-SPS Detector Emulsion

Reactions

π^- nucleus $\rightarrow$ bottom X 350 GeV/c

Particles studied bottom, charm

Comments Identification involves direct observation in emulsion of beauty and charm decays. Selection uses high- p_T muons. Eighty liters of emulsion are exposed.

Papers PL 158B (1985) 186, PL B186 (1987) 435, PL B187 (1987) 185, PL B209 (1988) 113, and NIM A274 (1989) 64.

CERN-WA-076 (Jan 1982) Approved Apr 1982, Nov 1984; Completed Nov 1986.

STUDY OF THE MESONS PRODUCED CENTRALLY IN THE REACTION $pp \rightarrow ppX^0$ AT 300 GeV/c

ATHENS U - A Apostolakis, M Spyropoulou-Stassinaki,
G Vassiliadis
BARI U - M Caponero, C Evangelista, B Ghidini V Lenti,
F Navach, A Palano (✓ Spokesperson), G Zito
BIRMINGHAM U - I J Bloodworth, J N Carney, R Childs,
J B Kinson, A Kirk, H R Shaylor, O Villalobos-Baillie,
M F Votruba

CERN - T A Armstrong, W Beusch, B R French, Y Goldschmidt-Clermont, K Knudson, J C Lassalle, E Quercigh, N Redaelli,
L Rossi, M T Trainor
COLLEGE DE FRANCE - M Benayoun, J Kahane, P Leruste,
A Malamant, J L Narjoux, M Sene, R Sene
PARIS, CURIE UNIV VI - A Jacholkowski, R Zitoun

Accelerator CERN-SPS Detector OMEGA

Reactions

$p p \rightarrow p p X$ 85, 300 GeV/c
 $\pi^+ p \rightarrow \pi^+ p X$ 85 GeV/c

Particles studied $f_1(1420)$, meson⁰, glueball

Comments Examines many specific exclusive channels. The first phase completed in 1982 was at 85 GeV/c, the second phase was at 300 GeV/c.

Papers PL 146B (1984) 273, PL 166B (1986) 245, PL 167B

(1986) 133, ZPHY C34 (1987) 23, ZPHY C34 (1987) 33, ZPHY C35 (1987) 167, NIM A274 (1989) 165, ZPHY C43 (1989) 55, PL B221 (1989) 218, and PL B221 (1989) 221.

CERN-WA-077 (Sep 1982) Approved Nov 1982; Completed Jul 1987.

SEARCH FOR DIRECT PRODUCTION OF GLUONIUM STATES IN HIGH $p_\perp$ $\pi^- N$ COLLISIONS AT 350 GeV/c

ATHENS U - M Spyropoulou-Stassinaki, G Vassiliadis
BARI U - C Evangelista, B Ghidini, V Lenti, F Navach, A Palano,
G Zito
BIRMINGHAM U - I J Bloodworth, J N Carney, J F Kinson,
A Kirk, M T Trainor, O Villalobos-Baillie, M F Votruba
CERN - W Beusch, B R French, Y Goldschmidt-Clermont,
A Jacholkowski, K Knudson, J C Lassalle, R Petruzzio,
E Quercigh (Spokesperson)

COLLEGE DE FRANCE - M Benayoun, J Kahane, P Leruste,
A Malamant, J L Narjoux, R Sene
PARIS, CURIE UNIV VI - M Sene, R Zitoun

Accelerator CERN-SPS Detector OMEGA¹ IME

Reactions

$\pi^- Be \rightarrow$ hadrons 150, 300 GeV/c

Particles studied glueball

Papers NIM A249 (1986) 391, PL B183 (1987) 412, and PL B198 (1987) 281.

CERN-WA-078 (Feb 1983) Approved Jun 1983; Completed Aug 1985.

SEARCH FOR THE HADROPRODUCTION OF $b\bar{b}$ PAIRS

BARI U - G Catanese, M T Muciaccia, S Natali, S Nuzzo,
F Ruggieri
BRUSSELS U, IIHE - M Van Hove, R Roosen
CERN - G Carboni, M J Eaten, G Fidecaro, M Fidecaro,
P Musset, P Pistilli (Spokesperson), F Piuze, G Poulard,
H Sletten

UNIVERSITY COLL, LONDON - J H Bartley, M Coupland,
D H Davis, B G Duff, F F Heymann, D C Imrie, G J Lush,
D N Tovee, P Trent

ROME U & INFN, ROME - A Frenkel, E Lamanna, S Di Liberto,
G Marini, G Martellotti, A Nigro, G Penso, S Petrerà,
E Petrolo, G Romano, G Rosa, A Sciubba, M De Vincenzi

TURIN U & INFN, TURIN - V Bisi, D Gamba, L Riccati

TURIN U - L Ramello

GENOA U & INFN, GENOVA - G Crosetti

DESY - C Gerke

Accelerator CERN-SPS Detector Spectrometer

Reactions

π^- nucleus $\rightarrow \mu^+ \mu^- X$ 320 GeV/c
 π^- nucleus $\rightarrow \mu^- \mu^- X$ "
 π^- nucleus $\rightarrow 3\mu^- X$ "
 π^- nucleus $\rightarrow 4\mu^- X$ "

Particles studied bottom, D^0

SUMMARIES OF CERN EXPERIMENTS

Comments In addition to the search for the associated production of beauty particles, the experiment also looks for evidence of $D^0\bar{D}^0$ mixing and measures the A dependence of the $D\bar{D}$ cross section

Papers NIM A243 (1986) 348, NIM A248 (1986) 326, PL B187 (1987) 431, NIM A253 (1987) 222, NIM A260 (1987) 43, PL B191 (1987) 456, PL B202 (1988) 453, PL B206 (1988) 546, and PL B213 (1988) 395

CERN-WA-079 (Apr 1983) Approved Jun 1983. Started Aug 1986

STUDY OF NEUTRINO-ELECTRON SCATTERING AT THE SPS

CHARM-II COLLABORATION

BRUSSELS U. IIHE D Geirgat, P Vilhan, G Wilquet, C De Winter

CERN - F Bergsma, U Binder, H Burkard, A Capone, W Flegel, H Grote, F Niebergall, C Nieuwenhuis, H Overas, V Palladino, J Panman, G Piredda, K Winter (✓ Spokesperson), G Zacek, V Zacek

HAMBURG U. T Bauche, R Beyer, V Blobel, F W Busser, C Foos, L Gerland, G Raedel, P Stahelin, A Tadsen

LOUVAIN U. T Delbar, B Emsens, D Favart, G Gregoire, E Knoop, T Mouthuy

MOSCOW ITEP P Gorbunov, E A Grigoriev, V D Khovansky, A Maslennikov, A Rosanov

MUNICH U. EXP PHYS W Lippich, A Nathaniel, A Stauden, NAPLES U. IFS & INFN NAPLES M Caria, B Eckart,

A Ereditato, E Grimm, F Grancagnolo, R Jasevahi, P Strolin, INFN, ROME E Di Capua, U Dore, P Loverre, D De Pedis,

A Rambaldi-Frenkel, R Santacesaria, D Zanelli

Accelerator CERN-SPS **Detector** CHARM-II

Reactions

$\nu_\mu e^- \rightarrow \nu_\mu e^-$ 5 160 GeV c

$\bar{\nu}_\mu e^- \rightarrow \bar{\nu}_\mu e^-$ "

Comments The main aim is to measure the ratio of cross sections for $\nu_\mu e^-$ and $\bar{\nu}_\mu e^-$ scattering. This gives the electroweak mixing angle. Taking data

Papers NIM A260 (1987) 368, and NIM A263 (1988) 109

CERN-WA-080 (1982) Approved Feb 1983. Nov 1984

STUDY OF RELATIVISTIC NUCLEUS-NUCLEUS COLLISIONS AT THE CERNS SPS

DARMSTADT, GSI R Albrecht, R Bock, H H Gutbrod (✓ Spokesperson), B Kolb, I Lund, H R Schmidt, T Siemarczuk

LBL P Jacobs, A M Poskanzer, H G Ritter

LUND U. G Claesson, A Eklund, S Garpman, H A Gustafsson, J Ith, P Kristiansson, A Oskarsson, I Otterlund, S Persson, E Stenlund

MUNSTER U. P Beckmann, F Berger, G Clewing, L Dragon, R Glasow, K H Kampert, H Lochner, T Peitzmann, M Porschke, R Santo, K Steffens, D Stuerken

OAK RIDGE T Awek, C Bartal, R Ferguson, A Franz,

F Obenshain, F Pfaff, S Saini, S Sorensen, M Tucknell, G Young

Accelerator CERN-SPS **Detector** PLASTIC-BALL Ionization chamber Calorimeter

Reactions

^{16}O nucleus 60 200 GeV T_{lab} N

^{32}S nucleus 200 GeV T_{lab} N

p nucleus "

Comments Also uses streamer tubes with pad readout and a lead glass array. Determines the energy flux and transverse energy distribution, the high k_T h^0 and π spectra near mid-rapidity, the target spectator decay pattern and entropy from relative yields of p, d, pions, etc., and the multiplicity distribution and multiplicity fluctuations. Taking data

Papers PL B199 (1987) 247, NP A361 (1987) 447, PL B201 (1988) 396, PL B202 (1988) 556, APP B13 (1988) 359, ZPHY C38 (1988) 3, ZPHY C38 (1988) 51, ZPHY C38 (1988) 97

ZPHY C38 (1988) 109, NP A488 (1988) 651, and PL B221 (1989) 427

CERN-WA-081 (1983) Approved Nov 1984. Completed Jun 1986

MEASUREMENTS OF PAIR PRODUCTION UNDER CHANNELLING CONDITIONS BY 70-180 GeV PHOTONS INCIDENT ON SINGLE CRYSTALS

AARHUS U. J Bak, S P Moller, G Oades, K Ostergaard, J B B Petersen, E Uggerhoj (✓ Spokesperson),

CERN A Sorensen

STRASBOURG, CRN P Siffert, M Siffert

Accelerator CERN-SPS **Detector** OMEGA

Reactions

γ crystal $\rightarrow e^+ e^- X$ 15 150 GeV c

Comments Uses the set-up of CERN WA-069

Papers PL B202 (1988) 615, PL B212 (1988) 537, and PL B213 (1988) 242

CERN-WA-082 (Oct 1985) Approved Feb 1986

HIGH STATISTICS STUDY OF CHARM HADROPHRODUCTION USING AN IMPACT PARAMETER TRIGGER

BOLOGNA U. & INFN, BOLOGNA A Fornio, R Gessardi,

P Mazzanti, A Quarenzi-Vignudelli, F Viaggi

CERN D Baeris, W Bensch, M Davenport, J P Dufey,

B R French, A Jacholkowski, K Knudsen, J C Lassalle, I Muller

GENOA U. & INFN, GENOA M Dameri, R Hurst, B Orsini,

L Rossi (✓ Spokesperson), G Tomassini

LEBEDEV INST. M Adamovich, Yu A Alexandrov,

S G Gerasimov, S P Kharlamov, L V Mahnina, M V Zaveriyayev

INFN, MILAN & MILAN U. C Meroni, N Rodighi, D Torretta,

MONS U. J L Bailey, A Buys, F Grad, P Legros

Accelerator CERN-SPS **Detector** OMEGA

Reactions

π^+ nucleus $\rightarrow$ charm X 340 GeV c

p nucleus $\rightarrow$ charm X 370 GeV c

Particles studied charm, D^+ , D^0 , D_s^+ , Λ_c^+

Comments Triggers on charm decays by measuring the impact

parameter. Uses silicon-strip counters as a microvertex detector. Taking data

Papers NP 1B (1988) 303

CERN-WA-083 (Oct 1985) Approved Feb 1986. Completed Nov 1986

INVESTIGATION OF SOFT PHOTON PRODUCTION IN HADRONIC COLLISIONS USING THE OMEGA SPECTROMETER

ATHENS U. S Anagnostis, A Belzoni, M Spyropoulou-Stassinaki,

(✓ Spokesperson), G Vassiliadis, I Vichou

TATA INST. S Bannerjee, A Subramanian,

CERN D Barbier, W Bensch, Y Goldschmidt-Clermont,

K Knudsen, E Querrigh, P Sonderegger,

LANCASTER U. T J Brodbeck, G W Wilson

Accelerator CERN-SPS **Detector** OMEGA

Reactions

$\pi^+ p \rightarrow \pi^+ X$ 280 GeV c

$p p \rightarrow \pi^+ X$ "

$\pi^- p \rightarrow \pi^- X$ "

Comments Investigates an observation made in BEBC that the yield of soft π 's exceeds the QED prediction of hadronic bremsstrahlung

CERN-WA-084 (Jan 1987) Approved Apr 1987

STUDY OF THE PRODUCTION AND DECAY PROPERTIES OF BEAUTY FLAVORED HADRONS

SUMMARIES OF CERN EXPERIMENTS

CERN W Beusch, J P Fabre, H Leutz, D R O Morrison.

M Primout, E Vicari

IMPERIAL COLL A Duane, K Harrison, D Websdale

PISA U & INFN, PISA G Angelini, A Cardini, E Flammini,

C Roda

ROME U & INFN, ROME A Freinkel, E Lamanna,

G Martellotti (✓ Spokesperson), G Penso, S Petrer, A Sciubba,

M Di Vincenzi, G Di Vita

RUTHERFORD - D J Crennell

SOUTHAMPTON U - J G McEwen

Accelerator CERN-SPS Detector OMEGA

Reactions

π^- nucleus $\rightarrow B(5270) \bar{B}(5270) X$ 350 GeV/c

Comments Developing an active target composed of 30- μ m-diameter scintillating plastic optical fibers. Aims are to measure the $B^\pm$ and B^0 lifetimes separately, the ratio ($b \rightarrow u$) ($b \rightarrow c$), and to search for $B^0 \bar{B}^0$ mixing. In preparation. Scheduled to run in September 89.

CERN-WA-085 (Oct 1984, Mar 1987) Approved Apr 1987.

STUDY OF HIGH ENERGY NUCLEUS-NUCLEUS INTERACTIONS USING THE Ω^- SPECTROMETER EQUIPPED WITH A MULTIPARTICLE HIGH p_T DETECTOR

ATHENS U - S Abatzis, M Spyropoulou-Stassinaki, G Vassiliadis

BARI U - C Evangelista, R Fini, B Ghidini, V Lenti, F Navach

BIRMINGHAM U - I J Bloodworth, J N Carney, R Childs,

J B Kinson, A Kirk, H R Shaylor, O Villalobos-Baillie,

M F Votruba

CERN - W Beusch, B R French, A Jacholkowski, K Knudson,

J C Lassalle, E Quercigh (Spokesperson), M T Trainor

COLLEGE DE FRANCE - M Benayoun, J Kahane, P Leruste,

A Malamant, J L Narjoux, M Sene, R Sene, J Tocqueville,

A Volte

GENOA U & INFN, GENOA - L Rossi

PARIS, CURIE UNIV VI - R Zitoun

TRIESTE U & INFN, TRIESTE - A Penzo

Accelerator CERN-SPS Detector OMEGA PRIME

Reactions

^{32}S W 200 GeV (T_{lab}/N)

Comments An exploratory experiment to look for new physics, and particularly for evidence for a quark-gluon plasma. Taking data.

CERN-WA-086 (Mar 1987) Approved Jun 1987. Completed Oct 1987

EXPOSURE OF CR39 STACKS TO OXYGEN AND/OR SULPHUR BEAMS AT THE CERN-SPS

BOLOGNA U & INFN, BOLOGNA - G Giacomelli

(✓ Spokesperson), A Margiotta-Neri, L Patrizi, G Sanzani,

P Serra-Lugaresi, M Spurio, G Vanderhaeghe

Accelerator CERN-SPS Detector Plastic

Reactions

^{16}O nucleus 50, 200 GeV (T_{lab}/N)

^{32}S nucleus "

Comments The main purpose is to calibrate CR39 sheets to be used in a large-area search for magnetic monopoles at the Gran Sasso Laboratory. A byproduct is to obtain upper limits on the production of nuclei with attached fractional charge

CERN-WA-087 (Mar 1987) Approved Jun 1987. Completed Oct 1987

INVESTIGATION OF NUCLEAR FRAGMENTATION IN RELATIVISTIC HEAVY ION COLLISIONS USING PLASTIC NUCLEAR TRACK DETECTORS

SIEGEN U - C Brechtmann, J Dreute, W Heinrich

(✓ Spokesperson)

Accelerator CERN-SPS Detector Plastic

Reactions

^{32}S nucleus 200 GeV (T_{lab}/N)

^{16}O nucleus 60, 200 GeV (T_{lab}/N)

Comments Uses CR39 track detectors to measure cross sections for production of nuclear fragments. Studies coulomb dissociation for various targets and energies

Papers PL B200 (1988), 583, ZPHY A330 (1988) 407, and ZPHY A331 (1988) 463

CERN-WA-088 (May 1987) Approved Jun 1987. Started Oct 1987. Completed Oct 1987

TEST OF BUBBLE DAMAGE DETECTORS IN A HEAVY ION BEAM FROM THE SPS

CARLETON U - J L Pinfold (✓ Spokesperson), J Waterhouse

CHALK RIVER, AECL - H Ing

NATIONAL RESEARCH COUNCIL, OTTAWA - F G Oakham,

C J Virtue

Accelerator CERN-SPS Detector Other

Reactions

^{32}S 200 GeV (T_{lab}/N)

Comments Studies properties of a polymer that holds droplets of a super-heated liquid in suspension. The threshold dE/dz to cause bubble formation varies with temperature and pressure, and the polymer can be reset with sufficient overpressure. Such a detector could be used to detect ionizing particles from cosmic rays or high energy particle interactions.

CERN-WA-089 (Aug 1987) Approved Feb 1988.

NEW HYPERON BEAM EXPERIMENT AT THE CERN-SPS USING THE OMEGA FACILITY

BOLOGNA U & INFN, BOLOGNA - A Forino, R Gessaroli,

A Quareni-Vignudelli, F Viaggi

CERN - D Barberis, W Beusch, J P Dufey, B R French,

P Grafstroem, J C Lassalle, F Muller

GENOA U & INFN, GENOA - M Dameri, B Osculati, L Rossi,

G Tomasini

GRENOBLE U - C Berat, M Buenerd, J Chauvin, J Y Hostachy,

P Martin, D Rebreyend

HEIDELBERG, MAX PLANCK INST - W Brueckner, T Henkes,

T Kallakowky, S Paul, B Povh, K Roehrich

HEIDELBERG U - H Doebbeling, J Engelfried, J Heintze,

S Ljungfelt, H Rieseberg, H W Siebert (✓ Spokesperson)

MAINZ U, INST PHYS - U Mueller, G Rosner, T Walcher

MONS U - J L Bailly, A Buys, F Grand, P Legros, P Pilette

LEBEDEV INST - M I Adamovich, Yu A Alexandrov, S G Gerasimov, S P Kharlamov, L N Malinina, N G Peresadko, M V Zavytyaev

Accelerator CERN-SPS Detector OMEGA

Reactions

Σ^- Cu 360 GeV/c

Σ^- Be "

Ξ^- Cu 300 GeV/c

Ξ^- Be "

Ω^- Cu "

Ω^- Be "

Particles studied Λ^+ , Σ^+ (2455), Ξ^0 , Ξ^+ , Ω^0 , Ω^+ , Ω^* (unspec), Ξ^* (unspec), dibaryon ($S = -2$), Ξ (2980)

Comments The aims are (1) to study charmed strange baryons, (2) to see if the Ξ (3100) actually exists, (3) to study Ω decays and Ξ and Ω resonances, and (4) to look for the doubly strange dibaryon, the H . In preparation

CESR Experiments

CESR-CLEO Started Oct 1979.

THE CLEO EXPERIMENT AT CESR

CORNELL U - C Bebek, K Berkelman, E Blucher, D G Cassel, T Copie, R DeSalvo, J W DeWire, R Ehrlich, R Galik, M G D Gilchrist, B Gittelman, S W Gray, M Halling, D L Hartill, Z K Heltsley, S Holzner, M Ito, J Kandaswamy, R Kowalewski, D L Kreinick, Y Kubota, N B Mistry, J Mueller, R Namjoshi, E Nordberg, M Ogg, D Perticone, D Peterson, M Pisharody, K Read, D Riley, A Silverman, P C Stein, S Stone, Xia Yi

HARVARD U - T Bowcock, R Giles, J Hassard, K Kinoshita, F Morrow, F M Pipkin, R Wilson
 ROCHESTER U - S Behrends, J A Guida, J M Guida, F Morrow, R Poling, C Rosenfeld, E H Thorndike, P Tipton
 RUTGERS U - J Green, F Sannes, R Stone
 SYRACUSE U - D Bortoletto, A Chen, L Garren, M Goldberg, N Horwitz, A Jawahery, P Lubrano, G Monetti (Spokesperson)
 VANDERBILT U - S Casoria, M Mestayer, R S Panvini, G B Word

OHIO STATE U - T Gentile, P Haas, M Hempstead, T Jensen, H Kagan, R Kass

ITHACA COLL - A J Sadoff

SUNY, ALBANY - M S Alam, N Katayama, I J Kim, C R Sun, V Tanikella

CARNEGIE MELLON U - A Bean, G J Bobbink, I Brock, A Engler, T Ferguson, R Kraemer, C Rippich, R Sutton, H Vogel

FLORIDA U - P Avery, D Besson

Accelerator CESR Detector CLEO

Reactions

$e^+e^- \rightarrow \text{hadrons}$ 9.0 12.0 GeV (E_{cm})
 $e^+e^- \rightarrow e^+e^-$ "
 $e^+e^- \rightarrow \mu^+\mu^-$ "

Particles studied $\Upsilon(1S)$, $\Upsilon(2S)$, $\Upsilon(3S)$, $\Upsilon(4S)$, $B(5270)$, τ , D^+ , D^0 , D_s^+

Comments Studies e^+e^- interactions in the energy range of the Υ resonances. Topics include $b\bar{b}$ spectroscopy, b -quark decays, and decays of the Υ 's.

Papers PRL 44 (1980) 1108, PRL 45 (1980) 219, PRL 46 (1981) 84, PRL 46 (1981) 88, PRL 46 (1981) 1181, PRL 48 (1982) 1070, PRL 49 (1982) 357, PRL 49 (1982) 610, PRL 49 (1982) 617, PR D27 (1983) 475, PR D27 (1983) 1665, NIM 211 (1983) 47, PL 122B (1983) 317, PRL 50 (1983) 807, PRL 50 (1983) 877, PRL 50 (1983) 881, PRL 51 (1983) 347, PRL 51 (1983) 634, PRL 51 (1983) 1139, PRL 51 (1983) 1143, PR D29 (1984) 1285, PRL 52 (1984) 799, PL 137B (1984) 277, PRL 52 (1984) 1084, PRL 53 (1984) 24, PRL 53 (1984) 1309, PR D30 (1984) 1433, PR D30 (1984) 1996, PR D30 (1984) 2279, PRL 54 (1985) 381, PRL 54 (1985) 1894, PRL 55 (1985) 923, PRL 55 (1985) 1248, PR D31 (1985) 2161, PR D31 (1985) 2386, PR D32 (1985) 2294, PR D32 (1985) 2468, PRL 56 (1986) 800, PRL 56 (1986) 1222, PRL 56 (1986) 1893, PRL 56 (1986) 2676, PR D33 (1986) 300, PR D34 (1986) 905, PRL 56 (1986) 2781, PR D34 (1986) 3279, PL B191 (1987) 319, PRL 58 (1987) 183, PR D35 (1987) 19, PRL 58 (1987) 307, PRL 58 (1987) 1814, PR D35 (1987) 1081, PR D35 (1987) 2747, PR D35 (1987) 3533, PR D36 (1987) 690, PR D36 (1987) 1289, PRL 59 (1987) 22, PRL 59 (1987) 407, PRL 59 (1987) 1993, PRL 60 (1988) 1614, PR D37 (1988) 1719 [erratum, PR D39, 1471], PR D38 (1988) 2679, PRL 62 (1989) 8, PRL 62 (1989) 863, PRL 62 (1989) 1240, PRL 62 (1989) 2233, PRL 62 (1989) 2436, PR D39 (1989) 3528, PL B223 (1989) 471, PR D40 (1989) 263, PR D40 (1989) 712, and PL B226 (1989) 401.

CESR-CUSB (1978) Approved Feb 1978, Nov 1979.

CUSB — HIGH RESOLUTION CALORIMETER TO STUDY THE Υ SPECTROSCOPY AND B PHYSICS

SUNY, STONY BROOK - J E Horstkotte, C Klopfeinstein,

J Lee-Franzini ($\checkmark$ Spokesperson), R D Schamberger, Jr.,

M Sivertz, L J Spencer

COLUMBIA U - P Franzini ($\checkmark$ Spokesperson), D Son, P M Tuts,

S Youssef, T Zhao

CORNELL U - S W Herb

LOUISIANA STATE U - K Han, R Imlay, G Levman, W Metcalf,

V Sreedhar

MUNICH, MAX PLANCK INST H Dietl, G Eigen, E Lorenz,

G Mageras, F Pauss, H Vogel

Accelerator CESR Detector CUSB

Reactions

$e^+e^- \rightarrow \text{hadrons}$ 9.4-11.6 GeV (E_{cm})
 $e^+e^- \rightarrow e^+e^-$ "
 $e^+e^- \rightarrow \mu^+\mu^-$ "
 $e^+e^- \rightarrow \gamma X$ "
 $e^+e^- \rightarrow \Upsilon(\text{unspec}) \pi^+ \pi^-$ "

Particles studied $\Upsilon(1S)$, $\Upsilon(2S)$, $\Upsilon(3S)$, $\Upsilon(4S)$, $\Upsilon(10660)$, $\Upsilon(11020)$, $\chi_{b0}(1P)$, $\chi_{b1}(1P)$, $\chi_{b2}(1P)$, $\chi_{b0}(2P)$, $\chi_{b1}(2P)$, $\chi_{b2}(2P)$, $B(5270)$, $B^*(5330)$, higgs, axion, $\zeta(8300)$, $X(2220)$

Comments See also CESR-CUSB-II.

Papers PRL 44 (1980) 1111, PRL 45 (1980) 222, PRL 46 (1981)

1115, PRL 47 (1981) 771, PRL 48 (1982) 906, PR D26 (1982)

717, PR D26 (1982) 720, PL 114B (1982) 277, NP B206 (1982)

1, PRL 49 (1982) 1612, PRL 49 (1982) 1616, PL 118B (1982)

453, PRL 51 (1983) 160, PL 130B (1983) 439, PL 130B (1983)

444, PR D29 (1984) 2483, NP B242 (1984) 31, PL 138B (1984)

225, PL 139B (1984) 332, PL 141B (1984) 271, PR D30 (1984)

1985, PRL 54 (1985) 377, PRL 55 (1985) 36, and PRL 56 (1986) 2672.

CESR-CUSB-II (1978) Approved Jun 1984

CUSB-II — HIGH RESOLUTION BGO CALORIMETER TO STUDY THE Υ SPECTROSCOPY AND B PHYSICS

COLUMBIA U - P Franzini ($\checkmark$ Spokesperson), S Kanekal,

P M Tuts ($\checkmark$ Spokesperson)

SUNY, STONY BROOK - U Heintz, T M Kaarsberg,

J Lee-Franzini ($\checkmark$ Spokesperson), D M J Lovelock, M Narain,

R D Schamberger, Jr., J Willins, C Yanagisawa

Accelerator CESR Detector CUSB-II

Reactions

$e^+e^- \rightarrow \text{hadrons}$ 9.4 11.6 GeV (E_{cm})
 $e^+e^- \rightarrow e^+e^-$ "
 $e^+e^- \rightarrow \mu^+\mu^-$ "
 $e^+e^- \rightarrow \gamma X$ "

Particles studied $\Upsilon(1S)$, $\Upsilon(2S)$, $\Upsilon(3S)$, $\Upsilon(4S)$, $\Upsilon(10660)$, $\Upsilon(11020)$, $\chi_{b0}(1P)$, $\chi_{b1}(1P)$, $\chi_{b2}(1P)$, $\chi_{b0}(2P)$, $\chi_{b1}(2P)$, $\chi_{b2}(2P)$, $B(5270)$, $B^*(5330)$, higgs, axion, $\zeta(8300)$, η_b , s-quark

Comments An upgraded detector

Papers PL B186 (1987) 233, PR D35 (1987) 2265, PR D35

(1987) 2883, NIM A263 (1988) 35, NIM A265 (1988) 243, and

PRL 62 (1989) 2077 See also CESR-CUSB.

DESY Experiments

DESY-DORIS-ARGUS Approved 1979; Started Sep 1982.

ARGUS — A NEW DETECTOR FOR DORIS

DESY - H Albrecht, U Binder, P Boeckmann, R Glaeser, G Harder, I Lembke-Koppitz, W Schmidt-Parzefall (Spokesperson), H Schroeder, H D Schulz, R Wirth, A Yagil
DORTMUND U - J P Donker, A Drescher, D Kamp, U Matthiesen, H Scheck, B Spaan, J Spengler, D Wegener
HEIDELBERG U, IHEP - J C Gabriel, K R Schubert, J Stiewe, K Strahl, R Waldis, S Weseler
IPP, CANADA - K W Edward, W R Frisken, D J Gilkinson, D M Gingrich, H Kapitza, P Kim, R Kutschke, D B MacFarlane, J A McKenna, K W McLean, A W Nilsson, R S Orr, P Padley, J A Parsons, P M Patel, J D Prentice, H Seywerd, J D Swain, G Tsipolitis, T S Yoon, J C Yun
KANSAS U - R Ammar, D Coppage, R Davis, S Kanekal, N Kwak
LUND U - L Joensson
MOSCOW, ITEP - A Babaev, M Danilov, A Golutvin, I Gorelov, V Lubimov, V Matveev, V Nagovitsin, V Ryltsov, A Semenov, V Shevchenko, V Soloshenko, V Tchistilin, I Tichomirov, Y Zaitsev
SOUTH CAROLINA U - R L Childers, C W Darden, Y Oku
LJUBLJANA U - B Bostjancic, G Kernel, M Plesko
STOCKHOLM U - H Gennow

Accelerator DESY-DORIS Detector ARGUS

Reactions

e^+e^-	9-11.5 GeV (Ecm)
$e^+e^- \rightarrow \text{charm X}$	"
$e^+e^- \rightarrow \text{bottom X}$	"
$e^+e^- \rightarrow \text{T(unspec)}$	"
$e^+e^- \rightarrow \text{hvy-lepton X}$	"

Particles studied charm, bottom, T(unspec), hvy-lepton

Papers NIM 163 (1979) 77, NIM 195 (1982) 475, NIM 205 (1983) 125, NIM 216 (1983) 35, NIM 217 (1983) 153, PL 134B (1984) 137, PL 135B (1984) 498, PL 146B (1984) 111, NIM A235 (1985) 26, NIM A237 (1985) 464, PL 150B (1985) 235, PL 153B (1985) 343, PL 154B (1985) 452, PL 156B (1985) 134, ZPHY C28 (1985) 45, PL 157B (1985) 326, PL 158B (1985) 525, PL 160B (1985) 331, PL 162B (1985) 395, PL 163B (1985) 404, ZPHY C29 (1985) 167, NIM A249 (1986) 277, PRL 56 (1986) 549, PL 167B (1986) 360, ZPHY C31 (1986) 181, PL B179 (1986) 398, PL B179 (1986) 403, PL B182 (1986) 95, ZPHY C33 (1986) 7, ZPHY C33 (1987) 359, PL B185 (1987) 218, PL B185 (1987) 223, PL B185 (1987) 228, PL B187 (1987) 425, PL B192 (1987) 245, PL B195 (1987) 102, PL B195 (1987) 307, PL B196 (1987) 101, PL B197 (1987) 452, PL B198 (1987) 255, PL B198 (1987) 577, ZPHY C35 (1987) 283, PL B199 (1987) 291, PL B199 (1987) 447, PL B199 (1987) 451, PL B199 (1987) 457, PL B199 (1987) 580, PL B202 (1988) 149, ZPHY C39 (1988) 177, P1 B207 (1988) 109, PL B207 (1988) 349, PL B209 (1988) 380, PL B210 (1988) 258, PL B210 (1988) 263, PL B210 (1988) 267, PL B210 (1988) 273, PL B211 (1988) 489, PL B212 (1988) 528, PL B215 (1988) 424, PL B215 (1988) 429, ZPHY C41 (1988) 1, ZPHY C41 (1988) 405, ZPHY C41 (1989) 557, PL B217 (1989) 205, PL B219 (1989) 121, PL B221 (1989) 422, ZPHY C42 (1989) 349, ZPHY C43 (1989) 45, and ZPHY C43 (1989) 181.

DESY-DORIS-CRYSTAL-BALL (Jun 1981) Started Jul 1982; Completed 1986.

A LARGE SOLID ANGLE NEUTRAL DETECTOR (THE CRYSTAL BALL)

CAL TECH - C Peck, F C Porter, P Ratoff
CARNEGIE MELLON U - I Brock, A Engler, R W Kraemer, D Marlow, F Messing, D Prindle, B Renger, C Rippich, H Vogel
CRACOW - Z Jakubowski, G Nowak
DESY - J K Bienlein, T Kloiber, W Koch, T Skwarnicki, H-J Trost, P Zechersch
HARVARD U - D Antreasyan, J Irlon, K Strauch, D Williams
MIT - S Cooper (Spokesperson)

PRINCETON U - D Besset, R Carbenda, M Cavalli-Sforza, R Cowan, D Coyne
SLAC - E D Bloom, R Clare, S Cooper, J Gaier, G Godfrey, W Lockman, S Lowe, B Niczyporuk, A Schwarz, K Wacker
STANFORD U - D Gelpman, R Hofstadter, I Kirkbride, R Lee, A Litke, B Pollock, J Tompkins
ERLANGEN U - G Folger, B Lurz, U Volland, H Wegener
FLORENCE U & INFN, FLORENCE - A Cartacci, G Conforto, B Monteleoni, P Peifer
HAMBURG U - A Fridman, F H Heinrich, R Lekebusch, W Maschmann, R Nernst, D Sievers, U Strobusch
NIJMEGEN U & NIKHEF, NIJMEGEN - A C Koenig, W Metzger, D J Schotanus, W Walk, R T Van de Walle
WURZBURG U - S Keh, H Kilian, K Koenigsmann (Spokesperson), M Scheer, P Schmitt

Accelerator DESY-DORIS-II Detector CRYST-BALL

Reactions

$e^+e^- \rightarrow \gamma X$	4.4-11.2 GeV (Ecm)
$e^+e^- \rightarrow \pi^0 X$	"
$e^+e^- \rightarrow \eta X$	"
$e^+e^- \rightarrow e^\pm X$	"

Particles studied T(1S), T(2S), $\chi_b(\text{unspec})$

Comments An extension of studies of quarkonium and gluonium (see SLAC-SP-024 and -030) to the T system, with special emphasis on γ transitions.

Papers PL 135B (1984) 498, PRL 54 (1985) 2195, PR D32 (1985) 2893, PR D33 (1986) 1847, PR D34 (1986) 2611, ZPHY C36 (1987) 383, PRL 58 (1987) 972, PR D36 (1987) 2633, ZPHY C40 (1988) 49, ZPHY C40 (1988) 199, ZPHY C41 (1988) 7, PR D38 (1988) 1365, PL B212 (1988) 123, and ZPHY C42 (1989) 33.

DESY-HERA-H1 (1986) Approved Jul 1986.

H1: A DETECTOR FOR HERA

AACHEN, TECH HOCHSCH, I PHYS INST - Ch Berger, P Bosetti, W Braunschweig, G Flugge, H Genzel, H Graessler, H Jung, H-U Martyn, F Raupach, W Schmitz, J Tutas, E Vogel
ANTWERP U & BRUSSELS U, IHE - M Barth, G Bertrand, D Johnson, P Marage, J Moreels, A de Roeck, R Roosen, J Sacton, E de Wolf
CRACOW - L Goerlich, L Hajduk, W Janczur, W Krasny, J Martyniak, G Nowak
UC, DAVIS - W Ko, R L Lander, D E Pellet, J R Smith, K B Sparks, P M Yager
DESY - W Bartel, H-J Behrend, F Brasse, H Brueck, J Buerger, L Criegee, F Eisele (✓ Spokesperson), R Felst, W Flaeger, G Franke, J Gayler, D Haidt, K Kado, G Knies, V Korbcl, H Krehbiel, M Leenen, R Meinke, J Meyer, J E Olsson, E Schenit, V Schroeder, P Steffen, W Struczinski, U Timm, P Waloschek, G Winter, W Zimmermann
DORTMUND U - K Borras, A Drescher, P Hartz, H Kolanoski, K Rauschnabel, V Sondermann, D Wegener
ECOLE POLYTECHNIQUE - P Dingus, M Hagenauer, E Pare, Y Sirois, M Urban
GLASGOW U - P Bussey, A Campbell, J Marks, I Skillicorn
HAMBURG U - G Andersson-Lindstrom, W Bauhoff, V Blobel, F-W Buesser, H H Duim, E Fretwurst, U Gaethke, T J Greenshaw, G Heinzelmann, B Koppitz, R Langkau, B Naroska, V Riech, W Scobel, H Spitzer, R van Staa, P Staehelin, G Weber
MOSCOW, ITEP - A Babaev, M Danilov, W I Efremenko, P Gorichev, V Shevchenko, Yu Zaitsev
LANCASTER U - A B Clegg, D C Darvill, R C W Henderson, D Newton
LEBEDEV INST - V F Andreev, P S Baranov, A S Belousov, P A Cerenkov, A M Fomenko, A I Lebedev, S V Levonian, E I Malinovsky, S V Rusakov, I P Sheviakov, P A Smirnov, Yu V Soloviev, A P Usik
LIVERPOOL U - G A Beck, J B Dainton, J Fry, E Gabathuler, P Mason, S M Maxfield, J Morton, G D Patel, D P C Sankey
LUND U - H Cronstrom, C Jacobsson, L Joensson, A Lohmander, U Mjoermark, A Nilsson, M Nyberg
MANCHESTER U - B Dickinson, A Donnachie, R J Ellison, J Foster, M Ibbotson, D Mercer, K Stephens, R J Thompson

SUMMARIES OF DESY EXPERIMENTS

- MUNICH, MAX PLANCK INST - W de Boer, H Brettel, G Buschhorn, J Fent, H Greif, G Grindhammer, J Huber, C Kiesling, D Luers, H Oberlack, P Ribarics, M Rudowicz, P Schacht
- ORSAY, LAL - J C Bizot, A Courau, B Delcourt, A Jacholkowska, M Jaffre, J Jeanjean, V Journe, C Paviot, PARIS, UNIV VII, LPNHE - E Barrelet, L del Buono, J Duboc, Z Feng, M Goldberg, H K Nguyen, C Vallee, T P Yiu KOSICE, IEF - J Antos, J Ferencei, M Seman PRAGUE, INST PHYS - J Cvach, I Herynek, J Hladky, J Strachota, P Zavada
- CHARLES U - J Formanek, S Valkar, A Valkarova, J Zacek ROME U & INFN, ROME - F Celani, F Ferrarotto, H Shooshtari, B Stella
- RUTHERFORD - D Clarke, P Flower, W J Haynes, C R Hedgecock, R Marshall, Z Q Ming, J V Morris
- SACLAY - C Coutures, G Cozzika, M David, J Feltesse, G Vallet, P Verrecchia
- WUPPERTAL U - H J Daum, J Martens, H Meyer, D Schmidt, M Treichel
- BERLIN-ZEUTHEN ADW - H Baerwolff, M Klein, P Kostka, Th Naumann
- ZURICH U - S Egli, R Eichler, C A Meyer, P Robmann, U Straumann, P Trouel
- Accelerator DESY-HERA Detector H1
-
- DESY-HERA-ZEUS** (Jun 1985, Mar 1986) Approved Nov 1986.
- ZEUS: A DETECTOR FOR HERA**
- MANITOBA U - F Ikraim, J Mayer, G Smith
- MCILL U - D Gilkinson, D Hanna, J Mitchell, P Patel, D Stairs
- TORONTO U - D Bandyopadhyay, S Bhadra, B Burrow, F Chlebana, M Crombie, G Hartner, G Levman, J Martin, R Orr, J Prentice, T S Yoon
- YORK U, CANADA - H Fawcett, W Frisken, D Hasell, Y Iga, T Zhang
- BONN U - J Crittenden, H Dabbous, B Diekmann, P Dobberstein, H Hartmann, J Hartmann, K Heinloth, E Hilger, H P Jakob, M Kraemer, M Kuecks, R Oedingen, E Paul, B Schneider, R Wedemeyer, M Zachara
- DESY - F Corvieux, G Drews, P Erhard, K Gather, H Hultschig, G Jahnhen, P Joos, R Klanner, W Koch, U Koetz, H Kowalski, A Ladage, B Loehr, D Lucke, K-H Mess, M Momayezi, D Notz, A Odian, P Palazzi, K U Poesnecker, M Rohde, E Ros, W Schuette, A Seidman, F Selonke, D Trines, E Tscheslog, W Vogel, T Woerner, G Wolf (v Spokesperson)
- FREIBURG U - A Bamberger, T Poser, K Runge, G Theisen
- HAMBURG U - C Behrens, K Dierks, A Hofmann, U Holm, J Krueger, E Lohrmann, G Poetz, G Riedel, R Salomon, P Schmueser, T Tsurugai, K Wick, B H Wiik, C Youngman
- KERNFORSCHUNGSANLAGE, JULICH - P Cloth, D Filges, R D Neef, N Paul, C Reul, G Sterzenbach
- SIEGEN U - E Badura, K Shankar, A H Walenta, W Weihs, H Z Xu, G Zech
- WEIZMANN INST - Y Eisenberg, D Hochman, U Karshon, A Montag, D Revel, E E Ronat, N Wainer
- BOLOGNA U - F Arzarello, G Bari, M Basile, L Bellagamba, J Berbers, G Bruni, P Bruni, A Castelvetti, M Chiarnini, L Cifarelli, F Ciralli, A Contini, S D'Auria, F Fracomo, P Giusti, G Iacobucci, G Laurenti, Q Lin, B Lisowski, G Maccarone, T Massam, M Morpurgo, R Nania, V O'Shea, F Palmionari, C Del Papa, S de Pasquale, E Perotto, G Cara Romeo, G Sartorelli, M Schoppa, R Trimellini, M Willutzky, A Zichichi
- CALABRIA U - L Caputi, G Susinno
- FLORENCE U - G Barbagli, G Castellini, S De Gennaro, G Landi, P Pelfer
- FRASCATI - G Anzivilino, R Cassaccia, F Cindolo, B Dulach, J Laakso, S Qian, F Sgamma, L Votano, A Zallo
- AQUILA U - R Scrimaglio
- LECCE U - P Rotelli
- MILAN U - F Allesandria, G Barraglini, E Fabrici, L Rossi, M Stanziani
- PADUA U - R Brugnara, R Carlin, F Dal Corso, U Dosselli, M De Giorgi, S Limintani, M Morandin, M Posocco, L Stanco, R Stroili, C Voci
- PALERMO U - G D'Alì
- ROME U - M Bonori, R Bruzzese, G D'Agostini, M Gaspero, M Iacovacci, G Marini, M Mattioli, A Nigro, G Pasotti, M Ricci, N Sachetti, M Spadoni
- TRIESTE U - A Rindi
- TURIN U - C Aglietta, D Allasia, M Arneodo, G Badino, A Castellina, G Cini, M Costa, M Dardo, M I Ferrero, W Fulgione, S Maselli, C Morello, L Periale, C Peroni, O Saavedra, A Solano, A Stalano, G C Trincherio, P Vallania, S Vernetto
- UDINE U - F Gasparini
- TOKYO U, INS - T Hasegawa, T Ishii, H Okuno, T Tokushuku, S Yamada
- TOKYO METROPOLITAN U - M Chiba, R Hamatsu, T Hirose, S Kitamura, T Yamagata
- NIKHEF, AMSTERDAM - A Dake, J Engelen, W Hoogland, P de Jong, S de Jong, P Kooijman, H v d Lugt, J Straver, A Tenner, H Uijterwaal, J Vermeulen, L Wiggers, E de Wolf
- CRACOW - J Chwastowski, A Dwurazny, A Eskreys, B Niziol, K Piotrkowski, L Zawiejski
- CRACOW, INST PHYS NUCL TECH - K Eskreys, K Jelen, D Kisielewska, T Kowalski, L Suszycki
- JAGELLONIAN U - A Kotanski
- WARSAW U, IEP - H Abranowicz, M Adamus, W Dominik, J Gajewski, K Genser, R J Nowak, J M Pawlak, K Stojda, A Stopczynski, R Szwed, T Tymieniecka, R Walczak, A K Wroblewski, G Wrochna, J A Zakrzewski, A F Zarnecki
- MADRID, AUTONOMA U - F Barreiro, M A Garcia, L Hervas, L Labarga, J del Peso, J F de Troconiz
- BRISTOL U - D G Cussans, M Dyce, B Foster, R Gilmore, T J Llewellyn, J Malos, A J Martin, C J S Morgado, A J Sephton, T L Short, V J Smith, R J Tapper, F F Wilson
- IMPERIAL COLL - T C Bacon, J Giddings, D McQuillan, D B Miller, M M Mobayyen, J Shulman
- UNIVERSITY COLL, LONDON - R Belusevic, F W Bullock, T W Jones, J Lane, G J Lush, D Shaw
- OXFORD U - G Blair, M G Bowler, R J Cashmore, R C E Devenish, D Gingrich, P M Hallam-Baker, N Harnew, G P Heath, M Lancaster, J Nash, G L Salmon, I Silvester, S J P Smith
- RUTHERFORD - J C Hart, K R Long, N A McCubbin, J H C Roberts, D H Saxon, S M Tkaczyk
- ARGONNE - J Dawson, M Derrick, B Musgrave, J Repond, J Schlereth, R Stanek, K Sugano, R Talaga
- BROOKHAVEN - B Radeka, R Rau
- COLUMBIA U - A Caldwell, I Gialas, S Ritz, F Sciulli, W Sippach
- IOWA U - U Mallik
- LOUISIANA STATE U - R Imlay, R McNeil, W Metcalf
- OHIO STATE U - B Bylsma, L S Durkin, T Y Ling, S K Park, T A Romanowski, C J Rush
- PENN STATE U - B Y Oh, J Whitmore
- UC, SANTA CRUZ - D E Dorfan, A Litke, H F Sadrozinski, A Seiden
- VIRGINIA TECH - J R Ficenec, B Lu, L W Mo, T A Nunamaker
- WISCONSIN U - U Camerini, C Foudas, T Kinnel, M Lomperski, R J Loveless, D D Reeder, S Silverstein, W H Smith, A Tsirou
- Accelerator DESY-HERA Detector ZEUS
- Comments Measures neutral and charged current processes in electron-proton interactions and searches for new processes. Emphasis is on accurate identification and measurement of jets and leptons. The main detector component is a hermetic and compensating uranium-scintillator calorimeter.
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- DESY-PETRA-CELLO** (Jul 1976) Approved Oct 1976; Started Mar 1980; Completed Nov 1986
- A 4* MAGNETIC DETECTOR FOR PETRA — CELLO**
- DESY, KARLSRUHE-MUNCHEN-ORSAY-PARIS-SACLAY COLLABORATION
- DESY - H J Behrend (Spokesperson), J H Field, V Schroeder, H Sindt
- KERNFORSCHUNGSZENTRUM, KARLSRUHE & KARLSRUHE U - D Apel, J Bodenkamp, D Crobaczek, J Engler, G Flugge, D Fries, F Moennig, H Mueller, H Randoll, G Schmidt, H Schneider
- MUNICH, MAX PLANCK INST - W de Boer, G Buschhorn, G Grindhammer, P Grosse-Wiesmann, B Gunderson, C Kiesling,

SUMMARIES OF DESY EXPERIMENTS

R Kotthaus, H Lierl, D Luers, T Meyer, L Moss, H Oberlack, P Schacht, M J Schachter, A Snyder, H Steiner
 ORSAY, LAL - G Carnesecchi, A Cordier, M Davier, F Le Diberder, D Fournier, J F Grivaz, J Haissinski, V Journe, F Laplanche, J J Veillet, A Weitsch
 PARIS, CURIE UNIV VI - R George, M Goldberg, B Grossetete, F Kapusta, F Kovacs, G London, L Poggioli, M Rivoal
 SACLAY - R Aleksan, J Bouchez, G Cozzika, Y Ducros, A Gaidot, J Pamela, J P Pansart, F Pierre

Accelerator DESY-PETRA Detector CELLO

Reactions

$e^+ e^-$ 14-47.3 GeV (Ecm)

Comments CELLO is optimized for e^+ and γ detection, at the expense of extensive particle identification.

Papers PS 23 (1981) 610, PL 103B (1981) 148, PL 110B (1982) 329, PL 113B (1982) 427, PL 114B (1982) 282, PL 114B (1982) 287, PL 114B (1982) 378, ZPHY C14 (1982) 95, ZPHY C14 (1982) 189, ZPHY C14 (1982) 283, PL 118B (1982) 211, NP B211 (1983) 369, NP B218 (1983) 269, ZPHY C16 (1983) 301, PL 123B (1983) 127, PL 126B (1983) 384, PL 126B (1983) 391, PL 127B (1983) 270, ZPHY C19 (1983) 291, ZPHY C20 (1983) 207, ZPHY C21 (1984) 205, PL 138B (1984) 311, ZPHY C23 (1984) 103, ZPHY C23 (1984) 223, PL 140B (1984) 130, PL 141B (1984) 145, PL 144B (1984) 297, PL 158B (1985) 536, PL 161B (1985) 182, PL 168B (1986) 420, PL 176 (1986) 274, PL 178 (1986) 452, PL 181 (1986) 178, PL 191 (1987) 209, PL 193 (1987) 157, PL 193 (1987) 376, ZPHY C35 (1987) 181, PL B200 (1988) 226, PL B202 (1988) 154, PL B212 (1988) 515, PL B215 (1988) 186, ZPHY C42 (1989) 367, PL B218 (1989) 493, ZPHY C43 (1989) 1, ZPHY C43 (1989) 91, and PL B222 (1989) 163.

DESY-PETRA-JADE Approved Oct 1976; Started Sep 1978; Completed Nov 1986.

A COMPACT MAGNETIC DETECTOR AT PETRA — JADE

DESY - W Bartel, L Becker, T Canzler, D Cords, P Dittmann, R Eichler, R Felst (✓ Spokesperson), D Haidt, S Kawabata, G Knies, H Krehbiel, R Meinke, B Naroska, L H O'Neill, J Olsson, Z Steffen, H Wenninger, W L Yen, M Zachara, Y Zhang

HAMBURG U - G Dietrich, E Elsen, J Hagemann, G Heinzemann, M Helm, H Kado, K Kawagoe, C Kleinwort, M Kuhlén, K Meier, A Petersen, R Ramcke, U Schneekloth, G Weber

HEIDELBERG U, IHEP - K Ambrus, S Bethke, A Dieckmann, H Drum, J Heintze, K H Hellenbrand, R D Heuer, S Komamiya, J von Krogh, P Lennert, H Matsumura, H Riesberg, J Spitzer, A Wagner

WUPPERTAL U - H Junge, N Magnussen, D Schmidt

LANCASTER U - A Bell, C Gowdery, D C Darvill, A Finch, F Foster, G Hughes, T Nozaki, J Nye, H Wriedt

MANCHESTER U - J Allison, J Armitage, J Baines, A H Ball, G Bamford, R Barlow, J Chrin, I P Duerdoth, I Glendinning, T Greenshaw, J Hassard, B T King, F K Loebinger, A A Macbeth, H E Mills, P G Murphy, H Prosper, P Rowe, K Stephens

MARYLAND U - R G Glasser, P Hill, B Sechi-Zorn, J A J Skard, S Wagner, G T Zorn

RUTHERFORD - S L Cartwright, D Clarke, M C Goddard, R Hedgecock, R Marshall, G F Pearce, J B Whittaker

HELSINKI U - J Huttunen, P Laurikainen, E Pietarinen

TOKYO U - M Imori, J Kanakaki, T Kawamoto, T Kobayashi, M Koshihata, T Mashimo, M Minowa, M Nozaki, S Odaka, S Orito, A Sato, T Suda, H Takeda, Y Totsuka, Y Watanabe, S Yamada, C Yanagisawa

Accelerator DESY-PETRA Detector JADE

Reactions

$e^+ e^- \rightarrow$ hadrons	10-44 GeV (Ecm)
$e^+ e^- \rightarrow e^+ e^-$	"
$e^+ e^- \rightarrow \mu^+ \mu^-$	"
$e^+ e^- \rightarrow \tau^+ \tau^-$	"
$e^+ e^- \rightarrow \gamma \gamma$	"
$e^+ e^- \rightarrow e^+ e^-$ hadrons	"
$e^+ e^- \rightarrow e^+ X$	"
$e^+ e^- \rightarrow e^- X$	"
$e^+ e^- \rightarrow \mu^+ X$	"
$e^+ e^- \rightarrow \mu^- X$	"
$e^+ e^- \rightarrow e^+ \mu^- X$	"
$e^+ e^- \rightarrow e^- \mu^+ X$	"

Particles studied τ , quark, hvy-lepton, $D^*(2010)$, s-particle

Papers PL 88B (1979) 171, PL 89B (1979) 136, PL 91B (1980) 142, PL 91B (1980) 152, PL 92B (1980) 206, ZPHY C6 (1980) 295, PL 99B (1981) 277, PL 99B (1981) 281, PL 100B (1981) 364, PL 101B (1981) 129, PL 101B (1981) 361, ZPHY C9 (1981) 315, PL 104B (1981) 325, PL 107B (1981) 163, PL 108B (1982) 140, PL 113B (1982) 190, PL 114B (1982) 71, PL 114B (1982) 211, PL 115B (1982) 338, PL 119B (1982) 239, PL 121B (1983) 203, PL 123B (1983) 353, PL 123B (1983) 460, ZPHY C19 (1983) 197, ZPHY C20 (1983) 187, PL 129B (1983) 145, PL 130B (1983) 454, PL 132B (1983) 241, ZPHY C21 (1983) 37, PL 134B (1984) 275, PL 139B (1984) 327, ZPHY C24 (1984) 223, ZPHY C24 (1984) 231, ZPHY C25 (1984) 231, PL 145B (1984) 441, PL 146B (1984) 121, PL 146B (1984) 126, PL 146B (1984) 437, ZPHY C26 (1985) 507, PL 152B (1985) 385, PL 152B (1985) 392, PL 155B (1985) 288, ZPHY C28 (1985) 343, PL 157B (1985) 340, PL 158B (1985) 241, PL 160B (1985) 337, PL 160B (1985) 421, ZPHY C29 (1985) 505, PL 161B (1985) 188, PL 161B (1985) 197, PL 163B (1985) 277, ZPHY C30 (1986) 371, ZPHY C30 (1986) 545, ZPHY C31 (1986) 349, ZPHY C31 (1986) 359, PL B174 (1986) 350, PL B182 (1986) 216, ZPHY C33 (1986) 23, PL B184 (1987) 288, ZPHY C33 (1987) 339, ZPHY C36 (1987) 15, ZPHY C39 (1988) 1, PL B213 (1988) 235, ZPHY C42 (1989) 1, ZPHY C42 (1989) 7, and ZPHY C42 (1989) 355.

DESY-PETRA-MARK-J (Jul 1976) Approved Oct 1976; Completed Nov 1986.

A SIMPLE DETECTOR TO MEASURE $e^+ e^-$ REACTIONS AT HIGH ENERGIES — MARK J

AACHEN, TECH HOCHSCH, III PHYS INST - R Becker-Szendy, A Boehm, E Deffur, H S Fesefeldt, D Hueser, W Krenz, D Linnhoefer, J Mnich, F P Poschmann, U Schroeder, J Schug, D Teuchert, S X Wu

BROOKHAVEN - R R Rau (Spokesperson)

CAL TECH - H Ma, H Newman, H Stone, R Y Zhu

DESY - S Ansari, M Hussain, K Nadeem, M Rohde, M F Wyne

MIT - U Becker, J G Branson, J D Burger, M Capelli, M Chen, M Dhina, D Fong, M Fukushima, G Herten, M M Ilyas, D Luckey, H Rykaczewski, S C C Ting (Spokesperson), M White, B Wysloueh, B Zhou

MADRID, JEN - B Adeva, J Berdugo, M Cerrada, L Garrido, C Mana, M A Marquina, M Martinez, S Rodriguez, J A Rubio, J Salicio

NIKHEF, AMSTERDAM - M Demarteau, P Duinker, D Harting, P Kuijter, E J Luit, G G G Massaro, G M Swider

GENEVA U - M Nusbaumer

BEIJING, IHEP - C C Chang, Y H Chang, H S Chen, M L Chen, M Y Chen, Y K Chi, B Z Dong, R D Han, M C Ho, D Z Jiang, H W Tang, K L Tung, M Q Wang, H G Wu, B X Yang, X Yu, L S Zhang, Z H Zhang

BERLIN-ZEUTHEN ADW - K Deiters, M Klein, R Leiste, W D Nowak, M Sachwitz, H J Schreiber, H Vogt

ZURICH, ETH - Q Z Li, M Pohl

Accelerator DESY-PETRA Detector MARK-J

SUMMARIES OF DESY EXPERIMENTS

Reactions

$e^+e^- \rightarrow \mu^+\mu^-$	12-47 GeV (E_{cm})
$e^+e^- \rightarrow e^+e^-$	"
$e^+e^- \rightarrow \tau^+\tau^-$	"
$e^+e^- \rightarrow \mu\text{on } X$	"
$e^+e^- \rightarrow \text{hadrons}$	"

Particles studied τ , $B(5270)$, gluon

Comments Measures asymmetries, looks for structures in the total hadronic cross section, determines properties of B mesons and gluons, searches for a wide variety of new particles up to $E_{cm} = 46.78$ GeV, etc.

Papers PRL 42 (1979) 1110, PRL 42 (1979) 1113, PRL 43 (1979)

830, PL 85B (1979) 463, PRL 43 (1979) 901, PRL 43 (1979) 1915, PRPL 63 (1980) 337, PL 89B (1979) 139, PRL 44 (1980) 1722, PL 95B (1980) 149, PRL 45 (1980) 1904, PRL 46 (1981) 1663, PL 108B (1982) 63, PRL 48 (1982) 721, PRL 48 (1982) 967, PRL 48 (1982) 1701, PL 115B (1982) 345, PRL 50 (1983) 799, PRL 50 (1983) 2051, PRL 51 (1983) 443, PRPL 109 (1984) 131, PRL 53 (1984) 134, PRL 53 (1984) 1806, PL 152B (1985) 439, PRL 54 (1985) 1750, PRL 55 (1985) 665, PL B179 (1985) 177, PL B180 (1986) 181, PR D34 (1986) 681, PL B194 (1987) 167, and PR D38 (1988) 2665.

DESY-PETRA-PLUTO-2 (Jul 1979) Started Aug 1981; Completed Aug 1982.

STUDY OF $\gamma\gamma$ INTERACTIONS WITH THE DETECTOR PLUTO AT PETRA

AACHEN, TECH HOCHSCH, I PHYS INST - Chr Berger,
A Deuter, H Genzel, R Grigull, W Lacksa, F Pielorz, F Raupach
BERGEN U - A Klovning, E Lillestøl, J M Olsen
GLASGOW U - P J Bussey, S Cartwright, J B Dainton, B King,
C Raine, J M Scarr, I O Skillicorn, K Smith
MARYLAND U - C Y Chang, R Glasser, R G Kellogg, K H Lau,
S Maxfield, R O Polvado, B Sechi-Zorn, J A Skard, A Skuja,
A Tykja, G Welch, G Zorn
SIEGEN U - M Almeida, A Baecker, F Barreiro, S Brand,
K Derikum, C Gruppen, H J Meyer, B Neumann, M Rost,
K H Stupperich, G Zech
TEL AVIV U - G Alexander, G Bella, Y Gnat, J Grunhaus
WUPPERTAL U - H J Daum, H Meyer, O Meyer, D Schmidt
DESY - H Ackermann, U Bartnik, J Buerger, L Criegee,
H C Dehne, H Funge, M Gaspero, Chr Gerke,
U Jacobs, G Knies, K Kraski, E Lehmann, C Maxeiner,
H Maxeiner, U Michelsen, H Nakata, K H Pape, F Ritter,
B Stella, U Timm ($\checkmark$ Spokesperson), W Wagner, P Waloschek,
G G Winter, M Zachara, W Zimmermann
HAMBURG U - O Achterberg, Ch Bieler, V Blobel, L Boesten,
D Burkart, K Diehlmann, V Hepp, H Kapitza, B Koppitz,
B Lewendel, W Luehrsen, F Meyer, M Poppe, H Spitzer,
R V Staa

Accelerator DESY-PETRA **Detector** PLUTO

Reactions

$e^+e^- \rightarrow e^+e^- \text{ hadrons}$	35 GeV (E_{cm})
$e^+e^- \rightarrow e^+e^- \text{ jets}$	"
$e^+e^- \rightarrow e^+e^- \text{ meson}$	"
$e^+e^- \rightarrow e^+e^- \text{ leptons}$	"
$e^+e^- \rightarrow \mu^+\mu^-$	"
$e^+e^- \rightarrow \text{hadrons}$	"
$e^+e^- \rightarrow \gamma\gamma$	"

Comments Magnetic forward spectrometers are added to the earlier PLUTO apparatus. Although the emphasis is on $\gamma\gamma$ physics, single- γ events are registered too.

Papers This is all the papers from all the PLUTO experiments

Most results to 1982 from PLUTO are summarized in PREP 83 (1982) 153, PL 53B (1975) 489, PL 64B (1976) 369, PL 66B (1977) 365, PL 67B (1977) 367, PL 68B (1977) 283, PL 68B (1977) 297, PL 68B (1977) 301, PL 72B (1977) 135, PL 72B (1978) 483, PL 73B (1978) 99, PL 76B (1978) 243, PL 76B (1978) 652, PL 76B (1978) 162, PL 76B (1978) 176, PL 81B (1979) 84, PL 81B (1979) 410, PL 82B (1979) 449, ZPHY C1 (1979) 343, PL 86B (1979) 413, PL 86B (1979) 418, PL 89B (1979) 120, ZPHY C3 (1980) 193, PL 90B (1980) 312, ZPHY C4 (1980) 269, PL 91B (1980) 148, PL 93B (1980) 497, PL 94B

(1980) 87, PL 94B (1980) 254, PRL 45 (1980) 1533, PL 95B (1980) 313, PL 97B (1980) 459, PL 99B (1981) 287, PL 99B (1981) 292, PL 99B (1981) 489, PL 100B (1981) 351, ZPHY C7 (1981) 289, ZPHY C8 (1981) 101, ZPHY C8 (1981) 167, PL 104B (1981) 79, PL 107B (1981) 168, ZPHY C12 (1982) 297, NP B202 (1982) 189, NP B214 (1983) 189, ZPHY C19 (1983) 205, ZPHY C21 (1983) 53, ZPHY C22 (1984) 103, PL 137B (1984) 267, PL 142B (1984) 111, PL 142B (1984) 119, PL 142B (1984) 125, ZPHY C26 (1984) 191, ZPHY C26 (1984) 199, PL 149B (1984) 421, PL 149B (1984) 427, ZPHY C26 (1984) 353, ZPHY C27 (1985) 167, ZPHY C27 (1985) 249, ZPHY C27 (1985) 341, ZPHY C28 (1985) 1, ZPHY C28 (1985) 365, ZPHY C29 (1985) 183, ZPHY C29 (1985) 499, PL 167B (1986) 120, NP B281 (1987) 365, ZPHY C33 (1987) 351, ZPHY C37 (1988) 329, and ZPHY C38 (1988) 521.

DESY-PETRA-TASSO (Jul 1976) Approved Oct 1976. Completed Nov 1986.

A LARGE 4π MAGNETIC DETECTOR FOR PETRA - TASSO

AACHEN, TECH HOCHSCH, I PHYS INST W Braunschweig,
R Gerhards, F J Kirschfink, H-U Martyn
BONN U - H M Fischer, H Hartmann, J Hartmann, E Hilger,
A Jocksch, R Wedemeyer
BRISTOL U - B Foster, A J Martin
DESY - F Barreiro, E Bernardi, J Chwastowski, K Genser,
H Kowalski, B Loeher ($\checkmark$ Spokesperson), D Lucke, D Notz,
J M Pawlak, K-U Poesnecker, E Ros, R Walczak, G Wolf
DORTMUND U - H Kolanoski
HAMBURG U - T Kracht, J Krueger, E Lohrmann, G Poelz,
W Zeuner
IMPERIAL COLL J Hassard, J Shulman, D Su, I Tomalin
MADRID, AUTONOMA U - L Hervas, A Lentes, J del Peso,
M Traseira
OXFORD U - M G Bowler, P N Burrows, R J Cashmore,
G Heath, M E Veitch
RUTHERFORD J C Hart, D H Saxton
SIEGEN U - S Brandt, M Holder
WEIZMANN INST Y Eisenberg, U Karshon, G Mikenberg,
A Montag, D Revel, E Ronat, N Wainer, G Yekutieli
WISCONSIN U - A Caldwell, D Muller, S Ritz, M Takashima,
S L Wu, G Zoernig

Accelerator DESY-PETRA **Detector** TASSO

Reactions

$e^+e^- \rightarrow \text{hadrons}$	12-47 GeV (E_{cm})
$e^+e^- \rightarrow \text{lepton}^+ \text{lepton}^-$	"
$e^+e^- \rightarrow \gamma\gamma$	"
$e^+e^- \rightarrow e^+e^- \text{ hadrons}$	"

Particles studied hvy-lepton, unspqr

Comments Studies formation of jets, gluon blemsstrahlung, inclusive particle production, QCD tests, lifetimes of the tau, charmed, and bottom particles, QED tests, electron- γ asymmetries in muon pair production, new particle searches and inclusive and exclusive two-photon reactions

Papers PL 83B (1979) 261, PL 86B (1979) 243, PL 88B (1979) 199, PL 89B (1980) 418, ZPHY C4 (1980) 87, PL 92B (1980) 199, PL 94B (1980) 91, PL 94B (1980) 259, PL 94B (1980) 437, PL 94B (1980) 444, PL 97B (1980) 448, PL 97B (1980) 451, PL 99B (1981) 163, PL 100B (1981) 357, ZPHY C10 (1981) 117, PL 105B (1981) 75, PL 107B (1981) 290, PL 108B (1982) 67, PL 108B (1982) 71, PL 110B (1982) 173, PL 113B (1982) 95, PL 113B (1982) 499, PL 114B (1982) 65, PL 117B (1982) 138, PL 117B (1982) 365, ZPHY C16 (1982) 13, PL 121B (1983) 216, PL 122B (1983) 95, ZPHY C17 (1983) 5, PL 126B (1983) 493, PL 130B (1983) 340, PL 130B (1983) 449, ZPHY C22 (1984) 13, PL 135B (1984) 243, PL 136B (1984) 130, PL 138B (1984) 219, PL 138B (1984) 317, PL 138B (1984) 441, PL 139B (1984) 126, ZPHY C22 (1984) 219, ZPHY C22 (1984) 307, PL 141B (1984) 264, PL 142B (1984) 135, PL 146B (1984) 443, PL 147B (1984) 487, ZPHY C26 (1984) 157, ZPHY C26 (1984) 181, ZPHY C26 (1984) 337, PL 149B (1984) 524, ZPHY C26 (1985) 521, ZPHY C27 (1985) 27, PL 154B (1985) 236, ZPHY C29 (1985) 29, ZPHY C29 (1985) 189, ZPHY C29 (1985) 347, ZPHY C30 (1986) 355, ZPHY C31 (1986) 527, ZPHY C31 (1986) 537, ZPHY C32 (1986) 11, ZPHY C32 (1986) 343, ZPHY C33 (1986)

SUMMARIES OF DESY EXPERIMENTS

13, ZPHY C35 (1987) 317, ZPHY C36 (1987) 349, ZPHY C37 (1988) 171, ZPHY C38 (1988) 543, ZPHY C39 (1988) 331, PL B214 (1988) 286, ZPHY C40 (1988) 163, ZPHY C41 (1988) 353, ZPHY C41 (1988) 359, ZPHY C41 (1988) 385, ZPHY C41 (1988) 533, ZPHY C42 (1989) 17, and ZPHY C42 (1989) 189.

SUMMARIES OF FERMILAB EXPERIMENTS

FNAL Experiments

FNAL-180 (Jun 1972) Approved Jul 1972, Jun 1976: Started 1975.

A STUDY OF $\bar{\nu}$ INTERACTIONS IN THE FERMILAB 16-FT BUBBLE CHAMBER, FILLED WITH HYDROGEN AND NEON

SERPUKHOV - V V Ammosov, A G Denisov, P F Ermolov (Spokesperson), V A Gapienko, V I Klukhin, V I Koreshev, A I Mukhin, P V Pitukhin, V I Sirotenko, E A Slobodyuk, MOSCOW, ITEP - V I Efremenko, A V Fedotov, P A Goritschev, V S Kaftanov, G K Kliger, V Z Kolganov, S P Krutchinen, M A Kubantsev, V I Shekelyan, V G Shevenko
FERMILAB - F R Huson, F A Nezzick
MICHIGAN U - J W Chapman, C T Coffin, B P Roe, D Sinclair, J Vander Velde

Accelerator FNAL Detector HLBC-15FT

Reactions

$\bar{\nu}_\mu p \rightarrow \mu^+ n$	0-200 GeV c
$\bar{\nu}_\mu p \rightarrow \mu^+ X$	"
$\bar{\nu}_\mu p \rightarrow \bar{\nu}_\mu X$	"
$\bar{\nu}_\mu \text{ nucleon} \rightarrow \mu^+ X$	"
$\bar{\nu}_\mu \text{ nucleon} \rightarrow \mu^+ \text{vee } X$	"
$\bar{\nu}_\mu \text{ nucleon} \rightarrow \mu^+ \text{hadron } X$	"
$\bar{\nu}_\mu \text{ nucleon} \rightarrow \mu^+ \pi^+ X$	"
$\bar{\nu}_\mu \text{ nucleon} \rightarrow \bar{\nu}_\mu X$	"
$\bar{\nu}_\mu \text{ nucleon} \rightarrow \bar{\nu}_\mu \text{vee } X$	"
$\bar{\nu}_\mu e^- \rightarrow \bar{\nu}_\mu e^-$	"

Comments Approved for 500 KPX, of which 273 KPX were taken by July 77. No running since. Analysis combined with the exposure of FNAL 053.

Papers NIM 129 (1975) 59, PRL 38 (1977) 256, PRL 39 (1977) 382, PR D15 (1978) 3905, PR D15 (1978) 1367, PL 81B (1979) 89, PL 84B (1979) 511, NC 51A (1979) 539, PL 84B (1979) 357, PL 84B (1979) 181, NP B162 (1980) 205, PL 91B (1980) 311, PR D22 (1980) 2581, PL 93B (1980) 210, NP B177 (1981) 365, NP B184 (1981) 13, PL 102B (1981) 213, PL 105B (1981) 301, PL 106B (1981) 151, PR D24 (1981) 1424, PS 25 (1982) 159, NP B199 (1982) 399, NP B203 (1982) 1, PL 132B (1982) 246, NP B203 (1983) 16, ZETFP 36 (1982) 300 - JETPL (1982) 367, ZETFP 38 (1983) 210 - JETPL 38 (1983) 248, YF 39 (1984) 619, YF 39 (1984) 626 - SJNP 39 (1984) 392, ZETFP 39 (1984) 99 - JETPL 39 (1984) 119, ZETFP 39 (1984) 176 - JETPL 39 (1984) 209, ZETFP 39 (1984) 327 - JETPL 39 (1984) 393, ZETFP 39 (1984) 443 - JETPL 39 (1984) 537, PL 137B (1984) 122, PL 140B (1984) 127, ZETFP 40 (1984) 262 - JETPL 40 (1984) 1041, PL 156B (1985) 441, YF 41 (1985) 1193 - SJNP 41 (1985) 763, YF 42 (1985) 374 - SJNP 42 (1985) 236, YF 42 (1985) 664 - SJNP 42 (1985) 421, YF 43 (1986) 598 - SJNP 43 (1986) 380, ZETFP 43 (1986) 502 - JETPL 43 (1986) 649, and ZETFP 43 (1986) 554 - JETPL 43 (1986) 715.

FNAL-326 May 1974, Jul 1975, Feb 1977: Approved Mar 1977, Completed Apr 1982.

A PROPOSAL TO MEASURE MUON PAIRS PRODUCED AT HIGH INVARIANT MASS BY PIONS

HICAGO U - H J Frisch, F B Greenlee, C Grosso-Pilcher, K F Johnson, M D Mestayer, L Schachinger, M J Shorheit (Spokesperson), M L Schwartz
PRINCETON U - P A Piroué, B G Pope, D P Stickland, R L Sumner

Accelerator FNAL Detector Double-arm spectrometer

Reactions

$\pi^- \text{Be} \rightarrow \mu^+ \mu^- X$	225 GeV c
$\pi^- \text{Cu} \rightarrow \mu^+ \mu^- X$	"
$\pi^- \text{Sn} \rightarrow \mu^+ \mu^- X$	"
$\pi^- \text{W} \rightarrow \mu^+ \mu^- X$	"

Comments Ran for 2000 hours

Papers PR D25 (1982) 2000, PRL 53 (1984) 32, and PRL 55 (1985) 1555.

FNAL-400 (May 1975) Approved Jul 1975, Jul 1976, Mar 1977, Apr 1978, Jul 1980: Completed Jul 1984.

CHARMED PARTICLE PRODUCTION BY NEUTRONS

FERMILAB - M Binkley, J Butler, J Enagonio, I Gaines, P Garbincius, M Gormley, J Haggerty, D Harding, P Lebrun, J Peoples, J Slaughter
ILLINOIS U, URBANA - M Diesburg, J Filaseta, T Kroc, C Shipbaugh, J Wiss (Spokesperson)
COLORADO U - P Coteus, J Cumalat, J Enagonio, R Ladbury
INFN, MILAN - A Grabar, S Sala
BOLOGNA U - F Frabetti
MILAN U - M Dicorato
PAVIA U - F Bossi, P Manfredi

Accelerator FNAL Detector Spectrometer

Reactions

$n \text{Si} \rightarrow \text{charm } X$	280, 560 GeV c
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Particles studied charm

Comments A charm search using incident neutrons, an active target, and a PWC decay vertex detector. Ran for 2210 hours

Papers NIM 222 (1984) 474, PRL 59 (1987) 1530, PRL 59 (1987) 2711, PL B210 (1988) 253, and PRL 60 (1988) 2117

FNAL-458 (Oct 1975 - May 1976) Approved Jul 1976, Mar 1977, Apr 1978

PHOTOPRODUCTION EXPERIMENT AT FERMILAB

COLUMBIA U - B Knapp, W Lee (Spokesperson), P Leung, S D Smith, A Wjengo
ILLINOIS U, URBANA - J Bronstein, R Coleman, G Gladding, M Goodman, R Messner, T O'Halloran, J Sorracino, A Wattenberg

FERMILAB - M Binkley, I Gaines, I Peoples
HAWAII U - J Knauer

Accelerator FNAL Detector Combination

Reactions

$\gamma \text{nucleus} \rightarrow \mu^+ \mu^- X$	0-300 GeV c
$\gamma \text{nucleus} \rightarrow \mu^+ e^- X$	"
$\gamma \text{nucleus} \rightarrow \mu^- e^+ X$	"
$\gamma \text{nucleus} \rightarrow e^+ e^- X$	"
$\gamma \text{nucleus} \rightarrow \mu^+ \text{charged } X$	"
$\gamma \text{nucleus} \rightarrow \mu^- \text{charged } X$	"
$\gamma \text{nucleus} \rightarrow e^+ \text{charged } X$	"
$\gamma \text{nucleus} \rightarrow e^- \text{charged } X$	"
$\gamma \text{nucleus} \rightarrow \pi^+ \text{charged } X$	"
$\gamma \text{nucleus} \rightarrow \pi^- \text{charged } X$	"
$\gamma \text{nucleus} \rightarrow 2\pi^+ 2\pi^-$	"
$\gamma \text{nucleus} \rightarrow 2\pi^+ 2\pi^- \pi^0$	"
$\gamma \text{nucleus} \rightarrow K^+ K^- \pi^+ \pi^-$	"
$\gamma \text{nucleus} \rightarrow K^+ K^- \pi^+ \pi^- \pi^0$	"
$\gamma \text{nucleus} \rightarrow \bar{p} p \pi^+ \pi^-$	"
$\gamma \text{nucleus} \rightarrow \bar{p} p \pi^+ \pi^- \pi^0$	"

Particles studied $J/\psi(1S)$, $\psi(2S)$, $\eta_c(1S)$, charm, vmeson, hvy lepton, $\eta_c(1S)$, charm vmeson, hvy-lepton, $\eta_c(1S)$, charm, vmeson, hvy-lepton

Comments Continues work of FNAL-087A and 401. Previously was approved for 1000 hours, with a total of 2000 hours for FNAL experiments 400, 401 and 458. This time has now, however, been used by experiment 87A. Inactive as of Ortoner 81.

Papers This includes papers from FNAL-087A + FNAL-401.

PRL 34 (1975) 1040, PRL 34 (1975) 1044, PRL 37 (1976) 571, PRL 37 (1976) 574, PRL 37 (1976) 578, PRL 37 (1976) 882, PRL 43 (1979) 414, PRL 43 (1979) 1691, PRL 44 (1980) 1309, PR D22 (1980) 537, PRL 46 (1981) 799, PRL 48 (1982) 73, PRL 50 (1983) 302, and PRL 54 (1985) 628.

SUMMARIES OF FERMILAB EXPERIMENTS

FNAL-466 (Dec 1975) Approved Mar 1976.

NUCLEAR FRAGMENTS FROM HIGH ENERGY PROTON INTERACTIONS

ARGONNE - D Henderson, S B Kaufman, E P Steinberg, B D Wilkins
PURDUE U - D Fortney, D Klingensmith, N T Porile (✓ Spokesperson), C F Wang
CHICAGO U - S K Chang, R A Johns, J LaRosa, N Sugarman, A Turkevich

Accelerator FNAL Detector Counter

Reactions

p nucleus → nucleus X 200-800 GeV/c

Comments An ongoing study, with 102 targets exposed as of February 88.

Papers PRL 43 (1979) 918, PR C19 (1979) 2288, PR C21 (1980) 664, PR D21 (1980) 2511, PR C22 (1980) 670, PR C23 (1981) 427, PR C25 (1982) 244, PR C25 (1982) 478, PR C29 (1984) 569, PR C33 (1986) 2183, PR C34 (1986) 1911, NP A468 (1987) 711, PR C36 (1987) 1051, and PR C38 (1988) 818.

FNAL-508 (Sep 1976) Approved Sep 1976: Completed Apr 1985.

STUDY OF MECHANISM FOR MULTIPLE PRODUCTION OF PARTICLES AT HIGH ENERGIES: EMULSION EXPOSURE TO ABOUT 760 GeV PROTONS

TASHKENT, FTI - A Abduszhamilov, L P Chernova, S I Gadzhieva, K G Gulamov, N Litvinenko, N S Lukicheva, D Mirkhodzhaeva, V Sh Navotny, E A Ravina, N Sh Saidkhanov, L N Svechnikova
LOUISIANA STATE U - L M Barbier, W V Jones, J P Wefel
LOUISIANA STATE U & CRACOW - B Wosiek
LEBEDEV INST - M M Chernyavsky, G I Orlova, N A Salmanova, M E Tretyakova
TASHKENT, IFY - N W Petrov
CRACOW - R Holynski, W Wolter (✓ Spokesperson), K Wozniak

Accelerator FNAL Detector Emulsion

Reactions

p nucleus 800 GeV/c

Comments Follows on work of FNAL-90, -249, and -339. Exposed 7 emulsion stacks

Papers APP B18 (1987) 249, PR D35 (1987) 3537, ZPHY C40 (1988) 1, ZPHY C40 (1988) 223, PR D37 (1988) 1113, and PR D39 (1989) 86

FNAL-515 (Oct 1976) Approved Mar 1977 Completed Mar 1982

STUDY OF CHARM PARTICLES PRODUCED IN HADRONIC INTERACTIONS

NORTHWESTERN U - D Buchholz, L M Cremaldi, S Deichamps, H S Mao, J Rosen (Spokesperson), W K Sakumoto, R Schluter, S B Sontz, C Winter
FERMILAB D Johnson
CARNEGIE MELLON U - R Edelstein, C P Forsyth, K Gamarink, G Ginther, A E Kreymer, R Lipton, J M McQuade, D M Potter, J Russ, I Spiegel
NOTRE DAME U - J Bishop, N Biswas, N Cason, L Dauwe, J Godfrey, V Kenney, P Mooney, R Pempfer, E Rojek, R Ruchti, M Sarmiento, W Shepherd

Accelerator FNAL Detector Spectrometer

Reactions

π^- nucleus → μ^+ charged X 205 GeV/c

π^- nucleus → μ^- charged X "

π^- nucleus → μ^+ charm X "

π^- nucleus → μ^- charm X "

Particles studied charm

Comments Triggers on prompt muons. An outgrowth of FNAL-397. Ran for 2650 hours.

Papers PRL 53 (1984) 1411, PR D35 (1987) 1541, and PR D39 (1989) 2494.

FNAL-524 (Jan 1977) Approved Mar 1977; Completed Apr 1985.

PROTON-NUCLEUS INTERACTIONS IN EMULSION PLATES WITH EMBEDDED METAL POWDER GRANULES AT HIGHEST AVAILABLE ENERGY (> 400 GeV)

WASHINGTON U. SEATTLE - J R Florian, J J Lord, R J Wilkes (✓ Spokesperson)

Accelerator FNAL Detector Emulsion

Reactions

p Cr 500 GeV/c

p Ag "

p W "

Particles studied charm, hvy-lepton

Comments Exposed 6 emulsion stacks.

FNAL-537 (Feb 1977, Oct 1977) Approved Mar 1978: Completed Feb 1982.

STUDY OF $\bar{p}N$ INTERACTIONS IN THE P-WEST HIGH INTENSITY LABORATORY

FERMILAB - M Binkley, B Cox (✓ Spokesperson), J Enagonio, C Hojvat, D Judd, R D Kephart, P K Malhotra, P O Mazur, C T Murphy, F Turkot, R L Wagner, D Wagoner, W Yang
ATHENS U - E Anassontzia, S Katsanevas, P Kostarakis, C Kourkoulis, A Markou, L K Resvanis, G Voulgaris
MCGILL U - H Areti, S Conetti, P Lebrun, D Ryan, T Ryan, W Schappert, D Stairs
MICHIGAN U - C Akerlof, D Kraushaar, D Nitz, R Thun
SHANDONG U - He Mao, Z Nan-jian

Accelerator FNAL Detector Spectrometer

Reactions

$\bar{p}$ nucleus → $\mu^+ \mu^- X$ 125 GeV/c

π^- nucleus → $\mu^+ \mu^- X$ "

Comments Studies J/ψ , $\psi(2S)$, and high-mass continuum muon pair production. The shapes of the x_F , τ , and p_T spectra agree with the simple Drell-Yan formalism. Measures the cross sections for J/ψ , $\psi(2S)$, and Drell-Yan muon pairs to 10%, and determines heavy-target effects in J/ψ and Drell-Yan production. Ran for 2700 hours

Papers NIM 212 (1983) 135, PR D29 (1984) 63, PRL 54 (1985) 2572, NIM A242 (1986) 215, PR D38 (1988) 1377, and PRL 60 (1988) 2121

FNAL-555 (May 1977) Approved Nov 1978, Completed Mar 1982.

STUDY OF CROSS SECTIONS AND POLARIZATIONS IN NEUTRAL STRANGE PARTICLE PRODUCTION AT HIGH TRANSVERSE MOMENTUM

RUTGERS U - A Beretvas, L Deck, T Devlin (✓ Spokesperson), K B Luk, P C Petersen, G B Thomson, R Whitman
WISCONSIN U - R Handler, B Lundberg, L Pondrom, M Shewell, C Wilkinson
MICHIGAN U - P Border, J Dworkin, G E Overseth, R Rameika, G Valenti
MINNESOTA U - K Heiler, C James

Accelerator FNAL Detector Spectrometer

Reactions

p Be → ΛX 400 GeV/c

p Be → $\bar{\Lambda} X$ "

p Be → $K_S^0 X$ "

Comments Extends measurements and uses apparatus of FNAL-8. Ran for 650 hours.

FNAL-557 (May 1977) Approved Jun 1977: Completed Jul 1984.

STUDY OF HADRON JETS WITH THE CALORIMETER TRIGGERED MULTIPARTICLE SPECTROMETER CAL TECH - R Gomez

SUMMARIES OF FERMILAB EXPERIMENTS

FERMILAB - B Brown, L Dauwe, P Devensky, H Haggerty, E Malamud (Spokesperson), M Nikolic
ILLINOIS U, CHICAGO - R Abrams, J Ares, H Goldberg, C Halliwell, F Lopez, S Margulies, D McLeod, A Salminen, J Solomon, Gwan Wu
INDIANA U - S Blessing, R Crittenden, P Draper, A Dzierba, J Florian, R Heinz, J Krider, T Marshall, J Martin, D Petersen, A Sambamurti, P Smith, A Snyder, C Stewart, T Sulanke, S Teige, A Ziemiński
MARYLAND U - R G Glasser, J Goodman, S Gupta, R Holmes, L Myriniathopoulos, P Rapp, H Stroble, G Yodh
RUTGERS U - S Ahn, T Watts
GEORGE MASON U - R Ellsworth
FLORIDA STATE U - S Hagopian, J E Lannutti, A Pfifer
SERPUKHOV - A Abramov, Yu Antipov, B Baldin, S Denisov, V Glebov, Y Gorin, V Kryshkin, S Petrukhin, S Polovnikov, V Sulyayev

Accelerator FNAL Detector FMPS

Reactions

$p \rightarrow \text{jet}(s) X$	400, 800 GeV/c
$p \rightarrow \mu^+ \mu^- X$	"
$p \text{ nucleus} \rightarrow \text{jet}(s) X$	"
$p \text{ nucleus} \rightarrow \mu^+ \mu^- X$	"

Comments An extension and improvement of FNAL-260. Triggers on jets with high p_T . Ran 600 hours at 400 GeV/c ending in June 81. Then ran 350 hours at 800 GeV/c on H, Al, Be, Cu, and Pb targets ending in July 84. This run was combined with the start of FNAL-672.

Papers IEEE TNS 28 (1981) 666, NIM 188 (1981) 285, PRL 49 (1982) 711, PRL 50 (1983) 11, PR D29 (1984) 1895, PR D29 (1984) 2469, NP B232 (1984) 189, PL B177 (1986) 233, PL B183 (1987) 115, and PR D35 (1987) 2736

FNAL-565 (Jun 1977) Approved Mar 1978, Completed Jun 1982

A STUDY OF THE DETAILED CHARACTERISTICS OF HADRON-NUCLEUS COLLISIONS USING THE FERMILAB HYBRID SPECTROMETER

COLLEGE DE FRANCE - P Beilliere, P Lutz, J L Narjoux
FERMILAB - N Gelfand
BROWN U - D Brick, M Widgoff
INDIANA U - E D Aleya, Jr
MIT - M Bloomer, J Bober, W Busza, B Cole, T A Frank, T A Fuess, L Grodzins, E S Hafen, P Haridas, D Huang, H Z Huang, R J Hulsizer, V Kistiakowsky, R J Ledoux, C Milstene, S Noguchi, S H Oh, I A Pless (Spokesperson), S Steadman, T B Stoughton, V Suchorebrow, S Tether, P C Trepagnier, B F Wadsworth, Y Wu, R K Yamamoto

OAK RIDGE - H O Cohn
PAVIA U & INFN, PAVIA - E Calligaris, C Castoldi, R Dolfini, L Introzzi, S Ratti

RUTGERS U - M Badiak, R DiMarco, P Jacques, M Kalelkar, R J Plano

SETON HALL U - P E Stamer
STEVENS TECH - E B Brucker, E Koller
TEL AVIV U - G Alexander, J Grunhaus, A Levy
TENNESSEE U - J E Brau, W M Bugg, G Condo, T Handler, H J Hargie, E Hart, A Rafatian, A H Rogers
TOHOKU U - K Abe, K Hasegawa, Y Hayashino, T Kitagaki, Y Otani, K Tamai, S Tanaka, A Yamaguchi, H Yuta
TOHOKU GAKUIN U - M Higuchi, M Sato
YALE U - T Ludlam, R Steiner, H D Taft

Accelerator FNAL Detector HBC-30IN-HYB

Reactions

$p \text{ nucleus}$	200, 400 GeV/c
$\pi^+ \text{ nucleus}$	200 GeV/c
$\pi^- \text{ nucleus}$	"
$K^+ \text{ nucleus}$	"
$K^- \text{ nucleus}$	"
$p \text{ nucleus}$	"

Comments The targets are magnesium, silver, and gold thin foils in the chamber. Downstream detectors for the hybrid

spectrometer include ISIS and a segmented Cerenkov counter. This and FNAL-570 took a total of 1068 KPX

Papers NP B201 (1982) 189, RSI 53 (1982) 303, PL B200 (1988) 266, and PR D39 (1989) 2484. See also FNAL-570.

FNAL-570 (Sep 1977) Approved Mar 1978; Completed Jun 1982.

A STUDY OF PARTICLE PRODUCTION AND DYNAMICS FROM $x = 0$ TO $x = 1$ AND THE DEPENDENCE ON INCIDENT QUANTUM NUMBERS

BROWN U - D Brick, A M Shapiro, M Widgoff
CERN - F Bruyant, L Montanet
ILLINOIS TECH - R A Burnstein, H A Rubin
INDIANA U - E D Aleya, Jr
JOHNS HOPKINS U - L Bachman, A Pevsner
MIT - F Barreiro, O Benary, E S Hafen, R I Hulsizer, V Kistiakowsky, I A Pless (Spokesperson), P Trepagnier, R K Yamamoto
MONS U - P Gillis, F Grard, V Henri, P Herquet, J Skura, R Windmolders
NIJMEGEN U - F Crijns, W Kittel, W Metzger, C Pols, J Schotanus, R Van de Walle
OAK RIDGE - H O Cohn, R D McCulloch
PADUA U - A Bettini, M Cresti, M Mazzucato, L Peruzzo, P Rossi, G Sartori, S Sartori, L Ventura, A Zudori, G Zumerle
PAVIA U - S Alborghetti, R Attendoli, E Calligaris, G Cecchet, R Dolfini, L Mapelli, S Ratti
ROME U - L Barone, R Bizzarri, G Bressi, G Ciapetti, D Dionisi, P F Loverre, D Zanello, L Zanello
RUTGERS U - P F Jacques, R J Plano, T L Watts
STEVENS TECH - E B Brucker, E L Koller, P E Stamer, S Taylor
TECHNION - S Dado, J Goldberg, S Toaff
TEL AVIV U - G Alexander, S Dagan, J Grunhaus, A Levy, D Lissauer, Y Oren
TENNESSEE U - W M Bugg, G T Condo, T Handler, E L Hart
TRIESTE U - E Castelli, C Omero, P Poropat, M Sessa
WEIZMANN INST - Y Eisenberg, B Haber, D Hochman, U Karshon, E E Ronat, A Shapira, R Yaari, G Yekutieli
YALE U - H Kraybill, D Ljung, T Ludlam, H D Taft
TOHOKU GAKUIN U & TOHOKU U et al

Accelerator FNAL Detector HBC-30IN-HYB

Reactions

$p p$	147 GeV/c
$\pi^+ p$	"
$K^+ p$	"
$\bar{p} p$	"
$\pi^- p$	"

Comments Downstream detectors for the hybrid spectrometer system include ISIS and a forward γ detector. The system is to identify and measure γ 's, pions, kaons, protons, antiprotons, and Λ 's, and 4-constraint fits will be possible with perhaps as many as three π^0 's. Physics topics emphasize multiparticle production in the central region. This experiment and FNAL-565 took a total of 1068 KPX.

Papers NP B150 (1979) 109, NP B152 (1979) 45, PR D19 (1979) 743, PR D20 (1979) 2123, PR D21 (1980) 632, PR D21 (1980) 1726, NP B164 (1980) 1, ZPHY C0 (1981) 93, ZPHY C11 (1981) 335, PR D24 (1981) 590, PL 103B (1981) 241, ZPHY C13 (1982) 11, PR D25 (1982) 2248, PR D25 (1982) 2794, ZPHY C15 (1982) 1, ZPHY C19 (1983) 1, ZPHY C24 (1984) 19, PR D30 (1984) 1134, and ZPHY C31 (1986) 59. See also FNAL-565.

FNAL-576 (Dec 1977) Approved Feb 1978; Completed Jul 1985.

500 GeV PROTON INTERACTIONS IN NUCLEAR EMULSION

OTTAWA U - H Areti, C J B Hebert, J Hebert (Spokesperson)
LUND U - B Andersson, I Osterlund
NANCY U - G Baumann, R Devienne
PARIS, CURIE UNIV VI - Teai-Chu
STRASBOURG, CRN - C J Jacquot
LYON, IPN - R Schmitt

SUMMARIES OF FERMILAB EXPERIMENTS

FERMILAB - A van Ginneken
 BELGRADE U - O Adamovic, M Juric
 VALENCIA U - J M Bolta, E Higon
 SANTANDER U - A Amoro, E de Felipe, R Niembro, A Ruiz,
 E Villar

Accelerator FNAL Detector Emulsion

Reactions

p nucleus 500 GeV/c

Comments Exposed 1 emulsion stack.

FNAL-581-704 (Sep 1981) Approved Dec 1981, Dec 1983, Jul 1984.

EXPERIMENTS WITH THE POLARIZED BEAM FACILITY

ARGONNE - D Grosnick, D Hill, D Lopiano, Y Ohashi,
 T Shima, H Spinka, R Stanek, D Underwood, A Yokosawa
 (✓ Spokesperson)

FERMILAB - D Carey, R Coleman, D Cossairt, A L Read
 KYOTO U - K Imai, S Makino, A Masaike, K Miyake,

T Nagamine, N Tamura, T Yoshida

KYOTO SANGYO U - F Takeuchi

KYOTO U OF EDUCATION - R Takashima

LOS ALAMOS - N Tanaka

ANNECY - K Kuroda, A Michalowicz

NORTHWESTERN U - F Luehring, D H Miller

RICE U - B Bonner, M Corcoran, B Mayes, H E Miettinen,

G S Mutchler, M Nessi, G C Phillips, J B Roberts, F Tedaldi-

Nessi

SACLAY - J Bystricky, F Lehar, A De Lesquen, L Van Rossum

SERPUKHOV - V Apokin, A Dereveschikov, Y Matulenko,

A Meschanin, S Nurushhev, D Patalakha, A Saraykin,

V Solovyanov, L Solovyev, A Vasilyev

INFN, TRIESTE - F Bradamante, M Giorgi, A Martin, A Penzo,

P Schiavon, S Dalla Torre-Collautti, A Villari, A Zanetti

KEK - S Ishimoto

IOWA U - A Nuval, Y Onel

UDINE U - C Boneschi, G Pauletta

HIROSHIMA U - K Iwatani

KITAKYUSHU, UNIV OCCUP ENVIR HEALTH - T Maki

Accelerator FNAL-TEV Detector Spectrometer, Calorimeter,
 Ionization chamber

Reactions Polarized beam and target

$p \rightarrow X$ 200 GeV/c

$p \rightarrow \pi^0 X$ "

$p \rightarrow \pi^+ X$ "

$p \rightarrow \pi^- X$ "

$p \rightarrow \Lambda X$ "

$p \rightarrow \Sigma^0 X$ "

$\bar{p} \rightarrow X$ "

Comments The experiments measure (1) the helicity asymmetry in total pp and $p\bar{p}$ cross sections, (2) the spin dependence of inclusive π^0 production, (3) the production of charged mesons at high z , and (4) the production of Λ 's and Σ^0 's at large z . FNAL-581 is approved for 400 hours, and FNAL-704 is approved for 1200 hours. Half of FNAL-581 is run and FNAL-704 is expected to begin at the end of 1989.

Papers PRL 61 (1988) 1918.

FNAL-594 (Feb 1978) Approved Mar 1978; Completed Jun 1982.

A NEW NEUTRINO DETECTOR AT FERMILAB

FERMILAB - F E Taylor, J K Walker (✓ Spokesperson)
 FERMILAB & MIT & MICHIGAN STATE U & NORTHERN
 ILLINOIS U - et al

Accelerator FNAL Detector Calorimeter

Reactions

ν_μ nucleus $\rightarrow \nu_\mu$ hadrons 0-250 GeV/c

ν_μ nucleus $\rightarrow \mu^- X$ "

ν_μ nucleus $\rightarrow \mu$ ons X "

ν_μ nucleus $\rightarrow \mu$ ons $e^- X$ "

ν_μ nucleus $\rightarrow \mu$ ons $e^+ e^- X$ "

$\nu_\mu n \rightarrow \mu^- p$ "

$\nu_\mu e^- \rightarrow \nu_\mu e^-$ "

$\nu_\mu e^- \rightarrow \mu^- \nu_e$ "

$\bar{\nu}_\mu p \rightarrow \mu^+ n$ "

$\bar{\nu}_\mu$ nucleus $\rightarrow \bar{\nu}_\mu$ hadrons "

$\bar{\nu}_\mu$ nucleus $\rightarrow \mu^+ X$ "

$\bar{\nu}_\mu$ nucleus $\rightarrow \mu$ ons X "

$\bar{\nu}_\mu e^- \rightarrow \bar{\nu}_\mu e^-$ "

$\bar{\nu}_\mu e^- \rightarrow \mu^- \bar{\nu}_e$ "

$\bar{\nu}_e e^- \rightarrow \mu^- \bar{\nu}_\mu$ "

Comments Exposed to the 400-GeV wide- and narrow-band neutrino beams for about 4400 hours. The analysis emphasizes neutral current interactions.

Papers IEEE TNS 29 (1982) 363, IEEE TNS 29 (1982) 400, PRL 55 (1985) 574, and PRL 55 (1985) 1969.

FNAL-597 (Jan 1978) Approved Mar 1978; Completed May 1982.

A HIGH STATISTICS STUDY OF $\bar{p}p$ ANNIHILATIONS AND A COMPARISON OF $\bar{p}, p, \pi^-, \pi^+$, AND K^+ INTERACTIONS ON HYDROGEN, MAGNESIUM, SILVER, AND GOLD AT 100 GeV/c UTILIZING THE FERMILAB 30-INCH HYDROGEN BUBBLE CHAMBER AND DOWNSTREAM PARTICLE IDENTIFIER

CAMBRIDGE U - P A Elcombe, M J Goodrick, J C Hill,

W W Neale

DUKE U - W Kowald, W D Walker

FERMILAB - P Lucas, L Voyvodic

PENN STATE U - R A Lewis, B Y Oh, G A Smith, W Toothaker,

J Whitmore (✓ Spokesperson)

NOTRE DAME U - J M Bishop, N N Biswas, N M Cason,

V P Kenney, M C K Mattingly, R C Ruchti, W D Shephard

(✓ Spokesperson), S J Y Ting

KANSAS U - R Ammar, D Coggage, R Davis, D Day, J Gress,

L Hercher, S Kanekal, N Kwak

Accelerator FNAL Detector HBC-30IN-HYB

Reactions

$\bar{p} p$ 100 GeV/c

$p p$ "

$\pi^+ p$ "

$K^+ p$ "

$\bar{p}$ nucleus "

p nucleus "

π^+ nucleus "

K^+ nucleus "

$\pi^- p$ 100, 320 GeV/c

π^- nucleus "

Comments The magnesium, silver, and gold targets are thin foils in the chamber. Uses the downstream particle detector (ISIS/OSIRIS) and a neutral calorimeter. This supersedes the previously approved FNAL-304. Took 658 KPX.

Papers PR D33 (1986) 3167, PL B197 (1987) 295, and NIM A273 (1988) 97.

FNAL-605 (May 1978, Nov 1978) Approved Mar 1978; Completed Aug 1985.

STUDY OF LEPTONS AND HADRONS NEAR THE KINEMATIC LIMITS

FERMILAB - C N Brown, W Cooper, D Finley, A Ito,
 A Jonckheere, H Jostlein, L Lederman, G Moreno, R Orava,
 S Smith, K Sugano

SUNY, STONY BROOK - M Adams, H Glass, D Jaffe, J Kirz,

R McCarthy, D Sieh

WASHINGTON U, SEATTLE - D A Forbush, R Gray, K B Luk,

R Plaag, J Rothberg, J Rutherford (✓ Spokesperson),

P B Straub, F C Toeva, R W Williams, K Young

COLUMBIA U - J A Crittenden, Y B Hsiung, W Sippach

SACLAY - J R Hubbard, Ph Mangelot, J Mullie, M Neveu,

R Praca, J Tichit, A Zadra

SUMMARIES OF FERMILAB EXPERIMENTS

KYOTO U - Y Hemmi, K Imai, K Miyake, T Nakamura, Y Sakai,
N Sasao, N Tamura, T Yoshida
KEK - A Maki
CERN - R P Bouclicr, G Charkp, G P Million, J-C Santiard,
F Sauli
FLORIDA STATE U - D Kaplan

Accelerator FNAL Detector Spectrometer

Reactions

p nucleus $\rightarrow \mu^+ \mu^- X$ 400, 800 GeV/c
 p nucleus $\rightarrow e^+ e^- X$ "
 p nucleus $\rightarrow$ hadron $^+$ hadron $^-$ X "

Particles studied axion, T(1S), T(2S), T(3S)

Comments Studies single and pair production of leptons and hadrons at very high transverse momenta. The nuclear targets include H₂, D₂, Be, Cu, and W. The dilepton invariant mass resolution is exceptionally good. Ran for 3970 hours.

Papers IEEE TNS 28 (1981) 514, IEEE TNS 28 (1981) 528, IEEE MAG 17 (1981) 1903, IEEE TNS 29 (1982) 323, NIM 205 (1983) 403, NIM 216 (1983) 79, NIM 217 (1983) 237, IEEE TNS 30 (1983) 30, IEEE TNS 31 (1984) 1028, IEEE TNS 32 (1985) 692, PRL 55 (1985) 457, NIM A244 (1986) 440, NIM A245 (1986) 338, PRL 57 (1986) 2101, PR D34 (1986) 2584, PR D38 (1988) 1016, NIM A273 (1988) 177, and PR D39 (1989) 3516.

FNAL-608 (Sep 1978) Approved Nov 1978, Jan 1980; Completed Feb 1984.

A STUDY OF THE STRUCTURE OF HIGH p_t HADRONIC INTERACTIONS

LEHIGH U - A Kanofsky
PENN U - L Cornell, M Dris, J Fleischman, W Kononenko,
B Robinson, W Selove (Spokesperson), G Theodosiou, B Yost
WISCONSIN U - H F Chen, A R Erwin, M A Hasan, C E Kuehn,
K S Nelson, M Thomp.
ARGONNE - M W Arenton, W R Ditzler, T H Fields, G Thomas
FERMILAB - M Harrison
RICE U - R K Clark, M Corcoran, K Johns, M Marcin,
H E Miettinen, R C Moore, C Naudet, J Roberts
MICHIGAN U - R Gustafson

Accelerator FNAL Detector Calorimeter

Reactions

$p p \rightarrow$ hadrons 400 GeV/c
 $\pi^+ p \rightarrow$ hadrons "

Comments Continues study of FNAL-395 of high p_t hadron jets. Ran for 620 hours.

Papers PRL 53 (1984) 1988, PR D31 (1985) 984, PL 150B (1985) 322, PRL 56 (1986) 808, and PL B207 (1988) 222.

FNAL-612 (Oct 1978) Approved Nov 1978, Completed Apr 1982.

MEASUREMENT OF THE DIFFRACTIVE PHOTON DISSOCIATION ON HYDROGEN

ROCKEFELLER U - T Chapin, R Cool, K Goulianos
(✓ Spokesperson), K Jenkins, J Silverman, G Snow, H Sticker,
S White
BEIJING, IHEP - Y H Chou

Accelerator FNAL Detector TPC

Reactions

$\gamma p \rightarrow p X$ 80-140 GeV/c
 $\gamma p \rightarrow p \nu_{\text{meson}}^0$ "

Comments Covers 0.02 < t < 0.1 GeV² and up to 0.1 in M_z^2/s . Ran for 1850 hours.

Papers NIM 197 (1982) 305, and PR D31 (1985) 17. No other papers expected.

FNAL-613 (Sep 1978) Approved Nov 1978; Completed May 1982.

A PROMPT NEUTRINO EXPERIMENT AT FERMILAB

MICHIGAN U - R C Ball, C T Coffin, H R Gustafson,
L W Jones, M J Longo, T J Roberts, B P Roe
(✓ Spokesperson), E Wang
WISCONSIN U - M Duffy, G K Fanourakis, R J Loveless,
D D Reader, D L Schumann, E S Smith
OHIO STATE U - M B Crisler, J S Hoftun, T Y Ling,
T A Romanowski, J T Volk
INFN, FLORENCE - C Castoldi, G Conforto
WASHINGTON U, SEATTLE - S Childress

Accelerator FNAL Detector Calorimeter

Reactions

p nucleus 400 GeV/c

Particles studied charm

Comments A beam-dump ν experiment with several targets, densities, and intensities. Studies production of charmed particles by hadrons, and searches for various exotic phenomena. Ran for 1800 hours with about 4.3×10^{17} protons on target.

Papers NIM 197 (1982) 371, PRL 51 (1983) 743, PRL 52 (1984) 1865, PRL 53 (1984) 1314, NIM 228 (1984) 37, PRL 55 (1985) 1816, PRL 57 (1986) 1522, and PR D38 (1988) 2032.

FNAL-615 (Nov 1978, May 1979) Approved Jul 1979; Completed Jul 1984.

A STUDY OF THE FORWARD PRODUCTION OF MASSIVE PARTICLES

CHICAGO U - C Adolphsen, J Alexander, K J Anderson,
J Conway, J Heinrich, K W Merritt, J E Pilcher, A Possoz
PRINCETON U - C Biino, J F Greenhalgh, P Kaaret, W C Louis,
K T McDonald (✓ Spokesperson), S Palestini, F Soemaker,
A J S Smith
IOWA STATE U - E I Rosenberg, D T Simpson

Accelerator FNAL Detector Spectrometer

Reactions

π^+ nucleus $\rightarrow \mu^+ \mu^- X$ 75, 250 GeV/c
 π^+ nucleus $\rightarrow \mu^+ \mu^- X$ 250 GeV/c

Particles studied $J/\psi(1S)$, $\psi(2S)$, $\Upsilon(\text{unspec})$

Comments Measures the pion structure function at large z , the nucleon sea-quark distribution at small z , and the longitudinal polarization of the J/ψ at large z , and sets limits on $D^0, \bar{D}^0$ mixing. Continues work of FNAL-331 and FNAL-444. Ran for 2260 hours.

Papers PRL 55 (1985) 2649, PRL 56 (1986) 1027, PR D34 (1986) 315, NIM A243 (1986) 323, PRL 58 (1987) 2523, PR D39 (1989) 92, and PRL 63 (1989) 356.

FNAL-617 (Jan 1979) Approved Mar 1979; Completed Jun 1982.

A STUDY OF DIRECT CP VIOLATION IN THE DECAY OF THE K^0 VIA A PRECISION MEASUREMENT OF η_{00}/η_{+-}

CHICAGO U - R Bernstein, G Bock, D Carlsmith, D Coupal,
J W Cronin, W Keling, K Nishikawa, H Norton, B Winstein
(✓ Spokesperson)

SACLAY B Peyaud, R Turlay, A Zylberstein

Accelerator FNAL Detector Spectrometer

Reactions

$K_L \rightarrow \pi^+ \pi^-$ 30 200 GeV/c
 $K_L \rightarrow \pi^0 \pi^0$ "
 $K_L \rightarrow \gamma \gamma$ "
 $K^*(892)^0 \rightarrow K^0 \gamma$ "

Particles studied K_L

Comments To reduce bias, measures for each mode ($\pi^+ \pi^-$ and $\pi^0 \pi^0$) the decay versus regeneration rates in a double-beam arrangement. Ran for 2300 hours.

Papers PRL 54 (1985) 1631, PRL 55 (1985) 566, PRL 56 (1986) 18, and PR D36 (1987) 3502. No other papers expected.

SUMMARIES OF FERMILAB EXPERIMENTS

FNAL-619 (May 1979) Approved Jul 1979; Completed Jun 1982.

MEASUREMENTS OF THE $\Sigma^0 \rightarrow \Lambda^0$ TRANSITION MAGNETIC MOMENT AND THE WEAK RADIATIVE DECAY $\Sigma^0 \rightarrow \Lambda \gamma$

RUTGERS U - A Beretvas, T Devlin (✓ Spokesperson), K B Luk, P C Petersen, G B Thomson, R Whitman
WISCONSIN U - R Handler, B Lundberg, L Pondrom, M Sheaff, C Wilkinson

MICHIGAN U - P Border, J Dworkin, O E Overseth, R Rameika, G Valenti

MINNESOTA U - K Heller, C James

Accelerator FNAL Detector Spectrometer

Reactions

Λ nucleus $\rightarrow \Sigma^0$ nucleus 80-350 GeV/c

Particles studied Σ^0 , Λ , Ξ^0

Comments Uses the Primakoff effect. Follows on work of FNAL-440, -495, and -620. Ran for 675 hours

Papers PRL 57 (1986) 949, and PR D34 (1986) 1626.

FNAL-621 (May 1979) Approved Jul 1981. Completed Aug 1985

A MEASUREMENT OF THE CP VIOLATION PARAMETER η_{+-}

RUTGERS U - A Beretvas, A J Carracappa, T Devlin, U P Joshi, K Krueger, A Pal, P Petersen, S Teige, G Thompson (Spokesperson)

MICHIGAN U - P Border, M Longo, O E Overseth

MINNESOTA U - N Grossman, K Heller, C James, M Shupe, K Thorne

Accelerator FNAL-TEV Detector Spectrometer

Reactions

$K_L \rightarrow \pi^+ \pi^- \pi^0$ 50 200 GeV/c

$K_S \rightarrow \pi^+ \pi^- \pi^0$ "

$K_L \rightarrow \pi^+ \pi^-$ "

$K_S \rightarrow \pi^+ \pi^-$ "

Particles studied K_L , K_S

Comments Uses the neutral hyperon spectrometer. Ran for 2470 hours

Papers PRL 59 (1987) 15

FNAL-623 (May 1979) Approved Nov 1980. Completed Jun 1982

HIGH-MASS STATES DECAYING INTO $\phi\pi$ AND $\phi\phi$ PRODUCED CENTRALLY IN 400 GeV/c pp INTERACTIONS

ARIZONA U - E Jenkins, K W Lai, A Pifer

FERMILAB U - J Green (Spokesperson)

FLORIDA STATE U - J Albright, H Fenker, H Goldman,

S Hagopian, J Lannutti

NOTRE DAME U - T Davis, J Pomeroy

TUFTS U - A Napier, J Schneps

VANDERBILT U - C Roos, J Waters, M S Webster

VIRGINIA TECH - G Collins, J Fienner, P Trower

Accelerator FNAL Detector FMPS

Reactions

$p p \rightarrow K^+ K^+ K^- K^- X$ 400 GeV/c

$p p \rightarrow K^+ K^- \text{pions } X$ "

Particles studied ϕ , $\phi(1680)$, exotic-meson, $\eta_c(1S)$, glueball

Comments A study of inclusive ϕ and $(4K)^0$ production, a search for glueballs and the η_c in $(4K)^0$, $\phi(2K)^0$, and $\phi\phi$, and a search for exotics in ϕ +pions. Ran for 425 hours.

Papers PL 152B (1985) 428, PRL 56 (1986) 1639, PR D33 (1986) 2519, and PR D34 (1986) 707.

FNAL-630 (Jan 1980) Approved Mar 1980; Completed Mar 1982.

STUDY OF B PARTICLE AND CHARMED PARTICLE PRODUCTION AND DECAY USING A HIGH RESOLUTION STREAMER CHAMBER

YALE U - T Cardello, M Catalano, P Cooper, S Dhawan, Y Li, R Majka, P McBride, O Murphy, P Nemethy, J Sandweiss (Spokesperson), A J Slaughter, H Taft, L Teig, L Tzeng
FERMILAB - M Johnson
LBL - et al.

Accelerator FNAL Detector Streamer chamber

Reactions

n nucleus $\rightarrow \mu\text{on}(s) X$ 300 GeV/c

Particles studied bottom, charm

Comments An extension of FNAL-490. Ran for 1150 hours.

Papers PRL 55 (1985) 1172.

FNAL-632 (May 1980) Approved Jun 1982; Completed Feb 1988.

AN EXPOSURE OF THE 15-FOOT BUBBLE CHAMBER WITH A NEON-HYDROGEN MIXTURE TO A WIDE-BAND NEUTRINO BEAM FROM THE TEVATRON

BIRMINGHAM U - G T Jones, R Jones, B Kenaedy, S O'Neale
BRUSSELS U, IHE - P Marage, J Moreels, J Sacton, P Vilain, E A de Wolf

CERN - C Brand, A M Cooper, H Drevermann, H Foeth, K K Geissler, G Harigel, H Klein, J Mittendorf, D R O Morrison (Spokesperson), A Parker, P Schmid, H Wachsmuth

PANJAB U - J M Kohli, I S Mitra, J Singh, P M Sood

FERMILAB - W Smart, L Voyvodic

IMPERIAL COLL - K W J Barnham, J R Campbell, E Clayton,

D Miller, M M Mobbayyen, P R Nailor

ILLINOIS TECH - J B Barclay, R A Burnstein, D Cullen,

R G Dillenber, J E Hanlon, D Karatas, C P Mailander,

R Naon, H A Rubin

JAMMU U - G L Kaul, J Prakash, N K Rao

MUNICH, MAX PLANCK INST - M Aderholz, L L Deck,

N Schmitz, W Wittek

OXFORD U - G Corrigan, J J Lloyd, G Myatt, D Radojicic

RUTGERS U - M S Kalelkar, R J Plano, P E Stamer

RUTHERFORD - B Franck, J Guy, G Kalmus, P Kasper,

R L Sekuln, M Tyndal, W A Venus

SACLAY - J P Baton, C Coutures, M Facchini-Turluer, M Jabiol,

M Neveu

STEVENS TECH - E B Brucker, E L Koller

TUFTS U - H Akbari, T Kafka, T Mann, R H Milburn, A Napier,

J Schneps

UC, BERKELEY - H H Bingham, P Dingus, J E Lys, G P Yost

HAWAII U - R J Cence, F A Harris, V Jain, M D Jones,

M W Peters (Spokesperson), V Z Peterson

Accelerator FNAL-TEV Detector HLBC-15FT

Reactions

ν_μ nucleus $\rightarrow \mu^- X$ 10-400 GeV/c

$\bar{\nu}_\mu$ nucleus $\rightarrow \mu^+ X$ "

Particles studied charm, bottom, top, τ

Comments The main aim is an exploratory search for new particles and effects in a new energy range. Also studies (1) production of like-sign dileptons, (2) production of charmed and heavier-quark particles and τ leptons, (3) quark and gluon fragmentation functions, the transverse momentum behavior of hadrons, and other aspects of the hadron system, and (4) the inelastic structure functions. Uses high-resolution optics and holography. Took 446 KPIX.

Papers NIM A257 (1987) 614.

FNAL-635 (Apr 1986, Mar 1983) Approved Nov 1983.

SEARCH FOR AXION-LIKE OBJECTS

VIRGINIA TECH - C Church, L W Mo (✓ Spokesperson),

T Nunamaker

FERMILAB - J Kilmer, R Orr, T Toohig

SUMMARIES OF FERMILAB EXPERIMENTS

Accelerator FNAL-TEV Detector Calorimeter

Reactions

$X \rightarrow \mu^+ \mu^-$	< 400 GeV, c
$X \rightarrow \mu^+ e^-$	"
$X \rightarrow \mu^- e^+$	"

Particles studied axion, photino

Comments A beam-dump experiment to search for axion-like objects, particularly in the $\mu^+ \mu^-$ decay mode. The detector is two calorimeters separated by about 50 feet. Inactive (February 89).

FNAL-636 (Apr 1980) Approved Nov 1980.

STUDY OF BEAM-DUMP PRODUCED NEUTRINOS

MIT - B Blatner, E S Hafen, P Haridas, J L Harton, R I Hulsizer, M Mars, S H Oh, I A Pless (Spokesperson), T B Stroughton, B F Wadsworth, R K Yamamoto

BROWN U - D Brick, H Rudnicka, A Shapiro, M Widgoff

FERMILAB - S R Childress, N M Gelfand, C T Murphy

BEIJING, IHEP - D Huang, Y Wu, S-W Xu

INDIANA U - E D Alyea

OAK RIDGE - H O Cohn

SETON HALL U - P E Stamer

TECHNION - S Dado, J Goldberg

TEL AVIV U - G Alexander, Y Gnat, R Heifetz, A Levy

TENNESSEE U - W M Bugg, G T Condo, T Handler, E L Hart

TOHOKU GAKUIN U - M Higuchi, M Sato

TOHOKU U - K Abe, K Hasegawa, Y Hayashino, T Kitagaki (Spokesperson), T Nakajima, T Takayama, K Tamai, S Tanaka, A Yamaguchi, H Yuta

Accelerator FNAL-TEV Detector HLBC-36IN-HYB

Reactions

ν_e nucleus $\rightarrow \tau X$	10-250 GeV/c
ν_e nucleus	"
ν_μ nucleus	"

Particles studied τ , ν_τ , charm

Comments The main goal is to establish the existence of the ν_τ . The detector is a new freon rapid-cycling bubble chamber with a holographic camera plus the Fermilab hybrid spectrometer with a μ identifier. Size of run unspecified. Inactive (February 88).

FNAL-646 (Apr 1980) Approved Jul 1981.

SEARCH FOR THE ν_e NEUTRINO AND STUDY OF PROMPT NEUTRINO PRODUCTION

UC, BERKELEY - H H Bingham, J E Lys, G Yost

COLUMBIA U - C Baltay, G Hargel, M Hibbs, J O'Lamitsu

FERMILAB - J Schmidt, W Smart, L Voyvodic

HAWAII U - R Cence, F Harris, V Jain, M Jones, M W Peters (Spokesperson), V Peterson

RUTGERS U - P Jacques, M Kalelkar, R Plano, P E Stamer

Accelerator FNAL-TEV Detector HLBC-15FT

Reactions

ν_e Ne $\rightarrow \tau^- X$	10-200 GeV/c
$\bar{\nu}_e$ Ne $\rightarrow \tau^+ X$	"
ν_e Ne $\rightarrow e^- X$	"
$\bar{\nu}_e$ Ne $\rightarrow e^+ X$	"
ν_μ Ne $\rightarrow \mu^- X$	"
$\bar{\nu}_\mu$ Ne $\rightarrow \mu^+ X$	"
ν Ne $\rightarrow \nu X$	"
$\nu_e e^- \rightarrow \nu_e e^-$	"
$\bar{\nu}_e e^- \rightarrow \bar{\nu}_e e^-$	"

Particles studied ν_τ , τ , hvy-lepton, charm, D_s^+ , D_s^-

Comments A beam-dump experiment. Uses a holographic camera system with a resolution of about 100 microns. Inactive (February 88).

FNAL-653 (May 1980) Approved Jul 1981, Completed Feb 1988

STUDY OF CHARM AND BEAUTY USING HADRONIC PRODUCTION IN A HYBRID EMULSION SPECTROMETER

AICHI U CF EDUCATION - N Ushida

UC, DAVIS - W Ko, R L Lander, A Mokhtari, V Paulone,

J T Volk, P M Yager

CARNEGIE MELLON U - R M Edelstein, R Fisher, R J Lipton,

W R Nichols, D Potter, J S Russ

CHONNAM NATIONAL U - J-Y Kim, K H Oh

GIFU U - S Tasaka

GYEONGSANG NATIONAL U - I G Park, J S Song

JEONBUG NATIONAL U - P W Rho

KOBE U - G Fujioka, H Fukushima, T Hara, Y Homma,

T Nakayama, Y Takahashi, Y Tazuki, C Yokoyama

KOREA U - K P Hong, J S Kang, C O Kim, S N Kim,

K A Moon, K S Sim

NAGOYA U - S Aoki, K Chiba, H Fuchi, K Hoshino,

M Miyaniishi, M Nakamura, K Niu, K Niwa, M Ohashi,

H Sasaki, O Yamakawa, Y Yanagisawa

OHIO STATE U - J Dunlea, S F Krivatch, S Kuramata,

B G Lundberg, G A Oleynik, N W Reay (✓ Spokesperson),

K Reibel, R A Sidwell, N R Stanton

OKAYAMA U - K Moriyama, H Shibata

OKLAHOMA U - G R Kalbfleisch, P L Skubic, J M Snow,

J A White, S E Willis

OSAKA U - O Kusumoto, Y Noguchi, M Teranaka

OSAKA PREFECTURE U, SCI EDUC INST - H Okabe,

J Yokota

SOOKMYONG WOMENS U - D Kim, J N Park

TOHO U - M Kazuno, H Shibuya

WON KWANG U - S Y Bakh

Accelerator FNAL-TEV Detector Emulsion, Spectrometer

Reactions

π^- nucleus $\rightarrow$	600 GeV/c
p nucleus $\rightarrow$	800 GeV/c

Particles studied charm, bottom

Comments Ran for 1800 hours.

FNAL-660 (Jun 1980) Approved Nov 1980, Completed Jun 1982

A STUDY OF THE EFFECT OF BENT CRYSTALS ON CHANNELING NEAR THE CRITICAL RADIUS OF BENDING

FERMILAB - S Baker, R Carrigan, T Tochig

SUNY, ALBANY - W Gibson (Spokesperson), I-J Kim, S Salman,

C R Sun, K Wang, G O Williams, R Wong

DUBNA - Z Guzik, T S Nigmatov, E N Tsyganov,

A S Vodopianov

CERN & CHALK RIVER, AECL & NEW MEXICO U &

STRASBOURG, CRN - et al

Accelerator FNAL Detector Ionization chamber

Reactions

charged ⁺ crystal	12-180 GeV/c
charged ⁻ crystal	"

Comments Ran for 425 hours.

Papers NIM 194 (1982) 205, NIM 194 (1982) 239, PRL 48 (1982)

488, NP B203 (1982) 40, JETPL 38 (1983) 561 = ZETFP 38

(1983) 462, NIM 218 (1983) 669, NIM B2 (1984) 9, NIM B2

(1984) 54, PL 137B (1984) 129, and NIM A234 (1985) 602.

FNAL-665 (Oct 1980) Approved Jul 1981.

MUON SCATTERING WITH HADRON DETECTION AT THE TEVATRON

ARGONNE - D F Geesaman, R Gilman, M C Green, H Jackson,

S Kaufman, S Tentind., Repond

UC, SAN DIEGO - R Kennedy, H G E Kobrak, A Salvarani,

R A Swanson

CRCOW - A Eskreys, K Eskreys, P Malecki, B Pawlik

SUMMARIES OF FERMILAB EXPERIMENTS

FERMILAB - F Bartlett, G Contrakon, J Hanlon, T B W Kirk, H Melanson, H Montgomery (✓ Spokesperson), J Morfin, S Wolbers

FREIBURG U - T Dreyer, M Erdmann, A Haas, W Mohr, H E Stier, M Wilhelm

HARVARD U - J Conrad, D Michael, R Nickerson, F M Pipkin, M Schmitt, R Wilson

ILLINOIS U, CHICAGO - M Adams, C Halliwell, S Magill, D McLeod

MARYLAND U - S Aid, S Kunori, S O'Day, E J Ramberg, A Skuja, P Steinberg, R Talaga

MIT - P Anthony, M Baker, W Busza, T Lyons, L Osborne, J J Ryan

MUNICH, MAX PLANCK INST - V Eckardt, H J Gebauer, G Jancso, A Manz, J Seyerlein, S Soeldner-Rembold, P Stopa, P Strube, H J Trost, M Vidal

WASHINGTON U, SEATTLE - A Bhatti, T H Burnett, R Davison, W Dougherty, D Jansen, S Krzywdzinski, J Lord, H J Lubatti, J Wilkes, T Zhao

WUPPERTAL U - H Braun, U Ecker, A Roeser

YALE U - S Dhawan, V Hughes, P Schueler, H Venkataramania UC, SAN DIEGO & FERMILAB & HARVARD U - A M Osborne UC, SAN DIEGO & ILLINOIS U, CHICAGO - E Sexton

Accelerator FNAL-TEV Detector CCM

Reactions

$\mu\text{on}, p \rightarrow \mu\text{on hadrons}$	< 750 GeV/c
$\mu\text{on deut} \rightarrow \mu\text{on hadrons}$	"
$\mu\text{on nucleus} \rightarrow \mu\text{on hadrons}$	"
nucleus	"

Comments Studies (1) the properties of hadron systems recoiling from deep inelastic muon collisions, and (2) the nucleon structure functions. Also uses the superconducting vertex magnet from CERN. A first run is completed. A second run with a number of different targets and an upgrade to the vertex spectrometer tracking system is scheduled for early 1990.

FNAL-672 (Jan 1981) Approved Jul 1981.

A STUDY OF HADRONIC FINAL STATES PRODUCED IN ASSOCIATION WITH HIGH-MASS DIMUONS

CAL TECH - R Gomez
FERMILAB - J Krider
ILLINOIS U, CHICAGO - H Goldberg, S Margulies, J Solomon
INDIANA U - R Crittenden, K De, A Dzierba, S Kartik, R Li, S Markham, T Marshall, J Martin, P Smith, T Sulanke, A Zieminski (✓ Spokesperson)

LOUISVILLE U - C Davis

MICHIGAN U, FLINT - L Dauwe

SERPUKHOV - A Abramov, Yu Antipov, B Baldin, S Denisov, V Glebov, Y Gorin, V Koreshev, V Kryshkin, V Sirotenko, R Sulyaev

Accelerator FNAL-TEV Detector FMPS

Reactions

$p \text{ nucleus} \rightarrow \mu^+ \mu^- X$	500, 1000 GeV/c
$\pi^+ \text{ nucleus} \rightarrow \mu^+ \mu^- X$	500 GeV/c
$\pi^- \text{ nucleus} \rightarrow \mu^+ \mu^- X$	"

Particles studied $J/\psi(1S)$, $\chi_c(\text{unspec})$

Comments Runs with thin-foil targets. In progress.

Papers NIM A270 (1988) 99.

FNAL-673 (Jan 1981) Approved 1981; Completed Apr 1982.

χ MESON PRODUCTION BY HADRONS

FERMILAB - J Cooper (✓ Spokesperson), T Kirk, S Pordes, A Wehmann

ILLINOIS U, URBANA - G Alverson, G Ascoli, J Bellinger, S Cihangir, T Graff, L Holloway, I Karliner, L Koester, U Kruse, W-G Li, P Lukens, R Sall

PURDUE U - V Barnes, C Davis, A Garfinkel, L Laasanen, J Simmons, J Wilson

TUFTS U - W Oliver, R Thornton

PENN U - D Bauer

Accelerator FNAL Detector CCM

Reactions

$p \text{ Be} \rightarrow \mu^+ \mu^- X$	200, 250 GeV/c
$p \text{ Be} \rightarrow J/\psi(1S) \gamma X$	"
$p \text{ Be} \rightarrow \chi (\text{unspec}) X$	"
$\pi^- \text{ Be} \rightarrow \mu^+ \mu^- X$	185 GeV/c
$\pi^- \text{ Be} \rightarrow J/\psi(1S) \gamma X$	"
$\pi^- \text{ Be} \rightarrow \chi_c(\text{unspec}) X$	"

Particles studied $J/\psi(1S)$, $\chi_c(\text{unspec})$

Comments An extension of FNAL-610. Ran for 1100 hours.

Papers PRL 54 (1985) 753, and NIM A236 (1985) 307.

FNAL-683 (Feb 1981) Approved Dec 1983, Apr 1987.

PHOTOPRODUCTION OF HIGH p_t JETS

LEIGH U - A Kanofsky

RLU U - B Bonner, J Buchanan, J Clement, M Corcoran (✓ Spokesperson), J Kruk, D Lincoln, H Miettinen, G Mutchler, F Nessi, M Nessi, J Roberts, M Traynor, Q Zhu

VANDERBILT U - J Marraffino, C Roos, J Waters, M S Webster

WISCONSIN U - A R Erwin, C Findeisen, B Fletcher, K Nelson

TEXAS U - P Riley

MARYLAND U - C C Chang, H D Holmgren

MICHIGAN U - D Gustafson, M Longo

HOUSTON U - B Mays

BALL STATE U - J Johanning, G Thomas

IOWA U - N Akchurin, Y Onel

Accelerator FNAL-TEV Detector Spectrometer, Calorimeter

Reactions

$\gamma p \rightarrow \text{jets } X$	200-600 GeV/c
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Comments Studies in particular 3- and 4-jet events and the A dependence of jet production. Scheduled to run Spring 1990.

FNAL-687 (Jan 1981) Approved Jul 1981, Dec 1983.

HIGH ENERGY PHOTOPRODUCTION OF STATES CONTAINING HEAVY QUARKS AND OTHER RARE PHENOMENA

FERMILAB - M Binkley, J Butler (Spokesperson), I Gaines, P H Garbincius, M Gormley, D Harding, A E Kreymer, P L G Lebrun, J Peoples

COLORADO U - P Coteus, S W Culy, J Cumalat

INFN, MILAN - D Pedrini

MILAN U - G Bellini, M Dicorato, P Frabetti, P F Manfredi,

D Menasce, L Moroni, F Palombo, L Perasso, S Sala,

M Szaslowski

NORTHWESTERN U - L Buchholz, J Gobbi, R Yoshida

NOTRE DAME U - J Bishop, N Biswas, N Cason, S Grenquist,

V Kenney, E J Mannel, R Ruchti, W D Shephard, P Wilkins

FRASCATI - M Dario, M Enorini, F L Fabbri, A Maccari,

G Rivellini, A Zallo

ILLINOIS U, URBANA - M Diesburg, L Koester, J Wiss

Accelerator FNAL-TEV Detector Spectrometer

Reactions

$\gamma \text{ nucleus} \rightarrow \mu^+ \mu^- X$	200-500 GeV/c
$\gamma \text{ nucleus} \rightarrow \mu\text{on } X$	"
$\gamma \text{ nucleus} \rightarrow e^+ e^- X$	"
$\gamma \text{ nucleus} \rightarrow e^\pm X$	"

Particles studied $\psi(\text{unspec})$, charm, $T(\text{unspec})$, bottom

Comments Continues studies of FNAL-087 and -401. Uses γ 's from a new wideband electron beam, a new large-aperture multiparticle spectrometer, an active silicon target, and a silicon microstrip decay-vertex detector. In progress, with 800 hours run as of February 88.

Papers NIM A241 (1985) 107.

FNAL-690 (Jan 1981) Approved Jul 1981, Nov 1983, Apr 1987.

STUDY OF CHARM AND BOTTOM PRODUCTION

SUMMARIES OF FERMILAB EXPERIMENTS

NEVIS LABS, COLUMBIA U - E Gottschalk, B Knapf
(Spokesperson), L Wienke
MASSACHUSETTS U, AMHERST - E Hartouni, D Jensen,
B Klima, M Kreisler, M Rabin, J Uribe
MEXICO U - C Aviles
FERMILAB - D Christian, G Gutierrez, S Holmes, J Strait,
A Wehmann
TEXAS ACCELERATOR CENTER - M Forbush, R Huson,
J White

Accelerator FNAL-TEV Detector Spectrometer

Reactions

hadron p 200-2000 GeV/c

Particles studied charm, bottom

Comments Initial goals include (1) a systematic study of exclusive reactions, particularly diffraction dissociation, (2) cataloguing the remaining stable charmed particles with details of production and decay, and (3) determining the scale of bottom production. Uses an innovative spectrometer with a hardware processor.

FNAL-691 (Feb 1981) Approved Nov 1983; Completed Aug 1985.

CHARM PRODUCTION WITH THE TAGGED PHOTON SPECTROMETER

FERMILAB - J A Appel, V K Bharadwaj, P M Mantsch, T Nash,
M V Purohit, K Sliwa, M D Sokoloff, W J Spalding
UC, SANTA BARBARA - A Bean, T Browder, J Dubosq,
S F McHugh, R J Morrison, G Punkar, J Raab, M S Witherell
(✓ Spokesperson)

CARLETON U - P Estabrooks, J Pinfold
RIO DE JANEIRO, CBPF - J Anjos, A Santoro, M Souza
COLORADO U - L M Cremaldi, J R Elliott, M Gibney,
U Nauenberg

NATIONAL RESEARCH COUNCIL, OTTAWA - M J Losty
TORONTO U - S B Bracker, G F Hartner, B R Kumar,
G J Lute, J F Martin, S Menary, A Stundzia

SAO PAULO U - C Escobar
YALE U - P Karchin

Accelerator FNAL-TEV Detector TPS

Reactions

$\gamma p \rightarrow \text{charm } X$ 100-260 GeV/c

Particles studied D^0 , D^+ , $D^*(2010)$, D_s^+ , $J/\psi(1S)$, Λ_c^+ ,
 $E_c(2455)^0$

Comments Ran for 1400 hours and collected 100 million events with a silicon microstrip detector. See also FNAL-516.

Papers PRL 57 (1986) 3003, PRL 58 (1987) 311, NP B282
(1987) 626, PRL 58 (1987) 1818, PRL 60 (1988) 897, PRL 60
(1988) 1239, PRL 60 (1988) 1379, PR D37 (1988) 2391, PRL
62 (1989) 125, PRL 62 (1989) 513, PRL 62 (1989) 722, PRL 62
(1989) 1587, PRL 62 (1989) 1717, PRL 62 (1989) 1721, and PL
B223 (1989) 267.

FNAL-701 (Mar 1981) Approved Jul 1981; Completed Jun 1982.

A SEARCH FOR NEUTRINO OSCILLATIONS WITH $(\Delta m)^2 > 10 \text{ eV}^2$

COLUMBIA U - P Auchincloss, B Blair, C Haber, F Sciulli,
M Shaevitz (Spokesperson), W Smith, R Zhu
CHICAGO U - F Merritt, M Ornglia, P Reutens
FERMILAB - R Coleman, E Fisk, B Jin, D Levinthal, W Marsh,
P Rapidis, D Yovanovitch
ROCHESTER U - A Bodek, F Borcherding, N Giokaris, K Lang,
I Stockdale

Accelerator FNAL Detector LAB-E

Reactions

$\nu_\mu \text{ Fe} \rightarrow \mu^- X$ 30-230 GeV/c

$\bar{\nu}_\mu \text{ Fe} \rightarrow \mu^+ X$ "

Particles studied ν_μ , $\bar{\nu}_\mu$

Comments Measures the change in ν flux with distance by detecting the numbers of charged current events in two detectors at different distances. Ran for 2250 hours

Papers PRL 52 (1984) 1384, ZPHY C27 (1985) 53, NIM A245
(1986) 27, ZPHY C33 (1987) 483, and PRL 59 (1987) 1397

FNAL-704

EXPERIMENTS WITH THE POLARIZED BEAM FACILITY

Accelerator FNAL-TEV Detector ?

Comments See FNAL-581/704.

FNAL-705 (Sep 1981) Approved Dec 1981; Completed Feb 1988.

A STUDY OF CHARMONIUM AND DIRECT PHOTON PRODUCTION BY 300 GeV/c $\bar{p}$, p , p^+ , AND π^- BEAMS

ARIZONA U - T Y Chen, K Lai, N Yao
ATHENS U, NUCL PHYS LAB - P Ioannou, C Kourkouvelis,
A Manousakis-Kaftsikakis, P Premantiois, L Resvanis,
G Voulgaris
DUKE U - L Fortney, Q Shen, R Tesarek, T Turkington
FERMILAB - L Antoniazzi, S Delchamps, M Haire, C M Jenkins,
P Masur, C T Murphy, R Smith, L Spiegel, F Turkot, W Yang
FLORIDA A AND M U - B Etemadi, K Guffey, W P Tucker
MCGILL U - S Conetti, J Kuzminski, A Marchionni, M Rosati,
A Simard, D Stairs, G Zioukas
NORTHWESTERN U - T LeCompte, J Rosen, Y Tan,
S Tzamaras
PRAIRIE VIEW A AND M - D J Judd, L Turnbull, D E Wagoner
SHANDONG U - Z Cao, H Mao, C-H Shen, C-H Wang, N Zhang,
X Zhang, B Zou
VIRGINIA U - M Arenton, B Cox (✓ Spokesperson)

Accelerator FNAL-TEV Detector Spectrometer

Reactions

$p \text{ } ^7\text{Li} \rightarrow \gamma(s) X$	300 GeV/c
$p \text{ } ^7\text{Li} \rightarrow J/\psi(1S) \gamma X$	"
$p \text{ } ^7\text{Li} \rightarrow \chi_c(\text{unspec}) X$	"
$\bar{p} \text{ } ^7\text{Li} \rightarrow \gamma(s) X$	"
$\bar{p} \text{ } ^7\text{Li} \rightarrow J/\psi(1S) \gamma X$	"
$\bar{p} \text{ } ^7\text{Li} \rightarrow \chi_c(\text{unspec}) X$	"
$\pi^+ \text{ } ^7\text{Li} \rightarrow \gamma(s) X$	"
$\pi^+ \text{ } ^7\text{Li} \rightarrow J/\psi(1S) \gamma X$	"
$\pi^+ \text{ } ^7\text{Li} \rightarrow \chi_c(\text{unspec}) X$	"
$\pi^- \text{ } ^7\text{Li} \rightarrow \gamma(s) X$	"
$\pi^- \text{ } ^7\text{Li} \rightarrow J/\psi(1S) \gamma X$	"
$\pi^- \text{ } ^7\text{Li} \rightarrow \chi_c(\text{unspec}) X$	"

Particles studied $J/\psi(1S)$, $\chi_c(\text{unspec})$

Comments Uses the upgraded FNAL-537 spectrometer, a large-aperture general-purpose detector with a high-resolution scintillating glass electromagnetic calorimeter. Ran for 3600 hours.

Papers NIM 219 (1984) 487, NIM 219 (1984) 491, NIM A236
(1985) 42, NIM A238 (1985) 315, and NIM A238 (1985) 321.

FNAL-706 (Oct 1981) Approved Dec 1981, Oct 1983.

A COMPREHENSIVE STUDY OF DIRECT PHOTON PRODUCTION IN HADRON INDUCED COLLISIONS

DELHI U - T Chand, B M Rajaram, R K Shivpuri
FERMILAB - M Afzal, W Baker, D Berg, D Carey, T Droege,
H Hohnstad, C Johnstone, C A Nelson, Jr
MICHIGAN STATE U - C Bromberg, D Brown, J Huston,
R Miller
MINNESOTA U - R Benson, P Lukens, K Ruddick
NORTHEASTERN U - G Alverson, W Faisler, D Garelick,
G Glass, M Glaubman, I Kourbanis, C Lirakis, E Pothier,
A Sinanidis, G H Wu, T Yasuda, C Yosef
PENN STATE U - S Easo, K Hartman, B Oh, T Thwaites,
W Toothaker, J Whitmore
PITTSBURGH U - E Engels, Jr, P Koehler, S Manni,
P F Shepard, J A Thompson, R Toshi
RAJASTHAN U - K B Bhalla, V Kumar, S Lokanathan
ROCHESTER U - G Ballochi, W Desno, G Fanourakis, T Ferbel,
G Ginther, P Gutierrez, A Latauro, F Lobkowicz, J Mansour,

SUMMARIES OF FERMILAB EXPERIMENTS

G Pedeville, E Prehys, R Roser, D Skow, P Slattery (Spokesperson), M Zielinski

Accelerator FNAL-TEV Detector Spectrometer

Reactions

p nucleus $\rightarrow \gamma(s)$ X 400, 800 GeV/c
 π^+ nucleus $\rightarrow \gamma(s)$ X 530 GeV/c
 π^- nucleus $\rightarrow \gamma(s)$ X "

Comments Studies the gluon structure functions of hadrons and investigates gluon fragmentation by analyzing the production of direct γ 's and their accompanying hadrons in collisions of pions, kaons, and protons with a variety of nuclear targets. Approved for 1000 hours. In progress, with 1000 hours run as of February 88.

Papers NIM A235 (1985) 332, APP B17 (1985) 435, and NIM A253 (1987) 523.

FNAL-710 (Feb 1982) Approved Jun 1982.

MEASUREMENTS OF ELASTIC SCATTERING AND TOTAL CROSS SECTIONS AT THE FERMILAB $\bar{p}p$ COLLIDER

BOLOGNA U - M Bertani, G Giacomelli, R Mondardini, I Veronesi, S Zucchelli
 CORNELL U - J Orear ($\checkmark$ Spokesperson), S Shukla
 FERMILAB - N Amos, W F Baker, D P Eartly, B Gomez, A J Lennox, J Negret, S M Pruss, R Rubinstein ($\checkmark$ Spokesperson)

NORTHWESTERN U - M M Block, C Guss, S Sadr
 MARYLAND U - D Dimitroyannis, J Goodman
 GEORGE MASON U - R Ellsworth

Accelerator FNAL-COLLIDER Detector Counter, Ionization chamber

Reactions

$\bar{p}p \rightarrow X$ 300-2000 GeV (E_{cm})
 $\bar{p}p \rightarrow \bar{p}p$ "

Comments The range is $0 < -t < 1 \text{ GeV}^2$. In progress.

Papers NIM A252 (1986) 263, and PRL 61 (1988) 525.

FNAL-711 (Aug 1982) Approved Jul 1983; Completed Feb 1988.

A STUDY OF THE ANGULAR AND ENERGY DEPENDENCE OF CONSTITUENT SCATTERING THROUGH MEASUREMENTS OF THE REACTION $pN \rightarrow \text{HADRON HADRON } X$

FERMILAB - M B Crisler, S H Pordes, H B White
 MICHIGAN U - M A Cummings, H R Gustafson
 UC, DAVIS - J T Volk
 FLORIDA STATE U - C Georgiopoulos, J H Goldman, S L Hagopian, V Hagopian, D M Kaplan, D A Levinthal (Spokesperson), F V Lopez, K R Turner, C J Young

Accelerator FNAL-TEV Detector Spectrometer, Calorimeter

Reactions

$p \text{ Be} \rightarrow \text{hadron hadron } X$ 900 GeV/c

Comments Studies the energy, angular, and flavor dependence of the for 1400 hours.

FNAL-713 (Jan 1982) Approved Jun 1982.

A SEARCH FOR HIGHLY IONIZING PARTICLES FOR THE DO AREA AT FERMILAB

UC, BERKELEY - R Guoxiano, P B Price ($\checkmark$ Spokesperson)
 HARVARD U - K Kinoshita

Accelerator FNAL-TEV Detector Plastic

Reactions

$\bar{p}p \rightarrow \text{monopole } X$ 300 2000 GeV (E_{cm})

Particles studied monopole

Comments Uses Lexan and CR-39 plastic detectors outside and phosphor glass detectors inside the vacuum pipe. Detects any

highly ionizing exotic particles, not just monopoles. Running until Summer 1989.

Papers PRL 59 (1987) 2523.

FNAL-715 (Feb 1982) Approved Jun 1982; Completed Feb 1984.

PRECISION MEASUREMENT OF THE DECAY $\Sigma^- \rightarrow n e^- \bar{\nu}$

ELMHURST COLL - E Swallow
 FERMILAB - J P Berge, A Brenner, P Grafstrom, E Jastrzebski, J Lach, J Marriner, R Raja
 LENINGRAD, INP - A Denisov, V Grachev, A Kulikov, V Schegelsky, D Seliverstov, N Smirnov, N Terentiev, I Tkach, A Vorobyov
 YALE U - P S Cooper ($\checkmark$ Spokesperson), P Razis, L J Teig
 IOWA STATE U - E W Anderson
 IOWA U - E McCliment, C Newson
 CHICAGO U - S Y Hsueh, D Muel sr, J Tang, R Winston, G Zapalac

Accelerator FNAL Detector Combination

Reactions Polarized beam

$\Sigma^- \rightarrow n e^- \bar{\nu}_e$ 250 GeV/c

Particles studied Σ^-

Comments Uses the apparatus of FNAL-497 augmented by a neutron detector and a double level of electron identification. Ran for 820 hours.

Papers PRL 54 (1985) 2399, PRL 57 (1986) 1526, and PR D38 (1988) 2056.

FNAL-720 (Jan 1982) Approved Mar 1982, Jun 1982 Completed Aug 1982.

A SEARCH FOR $+1/3 e$ STABLE PARTICLES USING CRYOGENIC SOURCES

ARGONNE - D Frekers, W Henning, W Kutschera, M P, J P Schiffer ($\checkmark$ Spokesperson), K W Shepard
 FERMILAB - C D Curtis, C W Schmidt

Accelerator FNAL Detector ?

Particles studied quark(1/3), quark(2/3)

Papers PR D29 (1984) 791. No other papers expected.

FNAL-723 (Oct 1982) Approved Mar 1983; Completed Aug 1985.

TEST OF A GRAVITATIONAL DETECTOR AT THE FERMILAB COLLIDER

ROCHESTER U - A C Melissinos ($\checkmark$ Spokesperson), P Reiner, J Rogers, J Semertzidis, W Wuensch
 FERMILAB - W B Fowler

Accelerator FNAL-COLLIDER Detector Other

Comments The detector is a superconducting cavity parametric converter. The eventual goal is to measure the near-zone gravitational interaction between a bunch of particles stored in the accelerator and a stationary detector. Aims to detect a signal, due to the passage of the beam, that is not of electromagnetic origin.

Papers NC 62B (1981) 190, PL 104A (1984) 341, and PL B176 (1986) 233.

FNAL-729 (Nov 1982) Approved Dec 1983; Completed Apr 1985.

CHARM AND MULTIPARTICLE PRODUCTION IN 1 TeV PROTON-EMULSION COLLISIONS

TATA INST - T Aziz, S N Ganguli, A Gurtu ($\checkmark$ Spokesperson), P K Malhotra

Accelerator FNAL-TEV Detector Emulsion

Reactions

p nucleus $\rightarrow$ charm X 1000 GeV/c

SUMMARIES OF FERMILAB EXPERIMENTS

Particles studied charm

Comments Exposed 2 emulsion stacks. The emulsion was defective, and it is hoped that another exposure will be possible.

FNAL-730 (Dec 1982) Approved Feb 1984; Completed Feb 1984.

EMULSION EXPOSURE TO 250 GeV Σ^-

CRACOW - S Krzywdzinski, H Wilczynski, W Wolter
WASHINGTON U, SEATTLE - J J Lord, R J Wilkes
($\checkmark$ Spokesperson)

Accelerator FNAL Detector Emulsion

Reactions

Σ^- nucleus 250 GeV/c

Comments Ran for 4 hours. Analysis is in progress.

FNAL-731 (Feb 1983) Approved Jul 1983; Completed Feb 1988.

A PRECISION MEASUREMENT OF THE CP VIOLATION PARAMETER ϵ'/ϵ IN THE K^0 SYSTEM

CHICAGO U - L Gibbons, K Nishikawa, V Papadimitriou,
R Patterson, Y Wah, B Weinstein ($\checkmark$ Spokesperson), R Winston,
M Woods, H Yamamoto
ELMHURST COLL - E C Swallow
FERMILAB - G Bock, R Coleman, B Hsuing, K Stanfield,
R Stefanski, T Yamanaoka
SACLAY - J C Brissou, P Debu, R Doudin, P Jarry, B Peyaud,
R Turlay, B Vallage
PRINCETON U - G Blair, G Gollin, G Grazer, M Karlson,
J Okamoto

Accelerator FNAL-TEV Detector Spectrometer

Reactions

$K_L \rightarrow \pi^+ \pi^-$ 50-150 GeV/c
 $K_L \rightarrow \pi^0 \pi^0$ "
 $K_L \rightarrow \pi^0 e^+ e^-$ "

Particles studied K_L

Comments A next-generation experiment following FNAL-617. A new neutral beam gives six times more flux at the same background rate. The apparatus gives five times greater acceptance for $K_L \rightarrow 2\pi^0$. The K_L and K_S decays are measured simultaneously in a double-beam arrangement. Ran for 3100 hours.

Papers PRL 60 (1988) 1695, PRL 61 (1988) 2661, and PRL 63 (1989) 28.

FNAL-733 (Feb 1983, Sep 1983) Approved Nov 1983; Completed Feb 1988.

STUDY OF HIGH ENERGY ν INTERACTIONS WITH THE TEVATRON WIDE BAND TRIPLET BEAM

FERMILAB - D Bogert, G Koizumi, L Stutte
MIT - J A Bofil, J I Friedman, S Fues, H W Kendall,
V Kistiakowski, T Lyons, L Osborne, R Pitt, L Rosenson,
B Strongin, F E Taylor, R Verdier
MICHIGAN STATE U - M Abolins, R Brock ($\checkmark$ Spokesperson),
W G Cobau, E Gallas, R W Hatcher, D Owen, G J Perkins,
M Tagliata, H Weerts
FLORIDA STATE U - J K Walker, J Womersley

Accelerator FNAL-TEV Detector Calorimeter

Reactions

ν_μ nucleus 0-500 GeV/c
 $\bar{\nu}_\mu$ nucleus "

Comments The detector is the Lab-C 200-ton flash-chamber proportional-tube calorimeter. In addition to standard topics such as scaling, studies same-sign dimuon production, weak neutral currents, inverse μ decay, and coherent ν scattering. Ran for 4100 hours.

FNAL-735 (Apr 1983, Sep 1983) Approved Dec 1983
SEARCH FOR A DECONFINED QUARK-GLUON PHASE OF STRONGLY INTERACTING MATTER IN $\bar{p}p$ INTERACTIONS AT E_{cm} NEAR 2 TeV

DUKE U - A T Goshaw, S Oh, W J Robertson, W D Walker
FERMILAB - C Hovvat, F Turkot
PURDUE U - R J De Bonte, A Bujak, D D Carmony, L J Gutay
($\checkmark$ Spokesperson), A S Hirsch, N Morgan, N T Porile,
R P Scharenberg, B C Stringfellow
WISCONSIN U - A Erwin, C Findeisen, K Nelson, M Thompson
IOWA STATE U - E W Anderson, C S Lindsey
NOTRE DAME U - J M Bishop, N N Biswas, P Kenney,
J Pickarz
DEPAUW U - V DeCarlo

Accelerator FNAL-COLLIDER Detector Spectrometer

Reactions

$\bar{p}p$ 2000 GeV (E_{cm})

Comments Measures the transverse momentum distributions up to $p_T = 1.4$ GeV/c and particle ratios for centrally produced p , $\bar{p}$, K^+ , K^- , π^+ , π^- , and γ as a function of the charged-particle multiplicity. In progress.

Papers PRL 60 (1988) 1622, and PRL 62 (1989) 12.

FNAL-740 (Sep 1983) Approved Feb 1984.

A STUDY OF $\bar{p}p$ COLLISION USING A LARGE DETECTOR AT D0

ARIZONA U - E Jenkins, J Rutherford, M Shupe
BROOKHAVEN - S Aronson, B Gibbard, H Gordon, J M Guida,
W Guryan, S Kahn, S Prototopescu, P Yamin
BROWN U - D Cutts, J Hofman, R Lanou, R Partridge, R Zeller
UC, RIVERSIDE - K Bazizi, A Kernan, D Smith, S Wimpenny,
M Yang
COLUMBIA U - P Franzini, P M Tuts
FERMILAB - S Abachi, N Amos, F Bartlett, D Bogert, A Bross,
J Christenson, W Cooper, R Dixon, G Dugan, D Eartly,
D Finley, H E Fisk, S Fues, D Green, H Haggerty, S Hansen,
A Ito, M Johnson, A Jonckheere, H Jostlein, P Lucas,
E Malamud, P Martin, J McCarthy, W Merritt, T Oshima,
H Prosper, R Raja, A L Read, R Smith, C Stewart, E Treadwell,
R Yamada

FLORIDA STATE U - S Hagopian, V Hagopian, S Linn,
H Piekarz, H Wahl, S Youssef

FLORIDA U - S Majewski, J Walker, A White, Z Wolf,

A Womersley

HAWAII U - M Peters

INDIANA U - K De, T Marshall, J Martin, D Ziemska,

A Ziemska

LBL - H Aihara, A Clark, O Dahl, P Grudberg, L Kerth,
C Klopfenstein, S Loken, R Madaras, F Olman, A Spadafora,
M L Stevenson, M Strovink, T Tripp, W Wenzel

MARYLAND U - N Hadley, S Kunori

MICHIGAN U - R Ball, R Gustafson, M Marcin, H Neal, G Snow

MICHIGAN STATE U - M Abolins, R Astur, R Brock,

D Edmunds, J Linemann, P Mooney, D Owen, B Pi, B Pope,

H Weerts, X Yi

NEW YORK U - J Kotcher, P Nemethy, D Nesic, J Sculli, Q Zhu

NORTHERN ILLINOIS U - M Fortner, J Green, D Hedin,

T Kramer, S Willis

NORTHWESTERN U - J Bantley, S Blessing, D Buchholz,

D Claes, B Gobbi, S Rajagopalan

ROCHESTER U - G Blazey, J Borders, P Draper, S Durston,

G Fanourakis, T Ferbel, R Hirosky, S Libonate, F Lobkowicz,

P Slattery

SACLAY - Y Ducros, J R Hubbard, P Mangeot, B Mansoulie,

J Tieger, A Zylberstein

SERPUKHOV - Y Antipov, B Baldin, S Chekulayev, S Denisov,

A Efimov, O Eroshin, V Glebov, E Kozlovsky, N Mokhov,

Y Pischalnikov, V Riadovikov, V Sirotenko, A Vorobiev

SUNY, STONY BROOK - S Ahn, T Behnke, J Cochran,

M Demarteau, R Engelmann, S Feyer, G Finocchiaro, G Forden,

M L Good, P Grannis ($\checkmark$ Spokesperson), J A Guida, T Heuring,

J Lee-Franzini, Q Z Li-Demarteau, M Marx, R McCarthy,

K Ng, M Paterno, D Pizzuto, M Rijssenbeek, R D Schamberger,

F Stocker, J Thompson

YALE U - M Zeller

SUMMARIES OF FERMILAB EXPERIMENTS

Accelerator FNAL-COLLIDER Detector D0

Reactions

$\bar{p} p$ 2000 GeV (E_{cm})

Particles studied W^+ , W^- , Z^0 , higgs, top, hvy-lepton

Comments Under construction.

Papers NIM 216 (1983) 45, NIM A244 (1986) 356, and NIM A248 (1986) 379.

FNAL-741 (Aug 1981) Approved Apr 1982.

THE COLLIDER DETECTOR AT FERMILAB

ARGONNE - R Blair, S E Kuhlmann, W Li, L Nodulman, J Proudfoot, D Underwood, R G Wagner, A B Wicklund
BRANDEIS U - J Bensinger, C Blocker, M Contreras, L DeMortier, P Kesten, L Kirsch, R Mattingly, S Moulding, L Nakae, H Piekarz, S Tarem
CHICAGO U - C Campagnari, M Campbell, P F Derwent, H Frisch, C Grosso-Pilcher, J Hauser, R Mikawa, M Miller, G Redinger, A Roodman, M Shochet (Spokesperson), R Snider, Y Tsay
FERMILAB - D Amidei, M Atac, A Bamberger, A Beretvas, P Berge, M Binkley, A W Booth, J T Carroll, R Cashmore, K Chadwick, S Cihangir, A G Clark, J Cooper, D Crane, C Day, J Elias, G W Foster, J Freeman, S R Hahn, J Huth, H Jensen, R P Johnson, U Joshi, R Kadel, R Kephart, P Maas, J P Marriner, A Mukherjee, C Nelson, C Newman-Holmes, A Para, J Patrick, R Plunkett, D Quarrie, A Savoy-Navarro, E E Schmidt, S Segler, D Theriot, S Tkaczyk, A Tollestrup (Spokesperson), R Vidal, R Wagner, A Yagil, G P Yeh, J Yoh, J C Yun

FRASCATI - S Bertolucci, G Chiarelli, M Cordelli, M Curatolo, B Esposito, P Giromini, S Miscetti, A Sansoni

HARVARD U - A R Baden, G Brandenburger, D Brown, R Carey, R St Denis, M Franklin, S Geer, C P Jesop, E Kearns, J S T Ng, E Pare, T J Phillips, R Schwitters, M Shapiro, W Trischuk

ILLINOIS U, URBANA - S Bhadra, S Errede, A Gauthier, L Holloway, P Hurst, D A Kharda, I Karlinger, R M Keup, H Keutelian, T Liss, C B Luchini, R Sard, V Scarpine, P Schlabbach, R L Swartz, Jr

KEK - F Abe, Y Fukui, S Mikamo, M Mishina

LBL - A Barbaro-Galtieri, W Carithers, W Chinowsky, R B Drucker, R Ely, M Gold, C Haber, R Harris, B Hubbard, M Levy, J Siegrist, P Tipton, W C Wester, III, B Winer

PENN U - D Connor, L Gladney, R Hollebeck, R Hughes, N Lockyer, K Ragan, T Rohlay, P Sinerio, J Walsh, H Williams

PISA U - G Appollinari, F Bedeschi, S Belforte, G Bellettini, F Cervelli, S Dell'Agnello, M Dell'Orso, E Focardi, P Giannetti, H Grassman, M Incagli, M Mangano, A Menzione, R Paoletti, G Punzi, F Rimondi, L Ristori, A Scribano, P Sestini, D A Smith, A Stefanini, G Tonelli, T Westhusing, F Zetti

PURDUE U - V Barnes, S Behrends, A Byon, A F Garfinkel, B T Huffman, A Laasanen, M Schub, J Tonnison

ROCKEFELLER U - N Giokaris, K Goulianos, S White

RUTGERS U - P Auchincloss, E Buckley, T Devlin, B Flaughier, P Hu, T Kamon, E Kuns, T Watts

TEXAS A AND M - D DiBitonto, T Hensing, P McIntyre, T Meyer, M Timko, R Webb

TSUKUBA U - Y Funayama, K Hara, T Ino, H Ito, S Kanda, S Kim, K Kondo, T Mimashi, S Miyashita, Y Morita, I Nakano, M Ninomiya, S Ogawa, Y Seiya, M Sekiguchi, M Takano, K Takikawa, F Ukegawa, A Yamashita, K Yasuoka, M Yokoyama

TUFTS U - K Sliwa

WISCONSIN U - J Bellinger, K L Byrum, D Carlsmith, R Handler, J I Lamoureux, R Markeloff, L A Markosky, L Pondrom, J Rhoades, M Sheaff, J Skarha, C Wendt

Accelerator FNAL-COLLIDER Detector CDF

Reactions

$\bar{p} p$ 500-2000 GeV (E_{cm})

Particles studied W^+ , W^- , Z^0 , higgs, top

Comments See also FNAL-775.

Papers NIM 204 (1983) 351, NIM 204 (1983) 361, NIM 205 (1983) 113, NIM 216 (1983) 127, NIM 219 (1984) 472, JdeP 45 (1984) 333, NIM A238 (1985) 18, NIM A271 (1988) 387, PRL 61

(1988) 1819, PRL 62 (1989) 613, PRL 62 (1989) 1005, PRL 62 (1989) 1825, PRL 62 (1989) 3020, and PRL 63 (1989) 720.

FNAL-743 (Sep 1983) Approved Dec 1983; Completed Aug 1985.

CHARM PRODUCTION IN pp COLLISIONS WITH LEBE-FMPS AT 1 TeV

AACHEN, TECH HOCHSCH, III PHYS INST - V Commichau, A Roth, W Struczninski
BRUSSELS U, IIHE - J Lemonne, B Vonck, J Wickens
CERN - J J Hernandez, J Hrubec, M Iori, H Leutz, A Poppleton, M C Touboul
DUKE U - A Goshaw, W Robertson, W Walker, C F Wild
FERMILAB - R Dixon, H C Fenker, J M Maruffino, M Nikolic, L Voyvodic
KANSAS U - R Ammar, S Ball, R Davis, J Gress, N Kwak, X Liu
MICHIGAN U - R C Ball, C T Coffin, T O Dersham, L W Jones, B P Roe, M F Weber
MICHIGAN STATE U - C Bromberg, R Miller, A Nguyen
MONS U - J-F Baland, V P Henri, P Legros, P Pilette
NORTHEASTERN U - C Hamilton, I D Leedom, S Reucroft (✓ Spokesperson), C Zabounidis
NOTRE DAME U - R Brun, G E Canough, N Giokaris, S Mikocik, J Poirier
VANDERBILT U - C Roos, M F Senko, J Waters, M Webster
TATA INST - T Aziz, S Banerjee, S N Ganguli, A Gurtu, P K Malhotra, R Raghavan, A Subramanian
BERLIN-ZEUTHEN ADW - U Genssch, D Knauss, G E Mendez, T Naumann, H Nowak
INNSBRUCK U & VIENNA, OAW - P Girtler, D Kuhn, G Neuhofer, K Rasner

Accelerator FNAL-TEV Detector HBC-LEBC-HYB, FMPS

Reactions

$p p \rightarrow \text{charm } X$ 800 GeV/c

Particles studied D^0 , D^+ , D_s^+ , A_s^+

Comments Uses LEBE from CERN-NA-027 (a similar experiment at 400 GeV) as the vertex detector. The main aim is to measure precisely the charm total cross section at 29-GeV c.m. energy to compare with a similar measurement at 37 GeV. Took 1256 KPIX.

Papers NIM A248 (1986) 301, PL B178 (1986) 124, PL B183 (1987) 110, and PRL 61 (1988) 2185.

FNAL-744 (Sep 1983) Approved Nov 1983; Completed Aug 1985.

HIGH STATISTICS STUDIES OF CHARGED CURRENT INTERACTIONS USING THE TEVATRON QUAD TRIPLET BEAM

CHICAGO U - F Merritt (Spokesperson), M Oreglia, P Reutens, B Schumm
COLUMBIA U - P Auchincloss, K Bachman, R Bernstein, R Blair, C Foudas, W C Lefmann, S Mishra, E Oltman, F Sciulli (Spokesperson), M Shaevitz, W Smith
FERMILAB - F O Borchering, D A Edwards, H E Fisk, D Jovanovic, Q A Kerns, M Lamm, W Marsh, W Merritt, P Rapidis
ROCHESTER U - A Bodek, H Budd, K Lang

Accelerator FNAL-TEV Detector LAB-E

Reactions

$\nu_\mu \text{ nucleus} \rightarrow \text{muon}(s) X$ < 400 GeV/c

$\bar{\nu}_\mu \text{ nucleus} \rightarrow \text{muon}(s) X$ "

Comments Studies opposite-sign dimuon events, same-sign dimuon events, and structure functions. Continues work of FNAL-616 and -701. Ran for 1900 hours.

Papers PRL 60 (1988) 1618, and PRL 63 (1989) 132.

FNAL-745 (Sep 1983) Approved Dec 1983; Completed Feb 1988.

MUON NEUTRINO EXPERIMENT USING THE TOHOKU HIGH RESOLUTION ONE METER BUBBLE CHAMBER

SUMMARIES OF FERMILAB EXPERIMENTS

BROWN U - P Allen, M Aryal, D Brick, A Chen, K De,
A Desilva, A Shapiro, M Widgoff
FERMILAB - N Gelfand, T Murphy
INDIANA U - E D Alyea, Jr
BEIJING, IHEP - C Mao, L G Mu, Y Tai, S Wang, Y Wu,
S W Xu, C Zhao
MIT - D A Goloskie, E S Hafen, J Harton, I A Pless
SUGIYAMA JOGAKUEN U - S Fukui
OAK RIDGE - H O Cohn
TENNESSEE U - J E Brau, W M Bugg, G T Condo, Y C Du,
T Handler, J Hargis, E L Hart, R Kroeger, R Majoras,
J Shimony
TOHOKU U - T Akagi, Y Chiba, K Furuno, H Hanada,
K Hasegawa, J Katayama, T Kitagaki (Spokesperson),
H Kurino, Y Morita, S Nakai, T Nakajima, K Numano,
M Sasaki, H Suzuki, T Takayama, K Tamai, S Tanaka,
A Yamaguchi, T Yamamura
TOHOKU GAKUIN U - M Higuchi, Y Hoshi, M Sato

Accelerator FNAL-TEV Detector HLBC-1M

Reactions

ν_μ nucleus $\rightarrow$ charm X < 500 GeV/c
 ν_μ nucleus $\rightarrow$ muon X "

Particles studied D^+ , D^0 , D_s^+ , Λ_c^+

Comments Uses the Tohoku high-resolution 1-meter freon bubble chamber. Studies charm production, and neutrino interactions in the high Q^2 region. Took 553 KPIX.

Papers PL B214 (1988) 281.

FNAL-747 (Feb 1984) Approved Apr 1985; Completed Aug 1985.

A SEARCH FOR FRACTIONALLY CHARGED PARTICLES AT THE TEVATRON

UC, IRVINE - A A Hahn (✓ Spokesperson), G L Shaw
FERMILAB - R Tokarek
LBL - H S Matis, H G Pugh
LOS ALAMOS - K Lackner, R Slansky
SAN FRANCISCO STATE U - R Bland, C L Hodges
CAL TECH - R Milner
HEWLETT-PACKARD & LBL - G Hirsch
LIVERMORE - C D Hendricks
ROCHESTER U - D Elmore
TORONTO U - K H Chang

Accelerator FNAL-TEV Detector Other

Reactions

p nucleus $\rightarrow$ quark X 800 GeV/c

Particles studied quark

Comments Searches for fractionally charged particles stopped in tanks of freon or in mercury.

Papers PR D39 (1989) 1851.

FNAL-750 (May 1984) Approved Jul 1984; Completed Jul 1985.

STUDY OF MULTIPARTICLE PRODUCTION IN INTERACTIONS OF 800 GeV/c PROTONS WITH EMULSION NUCLEI

DELHI U - D Grewal, S K Jha, R R Joseph, S Mathur, B Rajaram, A Sharma, R K Shivpuri (✓ Spokesperson), V Verma

Accelerator FNAL-TEV Detector Emulsion

Reactions

p nucleus 800 GeV/c

Comments Studies the characteristics of fast charged particles (mostly pions) and also γ 's from π^0 decay. Exposed one emulsion stack.

Papers PR D35 (1987) 3508, and PS T26 (1989) 298.

FNAL-751 (Jun 1984) Approved Jul 1984; Completed Apr 1985.

INTERACTIONS OF PROTONS AT 1 TeV IN NUCLEAR EMULSION

SUNY, BUFFALO - P L Jain (✓ Spokesperson)

Accelerator FNAL-TEV Detector Emulsion

Reactions

p nucleus 800 GeV/c

Comments Exposed 1 emulsion stack

Papers PR D34 (1986) 2886, PL B187 (1987) 175, and NC 99 (1988) 9. No other papers expected.

FNAL-753 (Sep 1984) Approved Nov 1984; Completed Jul 1985.

IMPROVING THE DEFLECTION OF HIGH ENERGY PARTICLE BEAMS BY CHANNELING IN BENT CRYSTALS OF SI AND Ge

CHALK RIVER, AECL - J S Forster (✓ Spokesperson),
H Hatton, I V Mitchell, R J Toone

FERMILAB - S I Baker, R A Carrigan, Jr
BELL NORTHERN RESEARCH, OTTAWA - G Este
NEW MEXICO U - J A Ellison
SUNY, ALBANY - W M Gibson, R Wijayawardana

Accelerator FNAL Detector Ionization chamber

Reactions

charged⁺ crystal 30-200 GeV/c

Comments Also uses Si and Ge detectors. Continues studies of FNAL-660. See also FNAL-754. Ran for 150 hours.

Papers NP B (accepted).

FNAL-754 (1984) Approved Nov 1984.

CRYSTAL CHANNELING TESTS IN M-BOTTOM INCLUDING FOCUSING WITH DEFORMED CRYSTALS AND STUDIES OF HIGH Z CRYSTALS

SUNY, ALBANY - S Alam, W Gibson, I J Kim, C R Sun
(✓ Spokesperson), F Sun, R Wijayawardana
FERMILAB - S Baker, R Carrigan, J Morfin, T Toohig
GENERAL ELECTRIC, SCHENECTADY - R Wentorf
CASE WESTERN RESERVE U - G E Welsch
SANDIA - W Beezhold

Accelerator FNAL Detector Ionization chamber

Reactions

charged⁺ crystal 20-200 GeV/c

charged⁻ crystal "

Comments Continues studies of FNAL-660. See also FNAL-753. Unscheduled as of July 89.

FNAL-756 (Oct 1984) Approved Jun 1985; Completed 1988.

MEASUREMENT OF THE MAGNETIC MOMENT OF THE Ω^-

FERMILAB - C James, K B Luk (✓ Spokesperson), R Rameika
MICHIGAN U - P Border, P M Ho, M Longo
MINNESOTA U - J Duryea, G Guglielmo, K Heller, K Johns,
M Shupe, K Thorne
RUTGERS U - T Diehl, S Teige, G Thompson

Accelerator FNAL Detector Spectrometer

Reactions

p Be $\rightarrow \Omega^-$ X 800 GeV/c

Λ Cu $\rightarrow \Omega^-$ X 300-800 GeV/c

Ξ^0 Cu $\rightarrow \Omega^-$ X "

Particles studied Ω^- , Σ^+ , Σ^- , Ξ^-

FNAL-758 (Mar 1985) Approved Mar 1985; Completed Apr 1985.

STUDY OF THE MECHANISM OF MULTIPARTICLE PRODUCTION IN EMULSION NUCLEI AT 800 GeV PROTONS

TOHO U - M Kazuno (✓ Spokesperson), H Shibuya
(✓ Spokesperson)

SUMMARIES OF FERMILAB EXPERIMENTS

Accelerator FNAL-TEV Detector Emulsion

Reactions

p nucleus 800 GeV/c

Comments Exposed 2 emulsion stacks. Uses beam tagging.

FNAL-759 (Mar 1985) Approved Mar 1985; Completed Apr 1985.

A STUDY OF NUCLEAR INTERACTIONS OF 800 GeV PROTONS IN EMULSION

KOBE U - T Abe, G Fujioka, K Fujiwara, H Fukushima, T Hara,
H Takahashi, K Taruma, Y Tsuzuki (Spokesperson)
OSAKA CITY U - M Teranaka
OSAKA PREFECTURE U, SCI EDUC INST - H Okabe,
J Yokota

Accelerator FNAL-TEV Detector Emulsion

Reactions

p nucleus 800 GeV/c

Comments Exposed 2 emulsion stacks.

FNAL-760 (Mar 1985) Approved Jun 1985.

INVESTIGATION OF THE FORMATION OF CHARMONIUM STATES USING THE $\bar{p}$ ACCUMULATOR RING

FERMILAB - V Bharadwaj, J Griffin, S Holmes, W Kells,
J McCarthy, J MacLachlan, J Peoples, P Rapidis, D Young
FERRARA U - R Calabrese, P Dalpiaz, P Ferretti-Dalpiaz,
E Lupi, F Petrucci, M Saurie
GENOA U - M Mainelli, M Mattera, F Tommassini, V Valbusa
TURIN U - G Borreani, R Cester (Spokesperson), E Menichetti,
S Palestini, N Pastrone, G Rinaudo, L Tecchio

Accelerator FNAL Detector Calorimeter

Reactions

$\bar{p} p \rightarrow \psi(\text{unspec})$	3-7 GeV/c
$\bar{p} p \rightarrow 2K^+ 2K^-$	"
$\bar{p} p \rightarrow \gamma's$	"
$\bar{p} p \rightarrow e^+ e^- \gamma(s)$	"
$\bar{p} p \rightarrow e^+ e^- \pi^+ \pi^- \pi^0$	"

Particles studied charmonium

Comments Uses a gas-jet target.

FNAL-761 (Apr 1985) Approved Jun 1985.

AN ELECTROWEAK ENIGMA: HYPERON RADIATIVE DECAYS

FERMILAB - E Jastrzebski, J Lach, J Marriner
LENINGRAD, INP - V Golovtsov, A Krivshich, V Schegelsky,
N Smirnov, N Terentyev, L Uvarov, A A Vorobyev
(Spokesperson)

IOWA U - E McCliment, C Newsom, E Norbeck

YALE U - P S Cooper

Accelerator FNAL-TEV Detector Spectrometer, Transition
radiation

Reactions

p nucleus $\rightarrow \Sigma^+ X$	800 GeV/c
p nucleus $\rightarrow \Xi^- X$	"

Particles studied Σ^+ , Ξ^-

Comments Measures branching fractions and asymmetry parameters of $\Sigma^+ \rightarrow p\gamma$ and $\Xi^- \rightarrow \Sigma^- \gamma$ decays.

FNAL-762 (Jun 1985) Approved Jun 1985; Completed Jul 1985.

CASCADE SHOWERS ORIGINATED IN PROTON-NUCLEUS COLLISIONS

KOBE U - S Duke (Spokesperson), K Nakata, H Oda
TOKYO U, COSMIC RAY LAB - T Ogata, T Saito, T Tabuki
OSAKA U - T Tominaga
OKAYAMA U - M Fuki
AOYAMA GAKUIN U - T Shibata

Accelerator FNAL-TEV Detector Emulsion

Reactions

p nucleus 800 GeV/c

Comments Emulsion and lead plates are interleaved. Exposed 18 such stacks.

FNAL-763 (Jun 1985) Approved Jun 1985; Completed Jul 1985.

PROTON-NUCLEUS INTERACTIONS AT TEVATRON ENERGY

TOKYO U, COSMIC RAY LAB - T Ogata (Spokesperson),

T Tabuki

KOBE U - S Duke, K Nakata, H Oda

OSAKA U - T Tominaga

OKAYAMA U - M Fuki

Accelerator FNAL-TEV Detector Emulsion

Reactions

p nucleus 800 GeV/c

Comments Emulsion and metal plates are interleaved. Exposed 2 stacks.

FNAL-764 (Jun 1985) Approved Jun 1985; Completed Jul 1985.

THE EXCLUSIVE INVESTIGATION OF MULTIPLE PRODUCTION IN RAPIDITY SPACE

HIROSAKI U - K Ishikawa, H Nanjo (Spokesperson), Y Noto

Accelerator FNAL-TEV Detector Emulsion

Reactions

p nucleus 800 GeV/c

Comments Emulsion and acryl plates are interleaved. Exposed 1 stack.

FNAL-765 (Jun 1985) Approved Jun 1985; Completed Jul 1985.

TRANSVERSE MOMENTUM MEASUREMENT OF SECONDARY PARTICLES IN PROTON-EMULSION COLLISIONS AT 800 GeV

OKAYAMA U - M Fuki, K Imaeda (✓ Spokesperson),
H Kobayashi

Accelerator FNAL-TEV Detector Emulsion

Reactions

p nucleus 800 GeV/c

Comments Exposed 7 emulsion stacks.

FNAL-766 (Jul 1985) Approved Jul 1985; Completed Oct 1985.

NEUTRON ENERGY SPECTRUM MEASUREMENTS IN TEVATRON TUNNEL - APPLICATION TO SSC

LBL - J McCaslin (✓ Spokesperson), W P Swanson
FERMILAB - A J Elwyn, W S Freeman, P M Yurista

Accelerator FNAL-TEV Detector Neutron spectrometer

Reactions

p nucleus $\rightarrow n X$ —

Comments A test relevant to radiation damage at the SSC.

FNAL-769 (Nov 1985) Approved Dec 1985; Completed Feb 1988.

PION AND KAON PRODUCTION OF CHARM AND CHARM-STRANGE STATES

RIO DE JANEIRO, CBPF - G A Alves, J C C Anjos,

H da Motta, A F S Santoro, M H G Souza

FERMILAB - J A Appel (✓ Spokesperson), R Dixon, H Fenker,

D Green, L Lucking, P M Mantsch, T Nash, W J Spalding,

C Stoughton, M Streetman, D Summers

NORTHEASTERN U - D Kaplan, I D Leedom, S Reucroft

TORONTO U - S B Bracker, C Gay, R Jedicke, G J Luste

SUMMARIES OF FERMILAB EXPERIMENTS

TUFTS U - J Metheny, R Milburn, A Napier
WISCONSIN U - D Errede, M Sheaff
YALE U - P Karchun, Z Wu

Accelerator FNAL Detector TPS

Reactions

pion nucleus $\rightarrow$ charm X 250 GeV/c
kaon nucleus $\rightarrow$ charm X "
p nucleus $\rightarrow$ charm X "

Particles studied $D^0, D^+, D^-, D^*(2010), D_s^+, D_s^-, A_c^+$

Comments A sequel to FNAL-691. Ran for 1900 hours.

FNAL-770 (Dec 1985) Approved Dec 1985; Completed Feb 1988.

NEUTRINO PHYSICS AT THE TEVATRON

CHICAGO U - F Merritt, M Oreglia, P Reutens, B Schumm
COLUMBIA U - P Auchincloss, K Bachman, R Bernstein, R Blair,
C Foudas, W C Lefmann, S Mishra, E Oltman, F Sciuilli,
M Shaevitz, W Smith (Spokesperson)
FERMILAB - F O Borcharding, D A Edwards, H E Fisk,
D Jovanovic, Q A Kerns, M Lamm, W Marsh, W Merritt,
P Rapidis

ROCHESTER U - A Bodek, H Budd, K Lang

Accelerator FNAL-TEV Detector LAB-E

Reactions

ν_μ nucleus $\rightarrow$ muon(s) X < 600 GeV/c
 $\bar{\nu}_\mu$ nucleus $\rightarrow$ muon(s) X "

Comments Uses flash ADC calorimeter drift chamber readout. A continuation of FNAL-744. Ran for 1600 hours.

FNAL-771 (Feb 1986) Approved Apr 1987.

BEAUTY PRODUCTION AND OTHER HEAVY QUARK PHYSICS ASSOCIATED WITH DIMUON PRODUCTION IN 800 (926) GeV/c pp INTERACTIONS

ATHENS U - P Adrianos, S E Anassontzis, P Ioannu,
S Katsanevas, C Kourkoulis, A Manousakis-Kaftsikakis,
T Parnantiotis, L K Resvanis, P Spentzouris, G Voulgaris
BROWN U - M Wiggoff
UC, BERKELEY - M Austern, H Bingham, R Fretter, L Garner,
J Lys, G Yost
UCLA - D Cline, A Fridman, J Kubic, J Rhoades
DUKE U - L Fortney, A Goshaw, W Kowald, S Oh,
W J Robertson

FERMILAB - M Haire, P O Mazur, E McCrory, C T Murphy,

R Smith, L Spiegel, W Yang

HOUSTON U - E Hungerford, K Lau, B Mayes, L Pinsky,

R Weinstein

INDIANA U - E D Alyea

LECCE U - P Creti, E Gorini, F Grancagnolo, F Palama,

O Palamara, P Pistilli

MIT - P Haridas, I Pless, E H Scott

MCGILL U - S Conetti, M Cooper, J Kuzminski, J Trischuk

NANJING U - T Y Chen, J Guojun, N Yao, Z Zhang

NORTHWESTERN U - M Block, T LaCompte, M Masuzawa,

M Recagni, J Rosen, S Tzamaras, T Yatro

PAVIA U - L Antoniazzi, G Bressi, G Introzzi, A Lanza,

G Liguori, P Manfredi, S Ratti

PRAIRIE VIEW A AND M - K Guffey, D J Judd, L Turnbull,

D E Wagoner, S Weinstein

PENN U - W Kononenko, W Selove, R VanBerg

SOUTH ALABAMA U - K Clark, M Jenkins

SHANDONG U - Z-L Cao, H Mao, C-H Shen, C Wang, C Wei,

N Zhang, X Zhang, B T Zhou

VIRGINIA U - M Arenton, B Cox (✓ Spokesperson), P Hanlet

Accelerator FNAL-TEV Detector Spectrometer

Reactions

p Si $\rightarrow$ $\mu^+ \mu^-$ X 800-925 GeV/c
p Si $\rightarrow$ B(5270) $\bar{B}$ (5270) X "
p Si $\rightarrow$ χ_b (unspec) X "
p Si $\rightarrow$ χ_c (unspec) X "

Particles studied B(5270)⁺, B(5270)⁰, χ_b (unspec), χ_c (unspec)

Comments Uses the FNAL-705 spectrometer augmented by a 16,000 channel silicon detector and a new single and dimuon trigger to select $D\bar{B}$ events at a high rate ($\sim 10^7$ s)

FNAL-772 (Mar 1986) Approved 1986; Completed Feb 1988

STUDY OF THE NUCLEAR ANTIQUARK SEA VIA $pN \rightarrow$ DIMUONS

LOS ALAMOS - G Garvey, J Moss (Spokesperson), J-C Peng
SUNY, STONY BROOK - R L McCarthy
FERMILAB - C N Brown, W E Cooper, A M Jonckheer,
ILLINOIS U, CHICAGO - M Adams

Accelerator FNAL-TEV Detector Spectrometer

Reactions

p deut $\rightarrow$ $\mu^+ \mu^-$ X 900 GeV/c
p Ca $\rightarrow$ $\mu^+ \mu^-$ X "

Comments A precise measurement of the A dependence of the Drell-Yan process with particular emphasis on the kinematic region ($M > 4$ GeV, $x > 0.2$) most sensitive to beam-valence-quark target-antiquark annihilation. Uses the FNAL-605 spectrometer. Ran for 1700 hours.

FNAL-773 (Mar 1986) Approved 1986.

MEASUREMENT OF THE PHASE DIFFERENCE BETWEEN η_{00} AND η_{+-} TO A PRECISION OF 1°

CHICAGO U - Y W Wah, B Weinstein, R Winston
ELMHURST COLL & CHICAGO U - E C Swallow
FERMILAB - G J Bock, R N Coleman, Y B Hsiung,
K C Stanfield, R Stefanski, T Yamanaka
PRINCETON U - G D Gollin (Spokesperson), J K Okamitsu
SACLAY - P Debu, B Peyaud, R Turlay

Accelerator FNAL-TEV Detector Spectrometer

Reactions

$K_L \rightarrow \pi^+ \pi^-$ 50-150 GeV/c
 $K_L \rightarrow \pi^0 \pi^0$ "
 $K_S \rightarrow \pi^+ \pi^-$ "
 $K_S \rightarrow \pi^0 \pi^0$ "

Particles studied K_L, K_S

Comments CPT conservation requires the phase difference to be < 1°. The current value is approximately 10_{-5}^{+10} . Adds an additional regenerator to the FNAL-731 spectrometer. A double K_L beam is incident on the spectrometer, which has 804 lead glass blocks and four drift chambers. Scheduled to run in 1989.

FNAL-774 (May 1986) Approved Dec 1986.

ELECTRON BEAM DUMP PARTICLE SEARCH

FERMILAB - A Bross, M Crisler (✓ Spokesperson), H Fenker,
S Pordes, J Volk
ILLINOIS U, URBANA - S Errede
NORTHEASTERN U - I Leedom
CRACOW - M Krasny

Accelerator FNAL-TEV Detector Calorimeter, Spectrometer

Reactions

e⁻ nucleus 450 GeV (E_{lab})

Particles studied axion

Comments A search for short-lived particles that couple to the electron by looking for their decay in flight downstream from an electron beam dump. Inspired by the observation of narrow positron spectra seen in heavy-ion collisions.

FNAL-775 (May 1986) Approved Jul 1986.

THE UPGRADED COLLIDER DETECTOR AT FERMILAB

ARGONNE - R Blair, S E Kuhmann, W Li, L Nodulman,
J Proudfoot, D Underwood, R G Wagner, A Wicklund
BRANDEIS U - J Bensinger, C Blocker, M Contreras,
L DeMottier, P Kesten, L Kirsch, R Mattingly, S Moulding,
L Nakae, S Tarem

SUMMARIES OF FERMILAB EXPERIMENTS

CHICAGO U - C Campagnari, M Campbell, P F Derwent, H Frisch, C Grosso-Pilcher, J Hauser, R Mikawa, M Miller, G Redlinger, A Roodman, M Shochet (Spokesperson), F D Snider, Y Tsay

FERMILAB - D Amidei, M Atar, A Bamberger, A Beretvas, J P Berge, M Binkley, A W Booth, J T Carroll, R Cashmore, K Chadwick, S Chhangir, A G Clark, J Cooper, D Crane, C Day, J E Elias, G W Foster, J Freeman, S R Hahn, J Huth, H Jensen, R P Johnson, U Joshi, R W Kadel, R Kephart, P Maas, J P Marriner, A Mukherjee, C Nelson, C Newman-Holmes, A Para, J Patrick, R Plunkett, D Quarrie, A Savoy-Navarro, E E Schmidt, S Segler, D Theriot, S Tkaczyk, A Tollestrup (Spokesperson), R Vidal, R L Wagner, A Yagil, G P Yeh, J Yoh, J C Yun

FRASCATI - S Bertolucci, G Chiarelli, M Cordelli, M Curatolo, B Esposito, P Giromini, S Maccetti, A Sansoni

HARVARD U - A R Baden, G Brandenburg, D Brown, R Carey, R St Denis, M Franklin, S Geer, C P Jessop, E Kearns, J S T Ng, E Pare, T J Phillips, R Schwitters, M Shapiro, W Trischuk

ILLINOIS U, URBANA - S Bhadra, S Errede, A Gauthier, L Holloway, P Hurst, D A Kardelis, I Karlner, R M Keup, H Keutelian, T M Liss, C B Luchini, R D Sard, V Scarpine, P Schlabach, R L Swartz, Jr

KEK - F Abe, Y Fukui, S Mikamo, M Mishina

LBL - A Barbaro-Galtieri, W Carithers, W Chinowsky, R B Drucker, R Ely, M Gold, C Haber, R M Harris, B Hubbard, M Levy, J Siegrist, P Tipton, W C Wester, III, B Winer

PENN U - D Connor, L Gladney, R Hollebeck, R Hughes, N Lockyer, K Ragan, T Rohaly, P Sinervo, J Walsh, H H Williams

PISA U - G Appollinari, B Bedeschi, S Belforte, G Bellettini, F Cervelli, S Dell'Agnello, M Dell'Orso, E Focardi, P Giannetti, H Grassman, M Incagli, M Mangano, A Menzione, R Paoletti, G Punzi, F Rimondi, L Ristori, A Scribano, P Sestini, D A Smith, A Stefanini, G Tonelli, T Westhusing, F Zetti

PURDUE U - V E Barnes, S Behrends, A Byon, A F Garfinkel, B T Huffman, A Laaen, M H Schub, J Tonnison

ROCKEFELLER U - N Giokaris, K Goulianos, S White

RUTGERS U - P Auchincloss, E Buckley, T Devlin, B Flaughner, P Hu, T Kamon, E Kuns, T Watts

TEXAS A AND M - D DiBitonto, T Hensing, P McIntyre, T Meyer, M Timko, R Webb

TSUKUBA U - Y Funayama, K Hara, T Ino, H Iso, S Kanda, S Kim, K Kondo, T Mimashi, S Miyashita, Y Morita, I Nakano, M Ninomiya, S Ogawa, Y Seiya, M Sekiguchi, M Takano, K Takikawa, F Ukegawa, A Yamashita, K Yasuoka, M Yokoyama

TUFTS U - K Sliwa

WISCONSIN U - J Bellinger, K L Byrum, D Carlsmith, R Handler, J I Lamoureux, R Markeloff, L A Markosky, L Pondrom, J Rhoades, M Sheaff, J Skarha, C Wendt

Accelerator FNAL-COLLIDER Detector CDF

Reactions

$p\bar{p} \rightarrow 500-2000 \text{ GeV (Ecm)}$

Comments Scheduled to start in February 91. See also FNAL-741.

FNAL-776 (Aug 1986) Approved Jan 1987; Completed Feb 1988.

MEASUREMENT OF NUCLEAR CALIBRATION CROSS SECTIONS FOR PROTONS WITH ENERGIES > 400 GeV

FERMILAB - R A Allen, S I Baker (✓ Spokesperson), P Yurista
BROOKHAVEN - J B Cumming
CERN - V Agoritas

Accelerator FNAL-TEV Detector Photon spectrometer

Reactions

$p \text{ Cu} \rightarrow {}^{24}\text{Na X} \quad 30, 150, 400, 800 \text{ GeV (E}_{\text{lab}})$

Comments Extends studies of FNAL-631. Copper samples are exposed to the proton beam, and then a gamma ray from ${}^{24}\text{Na}$ (15-hour half life) is detected with a high-resolution Ge(Li) detector.

FNAL-777 (Oct 1986) Approved Jan 1987; Completed May 1987.

NEUTRON FLUX MEASUREMENT IN THE TEVATRON TUNNEL

FERMILAB - J D Cossairt, A J Elwyn, W S Freeman, H Jostlein, C D Moore, P M Yurista

LBL - J B McCaslin (✓ Spokesperson), Rao-Ko Sun, W P Swanson

SSC CENTRAL DESIGN GROUP D E Groom

Accelerator FNAL-TEV Detector Neutron spectrometer

Reactions

n

Comments Results of FNAL-766 indicate that the neutron flux associated with beam loss in the SSC may seriously degrade semiconductor components in the tunnel. This experiment aims at a better understanding of the situation, particularly of the correlation of neutron flux with the proton loss rate.

FNAL-778 (Oct 1986) Approved Dec 1986.

AN EXPERIMENTAL STUDY OF THE SSC MAGNET APERTURE CRITERION

SSC CENTRAL DESIGN GROUP - A Chao, D Johnson, S Peggs, J Peterson, C Saltmarsh, L Schachinger

CORNELL U - R Meller, R Siemann, R Talman

SLAC - P Morton

FERMILAB - D Edwards (Spokesperson), D Finley, N Gelfand, R Gerig, M Harrison, R Johnson, N Meringma, M Syphers

Accelerator FNAL-TEV Detector Other

Reactions

$p \quad 800 \text{ GeV (E}_{\text{lab}})$

Comments Tests assumptions made in the conceptual design of the SSC concerning the optimal magnet aperture. Studies betatron oscillation amplitudes before and after introduction of nonlinear field components, etc.

Papers PRL 61 (1988) 2752.

FNAL-782 (Feb 1987) Approved Jul 1987.

A MUON EXPOSURE IN THE TOHOKU HIGH RESOLUTION BUBBLE CHAMBER

BROWN U - A Chen, A Shapiro, M Wiggoff

FERMILAB - S Childress, T Murphy

INDIANA U - Jr E D Aleya

BEIJING, IHEP - C Mao, L Mu, Y Tai, S Wang, Y Wu, S W Xu, C Zhao

MIT - E S Hafen, P Haridas, C Milstene, S H Oh, I A Pless

TOHOKU U - K Abe, T Akagi, K Furuno, K Hasegawa,

T Kitagaki (Spokesperson), II Masuda, Y Morita, M Sasaki,

H Suzuki, S Tanaka, A Yamaguchi, H Yuta

TOHOKU GAKUIN U - M Higuchi, Y Hoshi, M Sato

Accelerator FNAL-TEV Detector HLBC-1.4M-HYB

Reactions

$\mu\text{on nucleus} \quad 300 \text{ GeV/c}$

Comments Uses the Tohoku high-resolution freon bubble chamber. Studies (1) production of vector mesons and strange and charm particles down to small Q^2 , (2) the energy dependence of meson-baryon pair production in strange and charm channels, (3) the comparison of neutrino and muon interactions in the same 4π detector (see FNAL-745), (4) the structure function in the small Q^2 region, and (5) the EMC effect.

FNAL-784 (Mar 1987) Approved 1989.

PROPOSAL FOR A BOTTOM COLLIDER DETECTOR

PENN U - R Van Berg, R Hughes, N S Lockyer (Spokesperson)

YALE U - P Karchin

Accelerator FNAL-COLLIDER Detector BCD

Particles studied bottom

Comments The Bottom Collider Detector is to be a small, nearly 4π magnetic detector optimized to identify prompt

SUMMARIES OF FERMILAB EXPERIMENTS

electrons and secondary vertices coming from bottom-quark decays. Aims are to study $B^0\bar{B}^0$ mixing and CP violation, observe b -to- u quark decays, measure B^+ and B^0 lifetimes, search for rare B decays, etc

FNAL-790 (Jun 1987) Approved Dec 1987.

FNAL TESTBEAM NEEDS FOR THE US ZEUS COLLABORATION: CALORIMETER MODULE CALIBRATION FOR THE ZEUS DETECTOR

COLUMBIA U - F Sciulli (Spokesperson)
ARGONNE & ILLINOIS U. URBANA & OHIO STATE U &
PENN STATE U & VIRGINIA TECH & WISCONSIN U -
et al.

Accelerator FNAL Detector Calorimeter

Reactions

hadron	5-150 GeV (E_{lab})
$e^\pm$	"
muon	"

Comments Testing of components and electronics of the HERA-ZEUS calorimeter by US members of the ZEUS collaboration.

FNAL-791 (Nov 1987) Approved Jun 1988.

CONTINUED STUDY OF HEAVY FLAVORS AT THE TAGGED PHOTON LABORATORY

RIO DE JANEIRO, CBPF - J C Anjos, I Bediaga,
J M de Miranda, J R de Mello Neto, J T Paes, A C dos Reis,
A F S Santoro, M H G Souza
FERMILAB - J A Appel (✓ Spokesperson), S Hansen, C James,
L Lueking, B Lundberg, P M Mantsch, T Nash, W J Spalding,
C Stoughton, M E Streetman, D Summers
ILLINOIS TECH - R A Burnstein, P A Kasper, H A Rubin
MISSISSIPPI U - L Bolen, L Cremaldi, A Rafatian, J Reidy
OHIO STATE U - S Frederiksen, N W Reay, K Reibel, R Sidwell,
N Stanton
PRINCETON U - G Danner, N Kondakis, M V Purohit
(✓ Spokesperson), W C Smith
TUFTS U - T Kafka, R Milburn, A Napier, J Schneps
WISCONSIN U - D Errede, S Radetzky, M Sheaff
YALE U - C Darling, P E Karchin, R D Majka, J Sandweiss,
A J Slaughter, S Takach, E J Wolin

Accelerator FNAL-TEV Detector TPS

Reactions

π^- nucleus $\rightarrow$ charm X	500, 800 GeV (E_{lab})
π^- nucleus $\rightarrow$ bottom X	"

Particles studied charm, bottom

Comments Continues studies of FNAL-769. Phase I emphasizes charm physics and a first look at bottom hadroproduction — perhaps 100,000 fully reconstructed charm particles will be obtained. The eventual goal is to collect enough bottom decays to measure separately the lifetimes of charged and neutral bottom mesons, the total and differential bottom cross sections, and the bottom-particle branching ratios. Scheduled to run January 90.

FNAL-792 (Jan 1988) Approved Jan 1988; Completed Feb 1988.

STUDY OF FRAGMENTATION PRODUCTS FROM THE REACTION $800 \text{ GeV } p^{197}\text{Au}$

UPPSALA U - K Aleklett (✓ Spokesperson), L Sihver
(✓ Spokesperson)

OREGON STATE U - W D Loveland

Accelerator FNAL-TEV Detector Photon spectrometer

Reactions

$p^{197}\text{Au}$	800 GeV (E_{lab})
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Comments Studies angular distributions and energy spectra of fragmentation products using mylar catcher foils and off-line gamma ray spectroscopy.

FNAL-793 (Nov 1987) Approved 1988

EMULSION EXPOSURE TO 1000 GEV OR HIGHEST ENERGY PROTONS

WASHINGTON U. SEATTLE R Davison, J J Lord

(✓ Spokesperson)

WASHINGTON NATURAL PHILOSOPHY INST P Kotzer

KAZAKH STATE U - E V Kolomoets

Accelerator FNAL-TEV Detector Emulsion

Reactions

p W	1000 GeV (E_{lab})
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Comments Exposes six stacks of emulsion with 10 μm tungsten targets and looks for evidence for the quark-gluon phase of matter. Expected to run December 89.

FNAL-795 (Mar 1988) Approved 1988.

TEST OF ELECTRON/HADRON COMPENSATION FOR WARM LIQUID CALORIMETRY

ANNECY - B Aubert, J Colas, P Ghez
LBL - M Pripstein (✓ Spokesperson), M Strovink, W A Wenzel
COLLEGE DE FRANCE - L Dobrzynski, D Kryin, J-
P Mendiburu, P Salin

FERMILAB - D F Anderson, R Raja

CERN - R Wigmans

SACLAY - Ph Lavocat, B Mansoulie, S Palanque, J Teiger

TEXAS A AND M - D DiBitonto, M Timko

Accelerator FNAL-TEV Detector Calorimeter

Comments Tests a sampling hadron calorimeter with TMP as the active medium. The aim is to find combinations of plate composition and thickness and electric field that give near equality in hadron and electron response. Part of a broader program of detector R&D for the SSC and LHC.

FNAL-798 (1989) Approved 1989.

TEST OF A PROTOTYPE SYNCHROTRON-RADIATION DETECTOR FOR THE SSC

YALE U - P C Petersen

ROCKEFELLER U - W Rusack

Accelerator FNAL-TEV Detector ?

Comments The prototype is a lead/scintillating-fiber sandwich, three radiation lengths thick, read out with image intensifiers and CCD's. It will be sensitive to the early development of electromagnetic showers as well as to the synchrotron radiation emitted by electrons as they pass through a high magnetic field. The hope is to tag electron showers in a SSC detector.

FNAL-799 Approved 1989.

SEARCH FOR THE DECAY $K_L \rightarrow \pi^0 e^+ e^-$

CHICAGO U - Y W Wah, B Weinstein (Spokesperson), R Winston

ELMHURST COLL & CHICAGO U - E C Swallow

FERMILAB - G J Bock, R N Coleman, Y B Hsiung,

K C Stanfield, R Stefanski, T Yamanaka

PRINCETON U - G D Gollin, J K Okamitsu

SACLAY - P Debu, B Peyaud, R Turlay

Accelerator FNAL-TEV Detector Spectrometer

Reactions

$K_L \rightarrow \pi^0 e^+ e^-$	50-150 GeV/c
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Particles studied K_L

Comments Follows on work of FNAL-731 and -773. The sensitivity should approach the 10^{-11} level.

FNAL-800 (Mar 1988) Approved Apr 1988.

MEASUREMENT OF THE MAGNETIC MOMENT OF THE Ω^-

FERMILAB - C James, K B Luk, R Rameika (Spokesperson)

MICHIGAN U - P Border, P M Ho, M Longo

MINNESOTA U - J Duryea, G Guglielmo, K Heller, K Johns

(Spokesperson), M Shupe, K Thorne

RUTGERS U - T Diehl, S Teige, G Thompson

SUMMARIES OF FERMILAB EXPERIMENTS

Accelerator FNAL Detector Spectrometer

Reactions

$p \text{ Be} \rightarrow \Omega^- X$	800 GeV/c
$\Lambda \text{ Cu} \rightarrow \Omega^- X$	300-800 GeV/c
$\Xi^0 \text{ Cu} \rightarrow \Omega^- X$	"

Particles studied Ω^-

Comments An extension of FNAL-756.

FNAL-802 (1989) Approved 1989.

**DEEP INELASTIC MUON INTERACTION WITH
NUCLEAR TARGETS USING EMULSION TELESCOPE
TECHNIQUE**

FERMILAB - T Murphy

JADAVPUR U - L Chatterjee, D Ghosh, J D Roy

Accelerator FNAL-TEV Detector Emulsion

Reactions

muon nucleus —

Comments Studies deep inelastic scattering and the EMC effect.

INS Experiments

INS-17-1 Approved May 1981; Started Jan 1982; Completed Nov 1982.

MEASUREMENT OF THE DIFFERENTIAL CROSS SECTION FOR PROTON COMPTON SCATTERING

TOKYO U, INS - K Egawa, A Imanishi, T Ishii (Spokesperson), S Kato, K Uka

TOKYO U OF AGRIC TECH - T Noguchi, T Ohmori.

N Shimura, K Takahashi
MEIJI COLL. PHARMACY - Y Wada

Accelerator TOKYO Detector Double-arm spectrometer

Reactions

$\gamma p \rightarrow \gamma p$ 0.9-1.15 GeV/c

Papers NP B254 (1985) 458.

INS-17-2 Approved May 1981; Started Nov 1982; Completed Feb 1983.

STUDY OF QUASI-FREE DEUTERONS IN LIGHT NUCLEI

TOKYO U, INS - S Homma (✓ Spokesperson), M Kanazawa, M Koike, Y Murata, H Okuno, F Soga, N Yoshikawa

AKITA U - A Sasaki

Accelerator TOKYO Detector Double-arm spectrometer

Reactions

$\gamma \text{ nucleus} \rightarrow p n X$ 200-450 MeV/c

Comments Uses a tagged γ beam.

Papers PRL 45 (1980) 706, PR C27 (1983) 31, PRL 52 (1984) 2026, and PRL 53 (1984) 2536.

INS-18-1 (Jul 1982) Approved Jul 1982; Started Jun 1983; Completed Apr 1984.

ANGULAR DISTRIBUTION OF PHOTODISINTEGRATION OF QUASI-FREE DEUTERONS IN LIGHT NUCLEI

TOKYO U, INS - S Homma (✓ Spokesperson), M Kanazawa, M Koike, Y Murata, H Okuno, F Soga, M Yoshikawa

AKITA U - A Sasaki

Accelerator TOKYO Detector Double-arm spectrometer

Reactions

$\gamma \text{ nucleus} \rightarrow p n X$ 200-450 MeV/c

Comments Uses a tagged γ beam.

Papers NP A466 (1985) 241c, and PR C35 (1987) 1828.

INS-18-3 Approved Jul 1982; Started Jun 1983; Completed Apr 1984.

MEASUREMENT OF DIFFERENTIAL CROSS SECTION OF THE $\gamma d \rightarrow \pi^0 d$ REACTION

TOKYO U, INS - A Imanishi, T Ishii, S Kato (Spokesperson), T Miyachi, A Nakamura, Y Takechi, K Uka

TOKYO U OF AGRIC TECH - T Noguchi, T Ohmori.

N Shimura, K Takahashi
HIROSHIMA U - K Baba, Y Morita, Y Sumi

MEIJI COLL. PHARMACY - Y Wada

TOKYO KOGANEI U - K Kurita

Accelerator TOKYO Detector Double-arm spectrometer

Reactions

$\gamma \text{ deut} \rightarrow \pi^0 \text{ deut}$ 500-1000 MeV/c

Papers PRL 54 (1985) 2497.

INS-19-1 (1984) Approved Mar 1984; Completed Mar 1984.

MEASUREMENT OF DIFFERENTIAL CROSS SECTIONS FOR THE $\gamma d \rightarrow \pi^0 d$ REACTION AT BACKWARD ANGLES

TOKYO U, INS - A Imanishi, T Ishii, S Kato, T Miyachi (✓ Spokesperson), A Nakamura, Y Takeuchi, K Uka
TOKYO U OF AGRIC TECH - T Noguchi, T Ohmori.

N Shimura, K Takahashi

HIROSHIMA U - K Baba, Y Morita, Y Sumi

MEIJI COLL. PHARMACY - Y Wada

TOKYO GAKUGEI U - K Kurita

Accelerator TOKYO Detector Single-arm spectrometer

Reactions

$\gamma \text{ deut} \rightarrow \pi^0 \text{ deut}$ 0.5-1.0 GeV (E_{lab})

Comments Measures over c.m. angles 80 to 130°.

Papers PRL 54 (1985) 2497.

INS-19-2 (1984) Approved Mar 1984; Started Apr 1984; Completed Jun 1984.

STUDY OF THE REACTION $\gamma {}^4\text{He} \rightarrow p n(p) X$

TOKYO U, INS - S Homma (✓ Spokesperson), M Koike,

H Okuno, M Sudo, M Torikoshi

AKITA U - A Sasaki

TOHOKU U - Y Fujii

Accelerator TOKYO Detector Double-arm spectrometer

Reactions

$\gamma \text{ He} \rightarrow p n X$ 0.2-0.45 GeV (E_{lab})

$\gamma \text{ He} \rightarrow 2p X$ "

Comments Uses a tagged γ beam.

Papers PR C36 (1987) 1623.

INS-ES-101 Completed 1984.

STUDY OF HIGH ENERGY PHOTONUCLEAR FRAGMENTATION

TOKYO U, INS - S Shibata (Spokesperson), et al.

Accelerator TOKYO Detector ?

Reactions

$\gamma \text{ nucleus}$ —

INS-ES-102 Completed 1984.

CHANNELLING RADIATION BY AN ELECTRON BEAM AT SEVERAL HUNDRED MeV

TOKYO U - F Fujimoto (✓ Spokesperson), K Komaki, M Mutou, H Okuno, A Ootuka

NAGOYA U - S Fukui, C Y Gao, N Horikawa, T Iwata, T Nakanishi

Accelerator TOKYO Detector ?

Reactions

$e^- \text{ crystal} \rightarrow \gamma$ 350 MeV/c

Papers NIM B2 (1984) 71.

INS-ES-103 Started Apr 1985; Completed Oct 1985.

MEASUREMENT OF THE BACKWARD DIFFERENTIAL CROSS SECTION FOR $\gamma d \rightarrow \pi^0 d$

TOKYO U, INS - A Imanishi, T Miyachi (✓ Spokesperson), H Tezuka

TOKYO U OF AGRIC TECH - T Emura, M Nishimura, K Takahashi

HIROSHIMA U - M Asai, S Kasai, Y Morita, Y Sumi

HIROSHIMA SHUDO U - K Baba

MEIJI COLL. PHARMACY - Y Wada

KOREA U - Y Kim

Accelerator TOKYO Detector Single-arm spectrometer

Reactions

$\gamma \text{ deut} \rightarrow \pi^0 \text{ deut}$ 0.5-1.0 GeV (E_{lab})

Comments Measured over c.m. angles 140 to 156°. Studied the effect of the double scattering term and found no indication for dibaryon resonances.

SUMMARIES OF INS EXPERIMENTS

Papers PL B187 (1987) 249.

INS-ES-105 Completed 1984.

MEASUREMENT OF γ $^4\text{He} \rightarrow p\ n(p)$ ANYTHING

TOKYO U, INS - S Homma ($\checkmark$ Spokesperson), M Koike,
H Okuno, M Sudo, M Torikoshi
AKITA U - A Sasaki
TOHOKU U - Y Fujii

Accelerator TOKYO Detector Double-arm spectrometer

Reactions

$\gamma\ \text{He} \rightarrow p\ n\ X$ 0.2-0.45 GeV (E_{lab})

$\gamma\ \text{He} \rightarrow p\ p\ X$ "

Comments A continuation of INS-19-2.

INS-ES-107 (1984) Approved Mar 1984; Completed 1985.

STUDY OF CUMULATIVE EFFECTS IN PHOTONUCLEAR REACTIONS

TOKYO U, INS - M Koike, Y Murata ($\checkmark$ Spokesperson),

N Yoshikawa
TOKYO U - J Chiba, H Sano, K Tokushuku
HIROSHIMA U - W Matsumoto, T Sugitate, R Tanaka
SAGA U, JAPAN - H Itoh, A Murakami

Accelerator TOKYO Detector Single-arm spectrometer

Reactions

$\gamma\ \text{nucleus} \rightarrow p\ X$ 0.35-0.60 GeV (E_{lab})

INS-ES-110 Completed 1985.

PHOTONUCLEAR SPALLATION REACTIONS IN VARIOUS NUCLEI

TOKYO U, INS - S Shibata (Spokesperson), et al.

Accelerator TOKYO Detector ?

INS-ES-111 Started Jan 1986; Completed Mar 1986.

MEASUREMENT OF TRIPLET PHOTOPRODUCTION BY POLARIZED γ 's

HIROSHIMA U - I Endo ($\checkmark$ Spokesperson), M Harada, S Kasai,
K Niki, Y Sumi, M Tobiyama
TOKYO U, INS - M Mutou, H Tsujikawa, K Watanabe,
K Yoshida
HIROSHIMA SHUDO U - K Baba

Accelerator TOKYO Detector Counter

Reactions

$\gamma\ e^- \rightarrow e^+ e^- e^-$ 120-400 MeV/c

INS-ES-112 Started Jun 1986; Completed Jul 1986.

MEASUREMENT OF THE BACKWARD DIFFERENTIAL CROSS SECTION FOR $\gamma d \rightarrow \pi^0 d$

TOKYO U, INS - M Koike, T Miyachi ($\checkmark$ Spokesperson),
M Mutou, K Yoshida
TOKYO U OF AGRIC TECH - T Emura, M Nishimura, O Nitoh,
T Takahashi, J Yoshizawa
TOKYO METROPOLITAN U - S Kitamura
HIROSHIMA U - M Asai
HIROSHIMA SHUDO U - K Baba

Accelerator TOKYO Detector Single-arm spectrometer

Reactions

$\gamma\ \text{deut} \rightarrow \pi^0\ \text{deut}$ 0.4-0.8 GeV (E_{lab})

Comments Uses a tagged γ beam. Measures over the c.m. angles 160 to 170° . See also INS-19-1 and INS-ES-103. Studied the effect of the single and double scattering terms. Found no indication for dibaryon resonances.

INS-ES-113 Approved Jul 1985; Started Oct 1986; Completed Mar 1987.

STUDY OF DIBARYON RESONANCES USING γd INTERACTIONS

HIROSHIMA U - S Asai, I Endo, M Harada, H Hasai, K Iwatani,
S Kasai, K Niki, Y Sumi ($\checkmark$ Spokesperson)
KITAKYUSHU, UNIV OCCUP ENVIR HEALTH - T Maki
MEIJI COLL, PHARMACY - Y Wada
SAGA U, JAPAN - H Ito
SASKATCHEWAN U - C Rangacharyulu
TOKYO INST TECH - H Shimizu
TOKYO U, INS - S Kato, K Maruyama, Y Murata, M Mutou,
K Yoshida

Accelerator TOKYO Detector TAGX

Reactions

$\gamma\ \text{deut} \rightarrow p\ p\ \pi^-$ 0.35-1.1 GeV (E_{lab})

$\gamma\ \text{deut} \rightarrow p\ n\ \pi^+ \pi^-$ "

Comments Uses a tagged γ beam with a large duty factor ($> 10\%$), and a large-aperture magnetic spectrometer (TAGX) which consists of an analyzer magnet with a large gap (60 cm), two sets of scintillation counter hodoscopes, and central drift chambers. The geometrical acceptance is π sr.

Papers NP A478 (1988) 523c.

INS-ES-116 (1986) Approved Jul 1986; Started Jun 1987; Completed Mar 1988.

STUDIES OF THE PHOTONUCLEAR PROCESS ON He

HIROSHIMA U - I Endo, M Harada, S Kasai, K Niki, Y Sumi
SAGA U, JAPAN - A Hisadomi, H Ito
SASKATCHEWAN U - C Rangacharyulu ($\checkmark$ Spokesperson)
TOKYO U, INS - S Kato ($\checkmark$ Spokesperson), K Maruyama,
Y Murata, K Yoshida

KITAKYUSHU, UNIV OCCUP ENVIR HEALTH - T Maki
AKITA U - A Sasaki
TOKYO INST TECH - H Shimizu
MEIJI COLL, PHARMACY - Y Wada

Accelerator TOKYO Detector TAGX

Reactions

$\gamma\ \text{He} \rightarrow p\ n\ X$ 0.17-0.27 GeV/c

Papers NIM A276 (1989) 451.

INS-ES-117 (1986) Approved Jul 1986; Started Nov 1986; Completed May 1987.

FEASIBILITY STUDY OF MEASUREMENT OF ATOMIC FORM FACTORS BY MEANS OF COHERENT BREMSSTRAHLUNG

HIROSHIMA U - I Endo ($\checkmark$ Spokesperson), M Harada,
K Kitamura, T Monaka, Y Sumi, M Tobiyama
TOKYO U, INS - H Tsujikawa, K Watanabe, K Yoshida
TSUKUBA U - T Ohba
HIROSHIMA SHUDO U - K Baba
KURE, MARITIME SAFETY ACADEMY - H Motegi

Accelerator TOKYO Detector Counter

Reactions

$e^- \text{ crystal} \rightarrow e^- \gamma\ X$ 1.2 GeV (E_{lab})

Papers PRL 60 (1988) 2292.

INS-ES-118 (1987) Approved 1987.

RADIOCHEMICAL STUDY OF HIGH ENERGY PHOTONUCLEAR REACTIONS

TOKYO U, INS - S Shibata (Spokesperson), et al.

Accelerator TOKYO Detector ?

Reactions

$\gamma\ \text{nucleus}$ ---

INS-ES-119 (1988) Started Jul 1988; Completed Jan 1989.

DETERMINATION OF ATOMIC FORM FACTORS BY MEANS OF COHERENT BREMSSTRAHLUNG

HIROSHIMA U - I Endo ($\checkmark$ Spokesperson), T Kino, T Monaka,
A Sakaguchi, Y Sumi, M Tobiyama
TOKYO U, INS - K Watanabe, K Yoshida

SUMMARIES OF INS EXPERIMENTS

TSUKUBA U - T Ohba

HIROSHIMA SHUDO U - K Baba

TOKYO U OF AGRIC TECH - T Emura

Accelerator TOKYO Detector Counter

Reactions

$e^- \text{ crystal} \rightarrow e^- \gamma X$ 1.2 GeV (E_{lab})

Comments Uses Si, Ni, Al, and Zn crystals

SUMMARIES OF ITEP EXPERIMENTS

ITEP Experiments

ITEP-741 (1974) Approved 1974; Started 1975; Completed 1984.

STUDY OF π^+ NUCLEUS INTERACTIONS

MOSCOW, ITEP - T A Chistyakova, V E Luchmanov, L S Novikov (✓ Spokesperson), I I Vorobiev

Accelerator ITEP Detector HLBC-1M

Reactions

π^+ nucleus $\rightarrow \rho^0 X$	2.9 GeV/c
π^+ nucleus $\rightarrow \pi^+ X$	"
π^+ nucleus $\rightarrow \pi^+ (\pi^0 \gamma) X$	"

Papers ZETFP 33 (1981) 295 = JETPL 33 (1981) 279, YF 34 (1981) 80 = SJNP 34 (1981) 45, YF 36 (1982) 417 = SJNP 36 (1982) 243, and YF 43 (1986) 111 = SJNP 43 (1986) 71.

ITEP-761 (1976) Approved 1976; Started 1978; Completed 1982.

SEARCH FOR CP VIOLATION IN K^0 DECAYS

MOSCOW, ITEP - V V Barmin, V G Barylov, T A Chistyakova, I V Chuvilo, G V Davidenko, V S Demidov, A G Dolgolenko, V A Ergakov, V N Golubchikov, V A Matveev, A G Meshkovsky, G S Miroslidi, V I Moskalev, V A Shebanov (✓ Spokesperson), N N Shishov, M M Sokolov, Y V Trebukhovskiy, B S Volkov, N K Zobkovskaya
PADUA U - M Baldo-Ceolin, E Calimani, S Ciampolillo, F Mattioli, G Miari, A Sconza

Accelerator ITEP Detector HLBC-1M, HLBC-2M

Reactions

$K^+ Xe \rightarrow K^0 X$	0.8 GeV/c
$K^0 \rightarrow 3\pi^0$	—
$K^0 \rightarrow \pi^+ \pi^0 \pi^-$	—
$K^0 \rightarrow 2\gamma$	—
$K^0 \rightarrow 2\pi^0 \gamma$	—
$K^0 \rightarrow \pi^+ \pi^- \gamma$	—

Particles studied K^0

Papers PL 128B (1983) 129, ZETFP 38 (1983) 459 = JETPL 38 (1983) 557, YF 39 (1984) 428 = SJNP 39 (1984) 269, NP B247 (1984) 293, YF 41 (1985) 1187 = JETPL 41 (1985) 759, and NC 96A (1986) 159.

ITEP-762 (1976) Approved 1976; Started 1977; Completed 1986.

MEASUREMENT OF π^-d BACKWARD ELASTIC SCATTERING AT 1-3 GeV

MOSCOW, ITEP - V M Abramov, E A Agrapetov, L S Bagdasaryan, I A Dukhovskiy, V S Fedorets, V V Kishkurno, L A Kondratyuk, A P Krutenkova, V V Kulikov (✓ Spokesperson), M A Matsyuk, P A Murat, S V Proshin, I A Radkevich, U V Ralchenko, E N Turdakina, V P Yurov

Accelerator ITEP Detector MTS

Reactions

$\pi^- deut \rightarrow deut \pi^-$	1.0-1.8 GeV/c
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Papers NP A372 (1981) 301, and PL 189B (1987) 295.

ITEP-763 (1982) Approved 1982; Started 1982; Completed 1984.

STUDY OF STRONG INTERACTIONS IN HADRON-HADRON AND HADRON-NUCLEUS COLLISIONS

MOSCOW, ITEP - Y D Aleshin, G A Arutyunyan, I L Kiselevich, V P Kulakov, I A Melnichenko, V I Mikhajlichenko, S Y Nikitin (✓ Spokesperson), L A Prostova, V D Shkarlet, A V Shidlovskiy, V I Silaev

Accelerator ITEP Detector HBC-2M

Reactions

$\pi^- p$	4.85, 7 GeV/c
$\pi^+ p$	4.35 GeV/c
$p p$	7.85 GeV/c
$\pi^- Ne$	7 GeV/c

ITEP-764 (1976) Approved 1976; Started 1976; Completed 1983.

KNOCK OUT OF FAST PROTONS, DEUTERONS, AND TRITONS FROM NUCLEI

MOSCOW, ITEP - V M Abramov, E A Ayrapetov, I S Bagdasaryan, I A Dukhovskiy, V V Kishkurno, A P Krutenkova, V V Kulikov, M A Matsyuk, I A Radkevich (✓ Spokesperson), V P Solakhyan, E N Turdakina

Accelerator ITEP Detector MTS

Reactions

$\pi^- p \rightarrow p X$	1.46 GeV/c
$\pi^- deut \rightarrow p X$	"
$\pi^- {}^6Li \rightarrow p X$	"
$\pi^- {}^7Li \rightarrow p X$	"
$\pi^- C \rightarrow p X$	"
$\pi^- S \rightarrow p X$	"
$\pi^- In \rightarrow p X$	"
$\pi^- Bi \rightarrow p X$	"
$\pi^- {}^6Li \rightarrow deut X$	0.74 GeV/c
$\pi^- {}^6Li \rightarrow trit X$	"
$\pi^- {}^7Li \rightarrow deut X$	"
$\pi^- {}^7Li \rightarrow trit X$	"
$\pi^- C \rightarrow deut X$	"
$\pi^- C \rightarrow trit X$	"
$\pi^- S \rightarrow deut X$	"
$\pi^- S \rightarrow trit X$	"
$\pi^- Cu \rightarrow deut X$	"
$\pi^- Cu \rightarrow trit X$	"
$\pi^- In \rightarrow deut X$	"
$\pi^- In \rightarrow trit X$	"
$\pi^- Bi \rightarrow deut X$	"
$\pi^- Bi \rightarrow trit X$	"

Papers YF 38 (1983) 677 = SJNP 38 (1983) 404, YF 38 (1983) 823 = SJNP 38 (1983) 491.

ITEP-771 (1977) Approved 1977; Started 1978; Completed 1986.

STUDY OF THE INCLUSIVE PROPERTIES OF DEEP INELASTIC NUCLEAR REACTIONS

MOSCOW, ITEP - Y D Bayukov, P V Degtyarenko, B L Druzhinin, Y F Efremenko, V B Fedorov, B A Fominykh, V B Gavrilov, N A Goryainov, Y G Grishuk, O B Gushchin, F M Khassanov, N L Kornienko, M V Kossov, S V Kuleshov, L N Kuleshova, S G Kuznetsov, G A Leksin (✓ Spokesperson), S V Shevchenko, S M Shuvalov, B B Shvartsman, A V Smirnit-sky, D A Suchkov, V P Surin, A V Vlassov, L S Vorobyev

Accelerator ITEP Detector Spectrometer

Reactions

p nucleus $\rightarrow p X$	1-9 GeV/c
p nucleus $\rightarrow n X$	"
p nucleus $\rightarrow deut X$	"
p nucleus $\rightarrow trit X$	"
p nucleus $\rightarrow {}^3He X$	"
p nucleus $\rightarrow \pi^+ X$	"
p nucleus $\rightarrow \pi^- X$	"

SUMMARIES OF ITEP EXPERIMENTS

π^+ nucleus $\rightarrow$ p X	"
π^+ nucleus $\rightarrow$ n X	"
π^+ nucleus $\rightarrow$ deut X	"
π^+ nucleus $\rightarrow$ trit X	"
π^+ nucleus $\rightarrow$ ^3He X	"
π^+ nucleus $\rightarrow$ π^+ X	"
π^+ nucleus $\rightarrow$ π^- X	"
π^- nucleus $\rightarrow$ p X	"
π^- nucleus $\rightarrow$ n X	"
π^- nucleus $\rightarrow$ deut X	"
π^- nucleus $\rightarrow$ trit X	"
π^- nucleus $\rightarrow$ ^3He X	"
π^- nucleus $\rightarrow$ π^+ X	"
π^- nucleus $\rightarrow$ π^- X	"

Comments The targets are He, ^6Li , ^7Li , Be, ^{11}B , C, Al, Ti, Fe, ^{58}Ni , ^{64}Ni , Ni, Cu, Zn, Nb, Cd, In, ^{112}Sn , ^{124}Sn , Sn, Ta, Pb, and U.

Papers PTE 3 (1982) 25, YF 33 (1981) 183 = SJNP 33 (1981) 94, YF 34 (1981) 785 = SJNP 34 (1981) 437, YF 35 (1982) 950 = SJNP 35 (1982) 558, YF 37 (1983) 344 = SJNP 37 (1983) 206, YF 41 (1985) 158 = SJNP 41 (1985) 101, YF 41 (1985) 1541 = SJNP 41 (1985) 976, YF 42 (1985) 185 = SJNP 42 (1985) 116, and YF 42 (1985) 377 = SJNP 42 (1985) 238.

ITEP-783 (1978) Approved 1975; Started 1978.

STUDY OF TRITIUM β DECAY TO MEASURE THE $\bar{\nu}$ MASS

MOSCOW, ITEP - S D Boris, A I Golutvin, L P Laptin, V A Lyubimov, V V Nagovitzin, E G Novikov, V Z Nozik, V A Soloshenko, I N Tikhomirov, E F Tretyakov ($\checkmark$ Spokesperson)

Accelerator NONE **Detector** Spectrometer

Reactions
trit $\rightarrow$ ^3He e^- $\bar{\nu}_e$ 0 GeV/c

Particles studied ν_e

Comments Valine target.

Papers PL 94B (1980) 266, ZETF 81 (1981) 1158 = JETP 44 (1981) 616, ZETFP 42 (1985) 107 = JETPL 42 (1985) 130, and PL 159B (1985) 217.

ITEP-791 (1979) Approved 1979; Started 1980; Completed 1984.

STUDY OF RARE K_S DECAYS

MOSCOW, ITEP - V V Barmin, V G Barylov, T A Chistyakova, I V Chuvilo, G V Davidenko, V S Demidov, A G Dolgolenko, A G Meshkovsky, G S Miroslidi, V A Shebanov ($\checkmark$ Spokesperson), N N Shishov, N K Zornikovskaya

Accelerator ITEP **Detector** HLBC-1M

Reactions
 $K^+ \text{Xe} \rightarrow K^0 \text{X}$ 0.56-0.81 GeV/c
 $K_S \rightarrow e^- e^+$ —
 $K_S \rightarrow 2\pi^0 \gamma$ —
 $K^+ \rightarrow \pi^+ \pi^0 \gamma$ —

Particles studied K_S

Papers YF 44 (1986) 965 = SJNP 44 (1986) 622.

ITEP-801 (1980) Approved 1980; Started 1982.

STUDY OF POLARIZATION EFFECTS IN PROCESSES WITH TWO CHARGED PARTICLES IN THE FINAL STATE AT INTERMEDIATE ENERGIES

MOSCOW, ITEP - P E Budkovsky, V P Kanavets ($\checkmark$ Spokesperson), V L Khochlov, L I Koroleva ($\checkmark$ Spokesperson), I I Levintov, V L Martynov, B V Morozov, V M Nesterov, V V Platonov, V V Ryltsov, V A Sacharov, A V Soskov, A D Sulimov, V V Zhurkin

Accelerator ITEP **Detector** Ionization chamber

Reactions Polarized target
 $\pi^- p \rightarrow p \pi^-$ 1 4 2 1 GeV/c
 $\pi^- p \rightarrow n \pi^+ \pi^-$ "
 $\pi^- p \rightarrow n \rho^0$ "
 $\pi^+ p \rightarrow p \pi^+$ "

Comments The target polarization is $75 \pm 5\%$.

ITEP-802 (1980) Approved 1980; Started 1981

STUDY OF K^+ INTERACTIONS WITH XENON

MOSCOW, ITEP - V V Barmin, V G Barylov, T A Chistyakova, G V Davidenko, V S Demidov, A G Dolgolenko, V E Luchmanov, A G Meshkovsky, G S Miroslidi, A N Nikitenko, V A Shebanov ($\checkmark$ Spokesperson), N N Shishov, N K Zornikovskaya

Accelerator ITEP **Detector** HLBC-2M

Reactions
 $K^+ \text{Xe} \rightarrow K^+ \text{X}$ 0.79 GeV/c
 $K^+ \text{Xe} \rightarrow K^0 \text{X}$ "

Comments Study of the cumulative effects in xenon. The detector (DIANA) is a 700-liter xenon bubble chamber.

ITEP-803 (1980) Approved 1980; Started 1981; Completed 1982.

STUDY OF THE REACTION $\pi^+ p \rightarrow \Delta^{++} \rho^0$ IN BARYON EXCHANGE AT 3.94 GeV/c

MOSCOW, ITEP - A V Arefiev, Y D Bayukov, V B Fedorov, B A Fominykh, N A Goryainov, Y G Grishuk, P V Ivanov, F M Khassanov, G A Leksini ($\checkmark$ Spokesperson), B B Shvartzman, V L Stolin, V P Surin, A S Zhokin

Accelerator ITEP **Detector** Spectrometer

Reactions
 $\pi^+ p \rightarrow \Delta(1232 \text{ P}_{33})^{++} \rho^0$ 3.94 GeV/c

ITEP-804 (1980) Approved 1980; Started 1981; Completed 1982.

SEARCH FOR AN EXOTIC BARYON RESONANCE E^{++} WITH ISOSPIN 5/2

MOSCOW, ITEP - A V Arefiev, Y D Bayukov, V B Fedorov, B A Fominykh, N A Goryainov, Y G Grishuk, P V Ivanov, F M Khassanov, G A Leksini ($\checkmark$ Spokesperson), B B Shvartzman, V L Stolin, V P Surin, A S Zhokin

Accelerator ITEP **Detector** Spectrometer

Reactions
 $\pi^+ p \rightarrow p 2\pi^+ \pi^-$ 3.94 GeV/c
 $\pi^+ p \rightarrow p 2\pi^+ \pi^0 \pi^-$ "
 $\pi^+ p \rightarrow N_{5/2}^*(\text{unspec})^{++} \pi^-$ "
 $\pi^+ p \rightarrow N_{5/2}^*(\text{unspec})^{++} \pi^0 \pi^-$ "

Particles studied $N_{5/2}^*(\text{unspec})^{++}$

ITEP-811 (1981) Approved 1981; Started Dec 1981; Completed Jun 1982.

STUDY OF $K_L \rightarrow 2\gamma$ AND SEARCH FOR $K_S \rightarrow 2\gamma$ DECAYS

MOSCOW, ITEP - M Y Balatz ($\checkmark$ Spokesperson), V M Berezin, E T Bogdanov, V I Chistilin, N P Dobrovol'skaya, G B Dzyubenko, N D Galanina, E T Gedvillo, A D Kamen'sky, N A Khaldeeva, V S Lakaev, A M Lipkin, V N Markisov, V V Melmel, A A Nedosekin, A Y Ostapchuk, V A Sadykov, S F Semin, A I Sitnikov, E I Tarkovsky, M E Vishnevsky ($\checkmark$ Spokesperson), V E Vishnyakov, M O Vlasova, S V Zhelinin

Accelerator ITEP **Detector** Spectrometer

Reactions
 $K_L \text{Cu} \rightarrow \text{Cu } K_S$ 1 8 GeV/c

SUMMARIES OF ITEP EXPERIMENTS

$K_L \rightarrow 2\gamma$ " "
 $K_S \rightarrow 2\gamma$ " "
Particles studied K_L, K_S

ITEP-812 (1981) Approved 1981; Started 1981; Completed 1985.

STUDY OF CUMULATIVE PARTICLE PRODUCTION IN PION NUCLEUS INTERACTIONS

MOSCOW, ITEP - A E Buklej, N A Burgov, M M Chumakov, N A Fedushkina, S A Gerzon, Y T Kiselev, G A Leksins, A N Martenjanov, N A Pivnyuk, S V Semenov, V L Stolin, Y V Terekhov ($\checkmark$ Spokesperson), V I Ushakov, M K Vlasov, L S Vorobyev

Accelerator ITEP Detector Spectrometer

Reactions

π^+ nucleus $\rightarrow \pi^+ X$ 1.5 GeV/c
 π^+ nucleus $\rightarrow p X$ "
 π^+ nucleus $\rightarrow \text{deut } X$ "
 π^- nucleus $\rightarrow \pi^+ X$ "
 π^- nucleus $\rightarrow p X$ "
 π^- nucleus $\rightarrow \text{deut } X$ "

Comments The targets are Li, C, O, Cu, and Pb.

Papers YF 32 (1980) 423 = SJNP 32 (1980) 219, YF 36 (1983) 1313 = SJNP 36 (1983) ?, and YF 39 (1984) 801 = SJNP 39 (1984) 506.

ITEP-813 (1981) Approved 1981; Started 1982; Completed 1986.

STUDY OF CUMULATIVE PARTICLE CORRELATIONS

MOSCOW, ITEP - Y D Bayukov, P V Degtyarenko, E A Doroshkevich, Y V Efremenko, V B Fedorov, V B Gavrilov, N A Goryainov, Y G Grishuk, I A Klumov, M V Kossov, S V Kuleshov, L N Kuleshova, S G Kuznetsov, G A Leksins ($\checkmark$ Spokesperson), S M Shuvalov, B B Shvartsman, A V Smirnit-sky, A V Stavinsky, D A Suchkov, A V Vlassov, L S Vorobyev, B V Zagreyev

Accelerator ITEP Detector Spectrometer

Reactions

p nucleus $\rightarrow 2\text{nucleon } X$ 3.0, 5.0, 7.5 GeV/c
 p nucleus $\rightarrow \text{deut } p X$ "
 p nucleus $\rightarrow \text{deut } p X$ 7.5 GeV/c
 p nucleus $\rightarrow 2\text{deut } X$ "
 p nucleus $\rightarrow 3p X$ "
 p nucleus $\rightarrow \text{deut } 2p X$ "
 p nucleus $\rightarrow 2\text{deut } p X$ "
 π^- nucleus $\rightarrow 2\pi^+ X$ 5.0 GeV/c
 π^- nucleus $\rightarrow 2\text{nucleon } X$ 2.5, 3.0, 5.0 GeV/c

Comments The targets are Be, C, Al, Ti, Cu, Nb, Cd, Ta, Pb, and U.

Papers YF 39 (1984) 1482 = SJNP 39 (1984) 938, YF 44 (1986) 412 = SJNP 44 (1986) 263, and PL B189 (1987) 291.

ITEP-814 (1981) Approved 1981; Started 1982.

STUDY OF K^+ DECAYS

MOSCOW, ITEP - V V Barmin, V G Barylov, T A Chistyakova, G V Davidenko, V S Demidov, A G Dolgolenko, A G Meshkovsky ($\checkmark$ Spokesperson), G S Mirosid, V A Shebanov ($\checkmark$ Spokesperson), N N Shishov, N K Zombkovskaya

Accelerator ITEP Detector HLBC-1M

Reactions

$K^+ X e \rightarrow K^+ X$ 0.56-0.81 GeV/c
 $K^+ \rightarrow \pi^0 e^+ \nu_e$ —
 $K^+ \rightarrow 2\pi^+ \pi^-$ —
 $K^+ \rightarrow \pi^0 e^+ \nu_e \gamma$ —
 $K^+ \rightarrow 2\pi^+ \pi^- \gamma$ —
 $K^+ \rightarrow 2\pi^0 e^+ \nu_e$ —
 $K^+ \rightarrow \mu^+ \nu_e \gamma$ —

Particles studied K^+

Papers YF 45 (1987) 97 = SJNP 45 (1987) 62, YF 47 (1988) 1011 = SJNP 47 (1988) 643, and YF 48 (1988) 1719 = SJNP 48 (1988) 1032.

ITEP-821 (1982) Approved 1980; Started 1981; Completed 1983.

SEARCH FOR $K_L \rightarrow 2\text{CHARGED } e^+ e^- \text{ DECAY}$

MOSCOW, ITEP - M Y Balatz ($\checkmark$ Spokesperson), V M Berezin, E T Bogdanova, V I Chistilin, N P Dobrovolskaya, G B Dzyubenko, N D Galanina, E T Gedvillo, A D Kamen-sky, N A Khaldeeva, V S Lanaev, A M Lipkin, V N Markisov, V V Memelov, V A Murysov, A A Nedosekin, A Y Ostapchuk, V A Sadykov, S F Semin, A I Sitnikov, E I Tarkovsky, M E Vishnevsky ($\checkmark$ Spokesperson), V E Vishnyakov, M O Vlasova, S V Zhelnin

Accelerator ITEP Detector Spectrometer

Reactions

$K_L \rightarrow \pi^+ \pi^- e^- e^+$ 1-8 GeV/c
 $K_L \rightarrow \mu^+ \mu^- e^- e^+$ "
 $K_L \rightarrow 2e^- 2e^+$ "

Particles studied K_L

Papers YF 38 (1983) 927 = SJNP 38 (1983) 556.

ITEP-822 (1982) Approved 1982; Started 1983; Completed 1986.

SEARCH FOR BOUND AND RESONANT STATES IN THE $\Lambda\Lambda$ SYSTEM

MOSCOW, ITEP - V M Berezin, E T Bogdanov, V I Chis-tilin, N P Dobrovolskaya, N D Galanina, E T Gedvillo, N A Khaldeeva, A M Lipkin, V N Markisov, V V Memelov, A A Nedosekin, A Y Ostapchuk, V A Sadykov, E I Tarkovsky, M E Vishnevsky ($\checkmark$ Spokesperson), M O Vlasova

Accelerator ITEP Detector Spectrometer

Reactions

n nucleus $\rightarrow 2\Lambda X$ 2.0-9.5 GeV/c
 n nucleus $\rightarrow \text{dibaryon}(S = -2) X$ "

Particles studied dibaryon($S = -2$)

ITEP-823 (1982) Approved 1982; Started Jan 1983; Completed 1985.

MEASUREMENT OF COULOMB-NUCLEAR INTER-FERENCE IN $\pi^\pm$ NUCLEUS SCATTERING

MOSCOW, ITEP - V N Afanasjev, V S Borisov ($\checkmark$ Spokesperson), I N Borodina, G K Byshva, L L Goldin, L N Gusev, V P Tchernyshev, G K Tumanov, A O Vaisenberg, Y V Zubkov

Accelerator ITEP Detector Counter

Reactions

π^+ nucleus $\rightarrow \pi^+ X$ 1.85, 3.0 GeV/c
 π^- nucleus $\rightarrow \pi^- X$ "

Comments The targets are ^6Li , ^7Li , C, and Be. The detector (IRA) consists of proportional chambers and scintillation counters.

Papers YF 40 (1984) 34 = SJNP 40 (1984) 22.

ITEP-824 (1982) Approved 1982; Started 1984; Completed 1986.

STUDY OF $K_L \rightarrow \pi e \nu \gamma$ AND $K_L \rightarrow 2\pi e \nu$ DECAYS

MOSCOW, ITEP - M Y Balatz, V M Berezin, E T Bog-danov, V I Chistilin, N P Dobrovolskaya, G B Dzyubenko, N D Galanina, A D Kamensky, N A Khaldeeva, V S Lanaev, A M Lipkin, V N Markisov, V V Memelov, A A Nedosekin, A Y Ostapchuk, V A Sadykov, S F Semin, A I Sitnikov, E I Tarkovsky, M E Vishnevsky ($\checkmark$ Spokesperson), V E Vish-nyakov, M O Vlasova, S V Zhelnin

SUMMARIES OF ITEP EXPERIMENTS

Accelerator ITEP Detector Spectrometer

Reactions

$K_L \rightarrow \pi^+ e^- \bar{\nu}_e \gamma$	1-8 GeV/c
$K_L \rightarrow \pi^- e^+ \nu_e \gamma$	"
$K_L \rightarrow \pi^+ \pi^0 e^- \bar{\nu}_e$	"
$K_L \rightarrow \pi^0 \pi^- e^+ \nu_e$	"

Particles studied K_L

ITEP-825 (1982) Approved 1982; Started 1982; Completed 1984.

MEASUREMENT OF THE POLARIZATION OF CUMULATIVE PROTONS

MOSCOW, ITEP - P V Degtyarenko, Y V Efremenko,
V B Fedorov, V B Gavrilov, N A Goryainov, Y G Grishuk,
O B Gushchin, G A Leksin (✓ Spokesperson)

Accelerator ITEP Detector NHS

Reactions

$p \text{ Be} \rightarrow p X$	7.5 GeV/c
$p \text{ C} \rightarrow p X$	"
$p \text{ Pb} \rightarrow p X$	"
$\pi^- \text{ Be} \rightarrow p X$	3.0 GeV/c
$\pi^- \text{ C} \rightarrow p X$	"
$\pi^- \text{ Pb} \rightarrow p X$	"

Papers YF 41 (1985) 1541 = SJNP 41 (1985) 976.

ITEP-826 (1982) Approved 1982; Started 1983.

IRREGULARITIES IN THE ANGULAR DISTRIBUTION OF CUMULATIVE PARTICLES AT 180° IN THE LAB — VAN HOVE'S DETONATION OF HOT NUCLEAR MATTER?

MOSCOW, ITEP - P V Degtyarenko, B L Druzhinin, Y V Efremenko, V B Fedorov, V B Gavrilov, N A Goryainov,
Y G Grishuk, O B Gushchin, L N Kondratiev, G A Leksin
(✓ Spokesperson), A D Rogal, B B Shvartsman, A V Smirnit-
sky, L S Vorobiev

Accelerator ITEP Detector NHS

Reactions

$\pi^- \text{ C} \rightarrow p X$	1.5-3.0, 5.0 GeV/c
$\pi^- \text{ C} \rightarrow \text{deut } X$	"
$\pi^- \text{ C} \rightarrow \text{pion } X$	"
$\pi^- \text{ Pb} \rightarrow p X$	"
$\pi^- \text{ Pb} \rightarrow \text{deut } X$	"
$\pi^- \text{ Pb} \rightarrow \text{pion } X$	"
$p \text{ C} \rightarrow p X$	4.5, 7.5 GeV/c
$p \text{ C} \rightarrow \text{deut } X$	"
$p \text{ C} \rightarrow \text{pion } X$	"
$p \text{ Pb} \rightarrow p X$	"
$p \text{ Pb} \rightarrow \text{deut } X$	"
$p \text{ Pb} \rightarrow \text{pion } X$	"

Papers YF 44 (1986) 1396 = SJNP 44 (1986) 908.

ITEP-831 (1983) Approved 1983; Started 1984.

MEASUREMENT OF $\pi^-, \pi^+, K^+, K^-, p, \bar{p}, {}^2\text{H}, {}^3\text{H}, {}^3\text{He}$ AND ${}^4\text{He}$ INCLUSIVE CROSS SECTIONS IN PROTON INTERACTIONS WITH Be, Al, Cu, AND Ta NUCLEI IN THE ENERGY RANGE 3.7 TO 9.2 GeV

MOSCOW, ITEP - M V Baranov, V A Ergakov, G A Safronov,
A A Sibirzev, N Smirnov, N V Stepanov, Y V Trebukhovskiy
(✓ Spokesperson), S V Voronin, I A Vorontsov

Accelerator ITEP Detector Spectrometer

Reactions

$p \text{ nucleus} \rightarrow \pi^+ X$	3.7-9.2 GeV (T_{lab})
$p \text{ nucleus} \rightarrow \pi^- X$	"
$p \text{ nucleus} \rightarrow K^+ X$	"
$p \text{ nucleus} \rightarrow K^- X$	"
$p \text{ nucleus} \rightarrow p X$	"
$p \text{ nucleus} \rightarrow \bar{p} X$	"
$p \text{ nucleus} \rightarrow \text{deut } X$	"
$p \text{ nucleus} \rightarrow \text{trit } X$	"
$p \text{ nucleus} \rightarrow {}^3\text{He } X$	"
$p \text{ nucleus} \rightarrow \text{He } X$	"

ITEP-832 (1983) Approved 1983; Started 1988.

A TRACKING EXPERIMENT FOR STUDY OF DOUBLE BETA-DECAY IN ${}^{136}\text{Xe}$

MOSCOW, ITEP - M Ajnautdinov, V Artemiev, E Brakhman,
A Karelin, V Kirichenko, V Knyazev, O Kozodaeva, V Lubimov
(✓ Spokesperson), A Mitin, O Zeldovich, T Zvetkova

Accelerator NONE Detector Spectrometer

Particles studied $\bar{\nu}_e$

ITEP-841 (1984) Approved 1984; Started 1985; Completed 1986.

STRANGENESS AND POLARIZATION OF HOTLESS NUCLEAR MATTER: DATA ON CUMULATIVE Λ AND K^0 PRODUCTION (II)

MOSCOW, ITEP - P V Degtyarenko, Y V Efremenko,
V B Fedorov, V B Gavrilov, Y G Grishuk, F M Khaasanov,
M V Kossov, S V Kuleshov, S G Kuznetsov, G A Leksin
(✓ Spokesperson), N A Pivnuk, S M Shuvalov, B B Shvartsman,
A V Smirnit'sky, L S Vorobiev, B V Zagreyev

Accelerator ITEP Detector NHS

Reactions

$\pi^- \text{ C} \rightarrow \Lambda X$	1.2, 3.0, 5.0 GeV/c
$\pi^- \text{ Al} \rightarrow \Lambda X$	"
$\pi^- \text{ Cu} \rightarrow \Lambda X$	"
$\pi^- \text{ Cd} \rightarrow \Lambda X$	"
$\pi^- \text{ Pb} \rightarrow \Lambda X$	"
$\pi^+ \text{ C} \rightarrow \Lambda X$	3.0 GeV/c
$\pi^+ \text{ Pb} \rightarrow \Lambda X$	"
$p \text{ C} \rightarrow \Lambda X$	3.0, 7.5 GeV/c
$p \text{ Pb} \rightarrow \Lambda X$	"

ITEP-842 (1984)

STUDY OF HIGH ENERGY CUMULATIVE PARTICLE PRODUCTION IN PROTON NUCLEUS INTERACTIONS

MOSCOW, ITEP - S V Boyarinov, I I Evseev, S A Gerzon,
Y T Kiselev, G A Leksin (✓ Spokesperson), A N Martemyanov,
K R Mikhailov, V L Novikov, S V Semenov, V A Sheinkman,
Y V Terekhinov

Accelerator ITEP Detector Spectrometer

Reactions

$p \text{ nucleus} \rightarrow p X$	10 GeV (E_{lab})
$p \text{ nucleus} \rightarrow \pi^+ X$	"
$p \text{ nucleus} \rightarrow \pi^- X$	"
$p \text{ nucleus} \rightarrow K^+ X$	"
$p \text{ nucleus} \rightarrow K^- X$	"

Comments The nuclear targets are beryllium, aluminum, copper, and tantalum.

Papers YF 46 (1987) 1472 = SJNP 46 (1987) 871.

ITEP-851 (1981) Approved 1985; Started 1986.

STUDY OF π^- NUCLEUS INTERACTIONS WITH A SINGLE PHOTON EMISSION

SUMMARIES OF ITEP EXPERIMENTS

MOSCOW, ITEP - V V Barmin, V G Barylov, T A Chistyakova,
G V Davidenko, V S Demidov, A G Dolgolenko,
V E Luchmanov, A G Meshkovsky (✓ Spokesperson), G S Miro-
sidi, V A Shebanov, N N Shishov, N K Zombkovskaya

Accelerator ITEP Detector HLBC-1M

Reactions

$\pi^- \text{Xe} \rightarrow \gamma \text{X}$ 0.0, 0.4, 1.0 GeV/c

ITEP-861 (1984) Approved 1984; Started 1987.

SEARCH FOR ^{76}Ge DOUBLE BETA DECAY

MOSCOW, ITEP - I V Kirpichnikov (✓ Spokesperson),
V A Kuznetsov, A S Starostin, A A Vasenko
YEREVAN PHYS INST - G E Marcosyan, V M Oganessian,
V S Pogosov, S P Schachysisyan, A G Tamanyan

Accelerator NONE Detector Spectrometer

Reactions

$^{76}\text{Ge} \rightarrow ^{76}\text{Se} 2e^-$ —
 $^{76}\text{Ge} \rightarrow ^{76}\text{Se} 2e^- 2\bar{\nu}_e$ —
 $^{76}\text{Ge} \rightarrow ^{76}\text{Se} 2e^-$ unspc —

Comments Ge semiconductor, enriched ^{76}Ge . Spectrometer in
Yerevan soil mine.

ITEP-862 (1986) Approved 1986; Started 1986; Completed
1987.

MEASUREMENT OF THE POLARIZATION OF LAMB- DAS PRODUCED BY NEUTRONS WITH MOMENTA FROM 4 TO 10 GEV/c ON NUCLEI

MOSCOW, ITEP - A N Alekseev, V M Berezin, E T Bogdanov,
V I Chistilin, N P Dobrovolskaya, N D Galanina, S I Kartyshev,
N A Khaldieva, A M Lipkin, V N Markiev, V V Memelov,
R A Menshikov, A A Nedosekin, A Y Ostapchuk, V A Sadykov,
M E Vishnevsky (✓ Spokesperson), M O Vlasova

Accelerator ITEP Detector Spectrometer

Reactions

$n \text{C} \rightarrow \Lambda \text{X}$ 2-10 GeV/c
 $n \text{Pb} \rightarrow \Lambda \text{X}$ "

ITEP-871 (1987) Approved 1987; Started 1988.

STUDY OF KAON NUCLEUS INTERACTIONS WITH SINGLE PHOTON EMISSION

MOSCOW, ITEP - V V Barmin, V G Barylov, T A Chistyakova,
G V Davidenko, V S Demidov, A G Dolgolenko,
V E Luchmanov, A G Meshkovsky (✓ Spokesperson), G S Miro-
sidi, V A Shebanov, N N Shishov, N K Zombkovskaya

Accelerator ITEP Detector HLBC-1.5M

Reactions

$K^+ \text{Xe} \rightarrow \gamma \text{X}$ 0 0.8 GeV/c
 $K^- \text{Xe} \rightarrow \gamma \text{X}$ "

Comments The detector (DL' NA) is a 700-liter xenon bubble
chamber.

JINR Experiments

JINR-86-01 (Mar 1985) Approved Dec 1985; Started Feb 1986**INVESTIGATION OF THE MECHANISM OF RELATIVISTIC NUCLEUS-NUCLEUS INTERACTIONS**

DUBNA - L S Azhgirej (✓ Spokesperson), M A Ignatenko,
V V Ivanov, I A Koshevnikov, A S Kuznetsov, S V Razin,
G D Stoletov, I K Vzorov, V N Zhmyrov, P V Zrellov
WARSAW, POLYTECHNIC INST - E Mulas

Accelerator JINR Detector MASPICReactions

p nucleus $\rightarrow p$ X	4.0-9.0 GeV/c
p nucleus $\rightarrow$ deut X	"
deut nucleus $\rightarrow p$ X	"
deut nucleus $\rightarrow$ deut X	"
^3He nucleus $\rightarrow p$ X	4.5 GeV/c (P_{lab}/N)
^3He nucleus $\rightarrow$ deut X	"
He nucleus $\rightarrow p$ X	"
He nucleus $\rightarrow$ deut X	"
He nucleus $\rightarrow$ ^3He X	"
He nucleus $\rightarrow$ trit X	"

Comments Measures the impulsive spectra of secondary particles. One of the aims of the experiment is to determine the structure functions of light nuclei at small internucleon distances.

Papers YF 46 (1987) 1134 = SJNP 46 (1987) 661.**JINR-86-02** (1986) Approved 1985; Started 1986.**INVESTIGATION OF CUMULATIVE MULTIPARTICLE PRODUCTION IN 4π GEOMETRY**

DUBNA - N G Anishchenko, G S Averichev, S A Averichev,
A M Baldin, V D Bartenev, Y T Borzunov, V I Datskov,
L G Efimov, L B Golovanov, Y V Gusakov, V I Ilushchenko,
V M Izzyurov, A N Khrenov, I F Kolpakov, J Y Kulpina,
A G Litvinenko, A I Malakhov (✓ Spokesperson),
P K Manyakov, E N Matveeva, E A Matyushevsky,
V L Mazarsky, G L Melkumov, N S Moroz, A A Mozelev,
Y A Panebratsev, A N Parfenov, V G Perevozchikov,
G D Pilipenko, S N Plyashkevich, S V Rikhtvitsky, A E Senner,
Y A Shishov, E Shtriy, V A Smirnov, V S Stavinsky,
V V Trofimov, A P Tevineva, G P Tevineva, V Y Volkov,
P I Zarubin, L Y Zhiltsova
LENINGRAD STATE U - V K Bondarev
BUCHAREST, INST PHYS - O Bolea, M Khoroj, M Pentsya
BUCHAREST U - N Giordenesku, V Greku
UNKNOWN - V B Abidinov, M Shumbera, M K Suleymanov,
I Tuckek

Accelerator JINR Detector SPHEREReactions

nucleus nucleus $\rightarrow$ X	4.5 GeV/c (P_{lab}/N)
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Comments An investigation of high energy nuclear interactions with large transfer 4-velocities.

JINR-86-03 (Mar 1986) Approved Dec 1986; Started Feb 1987**INVESTIGATION OF HIGHLY EXCITED MULTI-QUARK SYSTEMS AND EFFECTS OF POLARIZATION OF RELATIVISTIC NUCLEI**

DUBNA - Y T Borzunov, E V Chernikh, L B Golovanov,
P K Manyakov, E A Matyushevsky, Z P Motina, A A Nomofilov,
R N Petrova, N M Piskunov, V I Sharov, I M Sitnik,
E A Strakovsky, L N Strunov (✓ Spokesperson), A P Tsinev,
T I Volobueva, G G Vorobiev, S A Zaporozhets

KIEV, ITF - A P Kobushkin

MOSCOW STATE U - V G Aleev

ZFK, ROSENDORF - S V Djimukhadze, B Kjun, G Mjuller,

B Naumann, L Naumann, V Noibert, Z Tesh

BANF - L Antonov, I Atanasov, I Dandolev, K Dimitrov,

L Penchev, P Tapalov, K Yaney

SOFIYA, INST NUCL RES - N Angelov, P P Temnikov

SOFIYA, INST CHEM TECH - L Vizireva

WARSAW, INST NUCL STUDIES - A Filipkovski

Accelerator JINR Detector ALPHA-POLISReactions

deut $p \rightarrow$ deut p	1-4.5 GeV/c (P_{lab}/N)
deut $p \rightarrow$ trit π^+	"
deut deut $\rightarrow$ 2deut	"
deut deut $\rightarrow$ trit p	"
^3He $p \rightarrow$ He π^+ X	"
^3He nucleus $\rightarrow$ deut p X	"
He nucleus $\rightarrow$ 2deut X	"
He nucleus $\rightarrow$ trit p X	"

JINR-86-04 (1986) Approved 1985; Started Feb 1988.**INVESTIGATION OF CUMULATIVE MULTIPARTICLE PRODUCTION**

DUBNA - M U Abdurakhimov, T G Astanevitch,
S V Aetvatsaturov, S A Averichev, V S Barashenkov,
E A Dementiev, L B Golovanov, M N Hachaturjan,
I M Ivanchenko, V G Ivanov, S A Khorojov, A D Kirillov,
E V Kozubsky, B A Kulakov (✓ Spokesperson),
Y V Kulikov, A A Kuznetsov, E S Kuznetsova, Y Lukstinsch,
E A Matyushevsky, A T Matushin, V T Matushin,
G L Melkumov, V I Moroz, N M Nikityuk, E O Okonov,
V I Prihodko, V B Radomanov, I S Saitov, V D Toneev
ALMA ATA, PHYS INST - I Y Chaanikov, N N Nurgozhin,
M A Tashimov

LENINGRAD, INP - L V Krasnov, V F Litvin

LEBEDEV INST - P S Baranov

MOSCOW STATE U - A K Kaminsky

TBILISI STATE U - N S Amaglobeli

YEREVAN STATE U - A G Thudaverdjan

TBILISI, INST PHYS - U G Gulama

WARSAW U - E Skjipschak, Y Zakzhevski

WTU - A Piantkovski

WARSAW, INST NUCL STUDIES - E Knapik

BUCHAREST U - K Beshlin

BUDAPEST, CRIP - O Bales, I Ioan

SOFIYA, INST NUCL RES - P K Markov, V N Penov

YEREVAN PHYS INST - P O Avakyan

UNKNOWN - Y Jofka, K Maletski, V I Manko, A A Ogloblin,

D M Rumyantsev, M I Rusinov, M Stempinski, R Tirkovski

Accelerator JINR Detector GIBSReactions

Mg Mg $\rightarrow$ X	4.5 GeV/c (P_{lab}/N)
^{12}C C $\rightarrow$ X	"
He nucleus $\rightarrow$ X	"
^{12}C nucleus $\rightarrow$ X	"

Comments An investigation of secondary cumulative particles, relativistic hypernucleus production, and decay mechanisms in central and peripheral nucleus-nucleus interactions.

JINR-86-05 (Mar 1986) Approved Dec 1986; Started Feb 1988.**DEVELOPMENT OF THE 'SLON' DETECTOR**

DUBNA - S A Averichev, B P Bannik, N A Blinov, A G Bonch-Osmolovsky, N Buriev, S A Dolgy, V I Kaplin, A D Kovalenko,
I I Kulikov, A G Murizin, G P Nikolaevsky, S Z Saifullin,
K D Tolstov (✓ Spokesperson), M A Voevodin, M I Yatsuta

LENINGRAD, INP - G N Koporskaya, M V Kostenko,

A I Krutshinin, G A Shneerson, V A Tshuraev

ALMA ATA, PHYS INST - V P Anzon, A S Gaytinov

Accelerator JINR Detector SLONReactions

nucleus nucleus $\rightarrow$ X	4.5 GeV/c (P_{lab}/N)
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KEK Experiments

KEK-049 (Aug 1976) Approved Mar 1978; Started Nov 1981; Completed Nov 1983.

PRODUCTION OF Λ^0 AND K_S^0 BY 12-GeV PROTONS ON NUCLEAR TARGETS

TSUKUBA U - F Abe, Y Asano, K Hara, Y Iguchi, S Kim, K Kondo, S Miyashita, H Miyata, S Mori, I Nakano, T Sugaya, K Takikawa ($\sqrt{}$ Spokesperson), R Tanaka, Y Yamamoto, T Yasuda, K Yasuoka

KEK - Y Fukui, S Kurokawa, A Maki

Accelerator KEK-PS **Detector** Double-arm spectrometer

Reactions

p nucleus $\rightarrow \Lambda X$ 12 GeV/c
 p nucleus $\rightarrow K_S X$ "

Particles studied Λ , K_S

Papers PRL 50 (1983) 1102, JPSJ 52 (1983) 4107, NIM 220 (1984) 293, JJAP 23 (1984) 492, PR D30 (1984) 1861, PR D34 (1986) 1950, and PR D36 (1987) 1302.

KEK-084 (May 1978) Approved Jun 1979; Started Dec 1981; Completed Feb 1984.

STUDY OF 2π AND 3π STATES IN $\pi^- p$ INELASTIC FORWARD SCATTERING

KEK - A Ando, S Inaba, T Inagaki, T Satoh, K Takamatsu, T Tsuru ($\sqrt{}$ Spokesperson), Y Yasu

KYOTO U - K Imai, Y Inagaki, T Nakamura, J Shirai, R Takashima, N Tamura

TOKYO U, INS - K Maruyama, H Okuno

TOKYO U - A Itano

SAGA U, JAPAN - S Kobayashi, A Murakami

AKITA U - A Sasaki

TSUKUBA U - K Ohmi

Accelerator KEK-PS **Detector** SUPERBENKEI

Reactions

$\pi^- p \rightarrow n \pi^+ \pi^-$ < 8 GeV/c
 $\pi^- p \rightarrow n \pi^+ \pi^- \pi^0$ "
 $\pi^- p \rightarrow n \pi^+ \pi^- \eta$ "

Papers NIM 201 (1982) 511, NIM 224 (1984) 318, Cryogenics (Feb. 1984) 83, NIM 225 (1984) 347, and PRL 57 (1986) 1296.

KEK-088 (Oct 1980) Approved Oct 1980; Started Oct 1983; Completed Mar 1984.

DETECTION OF DISCRETE γ AND π^0 FROM THE $\bar{p}p$ SYSTEM

KEK - M Kobayashi ($\sqrt{}$ Spokesperson), S Kurokawa, M Takasaki

FUKUI U - J Iwahori, M Kawaguti, H Yoshida

TOKYO U, INS - M Koike

KYOTO SANGYO U - F Takeuchi

OSAKA U - K Doi, T Fujitani, T Kozuki, H Kusumoto, H Nagao, Y Nagashima, T Omori, S Sugimoto, M Tsuchiya, M Ueda, Y Yamaguchi

TOKYO METROPOLITAN U - M Chiba

Accelerator KEK-PS **Detector** Ionization chamber

Reactions

$\bar{p} p \rightarrow \gamma X$ 580 MeV/c
 $\bar{p} p \rightarrow \pi^0 X$ "

Papers NIM 184 (1981) 399, NIM 189 (1989) 625, NIM 189 (1981) 629, NIM 190 (1981) 15, NIM 196 (1982) 239, NIM 224 (1984) 318, NIM A234 (1985) 267, JJAP 24 (1985) 593, NIM A242 (1986) 201, NIM A245 (1986) 51, NIM A245 (1986) 59, PL B177 (1986) 217, PR D36 (1987) 3321, PL B202 (1988) 447, PR D38 (1988) 2021, and PR D39 (1989) 3227.

KEK-074A (Jul 1981) Started Oct 1982; Completed Feb 1983.
SEARCH FOR BARYONIUM STATES IN $\bar{p}N$ INTERACTIONS

TOKYO U - T Fujii, T Kageyama, K Nakamura ($\sqrt{}$ Spokesperson), F Sai, S Sakamoto, S Sato, T Takahashi, T Tanimori, S S Yamamoto

TSUKUBA U - Y Takada

Accelerator KEK-PS **Detector** Wide-angle spectrometer

Reactions

$\bar{p} p \rightarrow \bar{p} p$ 390-780 MeV/c
 $\bar{p} p \rightarrow \bar{n} n$ "
 $\bar{p} p \rightarrow \pi^+ \pi^-$ "
 $\bar{p} p \rightarrow K^+ K^-$ "

Comments Phase II of KEK-074.

Papers NIM 215 (1983) 357, NIM 216 (1983) 57, PRL 53 (1984) 885, PR C31 (1985) 1853, PRL 55 (1985) 1835, JJAP 24 (1985) 1522, and PR D35 (1987) 2655.

KEK-081 (May 1980) Approved May 1980; Started Nov 1981; Completed Jul 1982.

ASYMMETRY IN THE ELASTIC SCATTERING OF K^+ AND π^+ FROM DEUTERIUM NEAR 1.5 GeV/c

UCLA - M Gazzaly, M Hajisaied, G J Igo ($\sqrt{}$ Spokesperson), F From.

T Kobayashi, G Pauletta, A T H Wang

KEK - M Fukawa, S Isagawa, S Ishimoto, A Masaike ($\sqrt{}$ Spokesperson), K Morimoto

TOKYO U - T Hasegawa, K Nisimura, F Soga

NIHON U, TOKYO - I Yamauchi

KYOTO U OF EDUCATION - A Okihana

HIROSHIMA U - H Hasei, K Iwatani, F Nishiyama

NAGOYA U - N Horikawa, T Nakanishi, Y Ohashi

Accelerator KEK-PS **Detector** TELAS

Reactions Polarized target

K^+ deut $\rightarrow K^+$ deut 1.5, 1.7 GeV/c
 π^+ deut $\rightarrow \pi^+$ deut 0.74, 1.5 GeV/c

Papers NIM 189 (1981) 561.

KEK-082 (Jun 1980) Approved Oct 1980; Completed 1985.

NUCLEAR REACTIONS WITH HIGH ENERGY PARTICLE BEAMS

TSUKUBA U - Y Asano, S Mori ($\sqrt{}$ Spokesperson), M Noguchi, M Sakano

KEK - H Hirabayashi, H Ikeda, K Kato, K Kondo, M Takasaki, A Yamamoto

Accelerator KEK-PS **Detector** Counter

Reactions

p nucleus < 13 GeV/c

Papers PR C28 (1983) 1718, PR C28 (1983) 1840, and JPSJ 54 (1985) 3734.

KEK-083 (Aug 1980) Approved Oct 1980; Started Jan 1982; Completed Jul 1982.

MEASUREMENT OF πd ELASTIC SCATTERING

HIROSHIMA U - M Akemoto, K Baba, I Endo, H Himemiya, K Inoue, T Kawamoto, Y Maeda, T Ohsugi, R Ohtani, Y Sumi ($\sqrt{}$ Spokesperson), T Takenhita, T Uehara, T Umeda

KITAKYUSHU, UNIV OCCUP ENVIR HEALTH - T Maki, M Nakano

Accelerator KEK-PS **Detector** Double-arm spectrometer

Reactions

π^- deut $\rightarrow \pi^-$ deut 0.42-1.16 GeV/c
 π^+ deut $\rightarrow p p$ 0.48-1.16 GeV/c

Particles studied dibaryon

Papers NIM 188 (1981) 51, PRL 50 (1983) 400, PRL 51 (1983) 1838, PL 149B (1984) 321, and PTP 75 (1986) 646.

SUMMARIES OF KEK EXPERIMENTS

KEK-089 (Oct 1980) Approved Oct 1980; Started Oct 1981; Completed Feb 1982.

SEARCH FOR A HEAVY NEUTRINO EMITTED IN $K^+ \rightarrow \mu^+ \nu$ DECAY

TOKYO U - R Enomoto, T Fujii, R S Hayano, S Sato, T Taniguchi, T Tanimori, T Yamanaka, T Yamazaki (Spokesperson)

KEK - Y Asano, S Kurokawa, S Schnetzer

Accelerator KEK-PS Detector Ionization chamber

Reactions

$K^+ \rightarrow \mu^+ \nu$ < 0.5 GeV/c

$K^+ \rightarrow \pi^+ X$ "

Papers PL 104B (1981) 84, PRL 49 (1982) 1305, PL 144B (1984) 177, and PRL 52 (1984) 1089.

KEK-090 (Jan 1981) Approved Oct 1981; Completed Feb 1984.
STUDY OF HIGH ENERGY NUCLEAR REACTIONS WITH LARGE APERTURE MULTIPARTICLE DETECTOR

TOKYO U - I Arai, K Nakai (Spokesperson), H Nobuyo, S Sasaki, T Shibata

TOKYO INST TECH - R Chiba, K Ichimaru, Y Mihara, K Nakayama, H Yokota

Accelerator KEK-FS Detector FANCY

Reactions

p nucleus 1-5 GeV/c

π^+ nucleus "

Papers NP A418 (1984) 163C, NIM A237 (1985) 559, and PL 158B (1985) 1.

KEK-092 (Jan 1981) Approved Feb 1981; Started Apr 1982; Completed Feb 1984.

MEASUREMENTS OF ASYMMETRY PARAMETER IN $\Sigma^+ \rightarrow p \gamma$ DECAY

KYOTO U - J Haba, T Homma, H Kawai, M Kobayashi, K Miyake (Spokesperson), T Nakamura, N Sasao, Y Sugimoto

Accelerator KEK-PS Detector TELAS

Reactions

Σ^+ -

Papers PRL 59 (1987) 668.

KEK-094 (Feb 1981) Approved Jun 1981; Completed Nov 1983.
REACTION MECHANISMS IN π -NUCLEUS INTERACTIONS

SAGA U, JAPAN - H Ito (Spokesperson), S Kobayashi, A Murakami

TOKYO METROPOLITAN U - T Hirose, T Wada

KEK - S Kishiro

TOKYO U OF AGRIC TECH - K Takahashi

TOKYO U, INS - C Nagoshi

INDUSTRIAL MEDICAL COLL, KITAKYUSHU - T Maki

KYUSHU U - A Yoshimura

Accelerator KEK-PS Detector Streamer chamber

Reactions

π^+ nucleus $\rightarrow \pi X$ 0.2-2.0 GeV/c

π^- nucleus $\rightarrow \pi X$ "

KEK-099 (Jan 1982) Approved Mar 1982; Started May 1982; Completed Jul 1982.

STUDY OF μ^+ POLARIZATION IN $K_{\mu 2}$ DECAY

TOKYO U - R Hayano (Spokesperson), T Ishikawa, T Taniguchi, T Yamanaka, T Yamazaki

KEK - S R Schnetzer

Accelerator KEK-PS Detector Single-arm spectrometer

Reactions

$K^+ \rightarrow \mu^+ \nu$ 0 GeV/c

Comments Same setup as KEK-089.

Papers PRL 52 (1984) 329, and PR D34 (1986) 85.

KEK-104 (May 1982) Completed Oct 1982.

SEARCH FOR HEAVY NEUTRINOS IN $K^+ \rightarrow \mu^+ \nu_e \rightarrow e^+ \nu$

TOKYO U - Y Akiba, R Hayano, T Ishikawa, M Iwasaki, A Otake, T Taniguchi, T Yamanaka, T Yamazaki (Spokesperson)

KEK - S R Schnetzer

Accelerator KEK-PS Detector Single-arm spectrometer

Reactions

$K^+ \rightarrow \mu^+ \nu$ -

$K^+ \rightarrow e^+ \nu$ -

Papers PRL 52 (1984) 1089, PR D32 (1985) 2911, PRL 54 (1985) 102, PL 160B (1985) 32, and PR D32 (1985) 2911.

KEK-113 (Mar 1983) Approved Apr 1983; Started Dec 1983; Completed Feb 1984.

DEUTERON FROM p NUCLEUS REACTIONS

TOKYO U - H Enyo, Y Miake (Spokesperson), T Nagae, S Nagamiya, K Nakai, H Sano, S Sasaki, K Tokujuku

TOKYO INST TECH - K Ichimaru

TOKYO U, INS - Y Murata, I Tanihata, M Yoshikawa

Accelerator KEK-PS Detector TOKIWA

Reactions

p nucleus $\rightarrow$ deut X 1-4 GeV/c

Comments Approved for 480 hours.

KEK-117 (Mar 1983) Approved Feb 1984.

STUDIES OF Λ AND Σ HYPERNUCLEI BY STOPPED K^-

TOKYO U - R Hayano (Spokesperson), T Ishikawa, M Iwasaki, H Ohta, H Tamura, T Yamazaki

KEK - K Tanaka

HEIDELBERG, MAX PLANCK INST - W Brueckner, H Doebbling, S Paul, B Povh, A Sakaguchi, R Schuessler

Accelerator KEK-PS Detector Double-arm spectrometer

Reactions

K^- nucleus $\rightarrow \pi^- p X$ 0 MeV/c

Particles studied hypernuc

KEK-121 (Mar 1983) Approved Apr 1983; Started Nov 1983; Completed Feb 1984.

STUDY OF FEW PION STATES IN THE $\pi^- p$ EXCHANGE REACTION

KEK - A Ando, S Inabe, T Inagaki ($\checkmark$ Spokesperson), T Satoh,

K Takamatsu, T Tsuru, Y Yasu

KYOTO U - K Imai, Y Inagaki, T Nakamura, J Shirai,

R Takashima, N Tamura

TSUKUBA U - K Ohmi

SAGA U, JAPAN - S Kobayashi, A Murakami

AKITA U - A Sasaki

Accelerator KEK-PS Detector SUPERBENKEI

Reactions

$\pi^- p \rightarrow \pi K^+ K_S^-$ 8 GeV/c

$\pi^- p \rightarrow \pi K^- K_S^+$ "

Comments An extension of KEK-064.

KEK-125 (Sep 1983) Approved Feb 1984; Started Jan 1986; Completed Mar 1986.

STUDIES OF dd INTERACTIONS IN THE RANGE 2-4 GeV/c

SUMMARIES OF KEK EXPERIMENTS

TOKYO U - T Ishikawa, T Kishida, M Kuze, F Sai,
S S Yamamoto (✓ Spokesperson)
TSUKUBA U - I Arai, A Manabe, H Nunokawa
KITAKYUSHU, UNIV OCCUP ENVIR HEALTH - T Maki
KEK - H Koiso, T Tsuboyama

Accelerator KEK-PS Detector Counter, Ionization chamber

Reactions

deut deut $\rightarrow$ X 1.5-4 GeV/c

deut Al $\rightarrow$ X "

deut C $\rightarrow$ X "

Comments Measured the total cross sections.

Papers JJAP 26 (1987) 1348, and NIM A270 (1988) 6.

KEK-131 Approved Oct 1984; Completed Mar 1986.

CONFIRMATION OF THE NARROW STATE $X(1935)$ IN THE REACTION $\bar{p}p \rightarrow K^+K^-$ AND $\pi^+\pi^-$

KOBE U - T Fujii (✓ Spokesperson)
TOKYO U, INS - S Homma, M Sudou
KEK - Y Fujii, S Ishimoto, K Nakamura, B Tanaka, T Tanimori
KYOTO U - Y Sugimoto
HIROSHIMA U - S Kohnno, K Morita, Y Sumi

Accelerator KEK-PS Detector ?

Reactions

$\bar{p}p \rightarrow K^+K^- \pi^+ \pi^-$ —

$\bar{p}p \rightarrow \pi^+ \pi^-$ —

Particles studied $X(1935)$

Papers PR D37 (1988) 583.

KEK-132 (Oct 1984) Approved Apr 1985.

A STUDY OF CUMULATIVE A PRODUCTION IN HIGH ENERGY HADRON-NUCLEUS REACTIONS

TSUKUBA U - I Arai (Spokesperson), A Manabe, M Ninomiya,
H Nunokawa, M Tanaka, K Tomizawa, K Yagi
TOKYO U - T Nagae, H Sano, S Sasaki, K Tokushuku
KEK - J Chiba, T Kobayashi

Accelerator KEK-PS Detector FANCY

Reactions

pion $^{12}\text{C} \rightarrow$ A X 4 GeV/c

p $^{12}\text{C} \rightarrow$ A X "

Comments Measures inclusive cross sections and polarizations, and studies multi-nucleon correlations in nuclei.

Papers PRL 63 (1989) 490.

KEK-133 Approved Oct 1984; Started Jul 1985; Completed Dec 1985.

STUDY OF EXCITED NUCLEONS IN NUCLEI

KEK - J Chiba (Spokesperson), K Nakai
TOKYO U - T Nagae, H Sano, S Sasaki, K Sekimoto,
K Tokushuku
TSUKUBA U - K Aoki, I Arai, A Manabe, H Nunokawa,
H Sakamoto

Accelerator KEK-PS Detector FANCY

Reactions

p nucleus $\rightarrow \Delta(1232 \text{ P}_{33})^0$ X 3.88 GeV/c

Comments Quasi-free production of Δ^0 isobars in proton nucleus reactions. The nuclear targets are deuterium, C, Al, and Cu.

Papers NIM A237 (1985) 559, and PL B191 (1987) 31.

KEK-135 (Sep 1984) Approved Feb 1985; Started Jan 1986; Completed Jul 1986.

MESON SPECTROSCOPY BY CHARGE-EXCHANGE REACTIONS

NAGOYA U - N Horikawa, T Iwata, T Kinaishi, M Kurashina,
I Maeda, T Matsuda, T Nakanishi, C Ohmori

KEK - S Inaba, T Inagaki, K Ohmi, T Sato, K Takamatsu,
T Tsuru (Spokesperson), Y Yasu
KYOTO U - Y Inagaki, T Nakamura
MIYAZAKI U - Y Ishizaki
KYOTO U OF EDUCATION - R Takashima
NAGOYA UNIV COLL MEDICAL TECH - K Mori
SUGIYAMA JOGAKUEN U - S Fukui

Accelerator KEK-PS Detector SUPERBENKEI

Reactions

$\pi^- p \rightarrow \eta \pi^+ \pi^- n$ 8.95 GeV/c

$\pi^- p \rightarrow \pi^+ \pi^- 4\gamma n$ "

Particles studied $f_0(1500)$, $X(1700)$, $f_2(1720)$

Papers PL B202 (1988) 441.

KEK-136 (Jan 1985) Approved Feb 1985; Completed 1986.
SEARCH FOR LONG-LIVED HADRONS WITH CHARGE TWO

KYOTO U - K Imai, H Kobayashi, A Konaka, A Masaike,
K Miyake, T Nagamine, T Nakamura, N Sasao (Spokesperson),
Y Yamada
TOKYO, METROPOLITAN COLL TECH - I Yamauchi

Accelerator KEK-PS Detector Ionization chamber

Reactions

p nucleus $\rightarrow$ hadron X 12 GeV (E_{lab})

Particles studied longlived

Papers PR D39 (1989) 1261.

KEK-137 Approved Oct 1985; Started Dec 1987.

STUDY OF THE RARE DECAY $K_L \rightarrow \mu e$

KEK - T Inagaki (✓ Spokesperson), M Kobayashi, T Satoh,
T Shinkawa, F Suekane, K Takamatsu, Y Yoshimura
TOKYO U - T Kishida, T Komatsubara, M Kuze, F Sai,
J Toyoura, S S Yamamoto
KYOTO U - Y Hemmi

Accelerator KEK-PS Detector Double-arm spectrometer

Reactions

$K_L \rightarrow \mu\text{on } \mu\text{on}$ 2-8 GeV/c

$K_L \rightarrow \mu\text{on } e^\pm$ "

$K_L \rightarrow e^\pm e^\pm$ "

Particles studied K_L

KEK-146 Approved Feb 1986.

CHEMISTRY OF π^- MESONIC ATOMS — STUDIES OF ELECTRONIC CHARGE DISTRIBUTION AROUND HYDROGEN IN MATTER

KYOTO U - I Fujiwara, N Imanishi, M Iwasaki (Spokesperson),
S Iwata, T Mukoyama, Y Takeuchi, K Toyada
TOHOKU U - K Hashimoto, H Kaji, T Sekini, K Yoshihara
OSAKA U - H Baba, T Saito, A Shinohara, S Yamakatsu,
A Yokohama
KEK - Y Yoshimura

Accelerator KEK-PS Detector ?

Reactions

π^- 140 MeV/c

KEK-150 (Feb 1986) Approved Feb 1986.

STUDY OF HYPERNUCLEI VIA (π^-, K^-) REACTIONS

TOKYO U - J Imazato, T Ishikawa, M Iwasaki, K Nagamine,
O Sasaki, E Takada, H Tamura
OSAKA U - H Ejiri, T Fukuda, M Fukuta, T Irie, H Noumi,
H Osumi, T Shibata (Spokesperson)
TOKYO U, INS - H Hamagaki, O Hashimoto (Spokesperson),
S Homma, M Koike, Y Matsuyama, K Omata, Y Shida, F Soga,
N Yoshikawa
KEK - R Hayano, K H Tanaka
YAMAGATA U - S Kato

SUMMARIES OF KEK EXPERIMENTS

KYOTO INDUSTRIAL U - F Takeuchi
TOHOKU U - K Maeda

Accelerator KEK-PS Detector Spectrometer

Reactions

π^- nucleus $\rightarrow K^- X$ 1.0-1.2 GeV/c

KEK-157 (1986) Approved Jun 1987; Started Dec 1987;
Completed Feb 1988.

STUDY OF PION-INDUCED DOUBLE CHARGE EXCHANGE REACTION AND DOUBLE PION PRODUCTION USING A LARGE SOLID ANGLE SPECTROMETER

KEK - J Chiba, T Kobayashi ($\checkmark$ Spokesperson), K Nakai
TOKYO U - T Nagae, H Sano, S Sasaki, K Tokushuku
TSUKUBA U - I Arai, M Kurokawa, A Manabe, M Ninomiya,
M Tanaka
TOKYO INST TECH - H Yokota

Accelerator KEK-PS Detector FANCY

Reactions

π^+ nucleus $\rightarrow \pi^- p p X$ 0.5-1.5 GeV/c
 π^+ nucleus $\rightarrow \pi^+ \pi^+ X$ "

KEK-159 (1987) Approved Feb 1987; Started May 1987;
Completed Oct 1987.

MEASUREMENT OF THE ANALYSING POWER (A_y) IN $\bar{p}d \rightarrow pd$ SCATTERING AT 3.5 GeV

NAGOYA U - N Horikawa ($\checkmark$ Spokesperson), T Iwata, T Kinashi,
I Maeda, T Matsuda, T Nakanishi, C Ohmori, M Okumi,
T Toyama

NAGOYA UNIV COLL MEDICAL TECH - K Mori

TOKYO U, INS - T Hasegawa

HIROSHIMA U - H Hasai, K Iwatani, F Nishiyama

TOHOKU U - Y Kobayashi, T Nakagawa

KEK - S Hiramatsu, S Ishimoto, Y Mori, H Sato, T Tsuru

KYUSHU U - A Ueno

TEXAS A AND M - J A Holt

Accelerator KEK-PS Detector Single-arm spectrometer

Reactions

p deut $\rightarrow p$ deut 3.5 GeV (E_{lab})

Comments The beam polarization is 31%.

KEK-160 (Feb 1987) Approved Mar 1989.

POLARIZATION OF WEAK DECAYS OF HYPERNUCLEI

OSAKA U - H Ejiri (Spokesperson), A Higashi, Y Iseki,

T Kishimoto, H Noumi, H Ohsumi, K Okuda, H Sano

TOKYO U, INS - T Fukuda, O Hashimoto, S Homma, T Nagae,

T Shibata

TOHOKU U - K Maeda

KYUSHU U - K Kimura

Accelerator KEK-PS Detector Wide-angle spectrometer

Reactions

$\pi^+ Be \rightarrow K^+$ hypernuc 1.05 GeV/c

Comments The polarization of the hypernucleus is measured by the asymmetry of the decay.

KEK-162 (1987) Approved Oct 1987.

MEASUREMENT OF THE CP-VIOLATING DIRECT AMPLITUDE IN $K_L^0 \rightarrow \pi^0 e^+ e^-$ DECAY

KYOTO U - H Kobayashi, A Konaka, K Miyake (Spokesperson),

T Nakamura, N Sasao

KEK - M Nomachi, O Sasaki, T Taniguchi

Accelerator KEK-PS Detector TOKIWA

Reactions

$K_L \rightarrow \pi^0 e^+ e^-$ -

Particles studied K_L

KEK-166 (1987) Approved Feb 1987.

SYSTEMATIC STUDY OF P-SHELL Σ HYPERNUCLEAR STATES USING THE STOPPED K^- METHOD

TOKYO U - R S Hayano, T Ishikawa, M Iwasaki, H Outa,

E Takada (Spokesperson), H Tamura

TOKYO U, INS - T Yamazaki

KEK - K H Tanaka

HEIDELBERG, MAX PLANCK INST - W Bruchner, H Doebbeling, S Paul, B Povth, A Sakaguchi

Accelerator KEK-PS Detector Double-arm spectrometer

Reactions

K^- nucleus $\rightarrow \pi^+ X$ 650 MeV/c

K^- nucleus $\rightarrow \pi^- X$ "

KEK-167B (1988) Approved Feb 1988.

SEARCH FOR A Σ HYPERNUCLEAR GROUND STATE BY KAON ABSORPTION ON 4He

TOKYO U - R S Hayano (Spokesperson), T Ishikawa, M Iwasaki,

H Outa, H Sakurai, E Takada

TOKYO U, INS - H Tamura, T Yamazaki

HEIDELBERG, MAX PLANCK INST - A Sakaguchi

Accelerator KEK-PS Detector Double-arm spectrometer

Reactions

K^- nucleus $\rightarrow \pi^- X$ -

KEK-173 (1987) Approved Oct 1987.

STUDY OF A PRODUCTION IN NUCLEI USING (p, n) REACTIONS

KEK - J Chiba (Spokesperson), T Kobayashi

TOKYO U, INS - T Nagae

TOKYO U - H Sano

TSUKUBA U - I Arai, A Manabe, M Ninomiya, M Tanaka,

K Tomizawa

OSAKA U, RES CTR NUCL PHYS - H Sakai

Accelerator KEK-PS Detector TOKIWA

Reactions

p nucleus $\rightarrow n X$ 1.5-2.0 GeV/c

p nucleus $\rightarrow \Delta(\text{unspec}) X$ "

p nucleus $\rightarrow \Delta(1232 P_{33})^{++} X$ "

KEK-174 (1987) Approved Jun 1987.

$A_y(E, \theta)$ MEASUREMENTS FOR NN REACTIONS

TEXAS A AND M - G Glass, J Hiebert, J A Holt, R Kenefick,

S Nath, L C Northcliffe (Spokesperson)

TEXAS U & ARGONNE - P Riley, H Spinka

KYOTO U - K Imai, M Iwaki, O Kamigaito, H Shimizu

TOKYO INST TECH - H Ohnuma, H Shimizu

TOHOKU U - K Maeda

KEK - S Hiramatsu, H Sato

NAGOYA U - T Tomiya

Accelerator KEK-PS Detector Ionization chamber

Reactions

p p $\rightarrow p p$ 1-3.5 GeV (E_{lab})

p p $\rightarrow \pi^+$ deut "

p n $\rightarrow p n$ "

KEK-175 (1987) Approved Jun 1987.

SURVEY OF A DECAY LIFETIME IN HEAVY NUCLEI

TOKYO U - R S Hayano, T Ishikawa (Spokesperson), M Iwasaki,

H Outa, E Takada

TOKYO U, INS - H Tamura, T Yamazaki

HEIDELBERG, MAX PLANCK INST - A Sakaguchi

Accelerator KEK-PS Detector Ionization chamber

Reactions

K^- nucleus 650 MeV/c

SUMMARIES OF KEK EXPERIMENTS

KEK-176 (1987) Approved Jun 1987.

SEARCH FOR $\Lambda\Lambda$ HYPERNUCLEI AND/OR THE H PARTICLE

KYOTO U - K Imai (Spokesperson), H Kegawa, A Masaie,
T Nakano
NAGOYA U - S Aoki, K Hoshino, K Kodama, M Miyaniishi,
M Nakamura, K Niu, K Niwa, H Tajima
KOBE U - T Hara
OSAKA CITY U - M Teranaka
GIFU U - K Nakazawa, S Tasaka
TOHO U - M Kazuno, H Shibuya
AICHI U OF EDUCATION - N Ushida
YOKOHAMA NATIONAL U - Y Maeda
UTSUNOMIYA U - Y Sato
OSAKA PREFECTURE U, SCI EDUC INST - J Yokota
KEK - K H Tanaka
KYOTO SANGYO U - F Takeuchi

Accelerator KEK-PS Detector ?

Reactions

K^- nucleus 1.5-1.8 GeV/c

Comments Uses an emulsion target.

KEK-179 (1987) Approved Feb 1988.

STUDY OF $\eta\pi^\pm$ RESONANCES - SEARCH FOR EXOTIC PARTICLES WITH $I = 1$, $J^{PC} = 1^{-+}$

KEK - S Inaba, S Ishimoto, K Ohmi, K Takamatsu, M Takasaki,
T Tsuru (Spokesperson), Y Yasu
TOKYO INST TECH - H Shimizu
NAGOYA U - N Hayashi, N Horikawa, T Iwata, T Kinashi,
T Matsuda, S Nakagawa, S Nakamura, T Nakanishi, M Okumi,
C Omori, T Samoto, K Teuchiya, A Wakai
NAGOYA UNIV COLL MEDICAL TECH - K Mori
TOHOKU U - K Kobayashi, T Nakagawa
MIYAZAKI U - T Hasegawa, T Nakamura
SUGIYAMA JOGAKUEN U - S Fukui
SAGA U, JAPAN - S Kobayashi, T Tsubaki
CHIBA U - H Kawai
TOKYO U, INS - Y Ishizaki

Accelerator KEK-PS Detector BENKEI

Reactions

$\pi^+ p \rightarrow \eta \pi^+ p$ 6 GeV/c
 $\pi^- p \rightarrow \eta \pi^- p$ "

KEK-187 (1980) Approved Jul 1988.

STUDY OF BACKWARD Λ PRODUCTION IN HIGH ENERGY HADRON-NUCLEUS REACTIONS

TSUKUBA U - I Arai (Spokesperson), A Manabe, M Ninomiya,
M Tanaka, K Tomisawa, K Yagi
KEK - J Chiba, T Kobayashi
TOKYO U, INS - H Sano

Accelerator KEK-PS Detector TOKIWA

Reactions

π^- nucleus $\rightarrow \Lambda X$ 4 GeV/c

KEK-195 (1988) Approved Jul 1988; Started Apr 1989; Completed Jul 1989.

PRECISE MEASUREMENT OF μ^+ LONGITUDINAL POLARIZATION IN THE DECAY $K^+ \rightarrow \mu^+ \nu$

KEK - J Imazato (Spokesperson), Y Kawashima, M Takasaki,
K H Tanaka
TOKYO U - M Aoki, R S Hayano, H Ohta, E Takada
TOKYO U, INS - H Tamura, T Yamazaki

Accelerator KEK-PS Detector Spectrometer

Reactions

$K^+ \rightarrow \mu^+ \nu$ 236 MeV/c

Particles studied K^+

KEK-PF-000 (1986) Approved Feb 1986; Started Jan 1986; Completed Jul 1986.

SEARCH FOR AXION-LIKE PARTICLES

KYOTO U - K Imai, H Kobayashi, A Konaka, A Masaie,
K Miyake, N Nagamine, T Nakamura, N Sasao (Spokesperson)
KEK - A Enomoto, Y Fukushima, E Kikutani, H Koiso, H Matsumoto, K Nakahara, S Ohsawa, I Sato, T Taniguchi, J Urakawa
Accelerator KEK-PF-LINAC Detector Wide-angle spectrometer
Reactions
 $e^- W \rightarrow$ axion χ 2.5 GeV (E_{lab})
Particles studied axion
Comments Looks for e^+e^- and $\gamma\gamma$ decay modes of the axion.
Papers PRL 57 (1986) 659.

KEK-TE-001 Approved Mar 1983.

TRISTAN e^+e^- EXPERIMENTS BY THE VENUS COLLABORATION

TOHOKU U - K Abe

KEK - K Amako, Y Arai, M Fukawa, Y Fukushima, D Haidt,
N Ishihara, J Kanazaki, T Kondo ($\sqrt{s}$ Spokesperson), T Matsui,
S Odaka, K Ogawa, T Ohama, H Sakamoto, H Sakuda, J Shirai,
T Sumiyoshi, F Takasaki, T Tsuboyama, S Uehara, Y Unno,
Y Watase, Y Yamada
TSUKUBA U - Y Asano, Y Ikegami, T Koseki, S Mori, I Nakano,
M Sakano, Y Takada, Y Yonezawa
TOKYO METROPOLITAN U - M Chiba, T Fukui, T Hirose,
M Minami, Y Narita, T Oyama, H Saito, M Utsumi, M Wakai,
T Watanabe, T Yamagata
HIROSHIMA U - Y Chiba, I Endo, I Hayashibara, T Ohsugi,
A Taketani, R Tanaka
WAKAYAMA MEDICAL COLL - M Daigo
TOKYO U OF AGRIC TECH - T Emura
OSAKA U - J Haba, T Kamitani, N Kanematsu, Y Nagashima,
H Osabe, S Sakamoto, S Sugimoto, Y Suzuki, A Tsukamoto,
T Yamashita
KYOTO U - Y Hemmi, R Kikuchi, K Kubo, H Kurashige,
K Miyake ($\sqrt{s}$ Spokesperson), A Okamoto, N Sasao, N Tamura
TOHOKU GAKUIN U - M Higuchi, Y Hoshi, M Sato
KOBE U - Y Hojyo, Y Homma, A Ono, H Sakae
MIYAZAKI U - T Nakamura
IBARAKI COLL TECH - M Shioden
MEIJI GAKUIN U - K Tobimatsu
FUKUI U - H Yoshida

Accelerator KEK-TRISTAN Detector VENUS

Reactions

$e^+e^- < 70$ GeV (E_{cm})

Papers JPSJ 56 (1987) 3763, JPSJ 56 (1987) 3767, PL B198
(1987) 570, PRL 59 (1987) 2915, PL B207 (1988) 355, PRL 61
(1988) 915, PL B213 (1988) 400, and PR D39 (1989) 3524.

KEK-TE-002 Approved Mar 1983.

STUDY OF e^+e^- ANNIHILATION PHENOMENA BY A DETECTOR WITH PARTICLE IDENTIFICATION

TOPAZ COLLABORATION

TOKYO U - T Kamae, T Kishida, N Kusuki, A Shirahashi,
T Takahashi, S S Yamamoto
TOKYO U, INS - A Imanishi, T Ishii, S Kato, K Maruyama,
T Oshihama, H Okuno, K Ukai, M Yoshioka
NAGOYA U - I Adachi, J Fujimoto, R Kajikawa
($\sqrt{s}$ Spokesperson), T Matsumura, A Sugiyama, S Suzuki,
T Takahashi, H Takamura
NARA WOMENS U - N Fujiwara, H Hayashii, N Iida,
Y Kayahara, K Muramatsu, S Noguchi, S Yamashita
OSAKA CITY U - Y Kato, A Maruyama, T Okusawa,
A Shimonaka, T Takahashi
TOKYO U OF AGRIC TECH - K Iwashiro, O Nitoh, S Onodera,
K Shimozawa, K Takahashi
TEZUKAYAMA U - F Ochiai
KOBE U - K Fujii, T Fujii, K Fujiwara

SUMMARIES OF KEK EXPERIMENTS

TOKYO INST TECH - Y Watanabe
 PURDUE U - B Howell, D Koltick
 KEK - M Doser, R Enomoto, H Fujii, K Fujii, H Ikeda, R Itoh,
 H Iwasaki, S Kawabata ($\checkmark$ Spokesperson), H Kichimi,
 M Kobayashi, A Miyamoto, R Sugahara, T Tauchi,
 T Tsukamoto, S Uno, M Yamauchi

Accelerator KEK-TRISTAN Detector TOPAZ

Reactions

$e^+ e^-$ < 70 GeV (Ecm)

Comments Searches for new particles such as heavy quarks, heavy leptons, and various supersymmetric particles, and studies in detail electroweak as well as QCD phenomena. The detector has large solid angle coverage with very good particle identification and 3-dimensional tracking capabilities.

Papers NIM 225 (1984) 23, NIM A236 (1985) 55, NIM A252 (1986) 423, NIM A256 (1987) 449, NIM A269 (1988) 507, NIM A269 (1988) 513, NIM A270 (1988) 11, PR D37 (1988) 1339, PRL 60 (1988) 97, PL B200 (1988) 391, PL B208 (1988) 319, and PL B218 (1989) 105.

KEK-TE-003 (1983) Approved Nov 1983.

AMY — A HIGH RESOLUTION LEPTON DETECTOR FOR TRISTAN

AMY COLLABORATION

ROCHESTER U - M Battle, D Blanis, A Bodek, H Budd, S Eno,
 A Fry, T Haelen, H Harada, M Ho, Y K Kim, T Kumita,
 T Mori, S L Olsen ($\checkmark$ Spokesperson), M Shaw, A Sill,
 E H Thorndike, K Ueno, H W Zheng
 LOUISIANA STATE U - A Bacala, W C Du, R Imlay, P Kirk,
 W Martere, R McNeil, W Metcalf, S S Myung, L J Ning
 OHIO STATE U - M Frautschi, H A Kagan, R D Kass, G Trahern
 VIRGINIA TECH - A Abashian, T Duty, K Gotow, K P Hu,
 E Low, M Mattson, J Muth, L Pillonen, K Sterner
 MINNESOTA U - D Perticone, R Poling, T Thomas
 UC, DAVIS - M Dickson, W Ko, F Kole, R Lander, K Maeshima,
 R Malchow, J Smith, K Sparks, D Stuart, C Williams
 SOUTH CAROLINA U - F Avignone, R Childers, C Darden,
 J Edwards, S Lusin, C Rosenfeld, A Wang, S Wilson
 RUTGERS U - A Aldrich, J Green, D Maiulio, I H Park,
 F Sannes, S Schnetzer, B Stone, J Vinson, G Watts,
 D Zimmerman

TOKYO INST TECH - H Yokota
 NIIGATA U - Y Ishi, K Miyano, H Miyata, H Takei
 SAITAMA U - T Ishizuka, K Ohta, S Sakata
 SAGA U, JAPAN - K Eguchi, H Ichinose, H Itoh, S Kobayashi,
 A Murakami, K Toyoshima
 KONAN U - F Kajimo
 NIHON DENTAL COLL - Y Yamashita
 KOREA U - J S Kang, H S Kim, M H Lee
 CHUNGKUN U, DEAJEON - H Y Lee
 KYUNGPOOK NATIONAL U - D H Han, E J Kim, G N Kim,
 D Son
 BEIJING, IHEP - P Gu, J Li, Y K Li, Z P Mao, Z Xu, Y Yang,
 Z P Zheng, Y T Zu
 SACLAY - P Perez
 CHUO U, TOKYO - T Kojima, H Kozuka, S Matsumoto,
 T Sasaki, T Takeda, R Tanaka, Y Yamagishi, T Yasuda
 KEK - A Abe, Y Fujii, S K Kim, Y Kurihara, A Maki
 ($\checkmark$ Spokesperson), T Nozaki, T Omori, H Sogawa, Y Sakai,
 Y Sugimoto, Y Takaiwa, S Terada

Accelerator KEK-TRISTAN Detector AMY

Reactions

$e^+ e^-$ < 70 GeV (Ecm)

Papers NIM A260 (1987) 361, NIM A265 (1988) 141, PRL 60 (1988) 93, PRL 60 (1988) 2359, PRL 61 (1988) 911, PL B218 (1989) 112, PL B218 (1989) 499, PRL 62 (1989) 1713, and PL B223 (1989) 476.

KEK-TE-004 (Nov 1984) Approved Apr 1985.

NIKKO-MARU EXPERIMENT, A SEARCH FOR HIGHLY IONIZING PARTICLES

SHIP COLLABORATION

HARVARD U - K Kinoshita (Spokesperson)
 TOKYO, INST FOR SPACE AND ASTRONAUTICAL SCIENCE
 - M Fujii
 UC, BERKELEY - P B Price
 GIFU U - S Tasaka
 KEK - K Nakajima

Accelerator KEK-TRISTAN Detector SHIP

Reactions

$e^+ e^-$ 50-52 GeV (Ecm)

Particles studied monopole

Papers PRL 60 (1988) 1610.

LAMPF Experiments

LAMPF-058-120 (Aug 1972) Started Sep 1980; Completed Jul 1982.

MEASUREMENT OF $\pi^-p \rightarrow \gamma n$, AND MEASUREMENT OF THE POLARIZATION ASYMMETRY AND THE DIFFERENTIAL CROSS SECTION OF πN CHARGE EXCHANGE FROM 180 TO 500 MeV

UCLA - P Glodis, R P Haddock, K C Leung, B M K Nefkens (Spokesperson)
CATHOLIC U - D I Sober (Spokesperson)
LOS ALAMOS - C F Hwang

Accelerator LAMPF Detector Counter

Reactions Polarized target

$\pi^- p \rightarrow \gamma n$ 247, 687 MeV/c

$\pi^- p \rightarrow \pi^0 n$ "

$\pi^- p \rightarrow \pi^- p$ "

$\pi^+ p \rightarrow \pi^+ p$ "

Comments Ran 1580 hours.

Papers NP A416 (1984) 193, NP A416 (1984) 217, and NP A416 (1984) 513.

LAMPF-190 Started Oct 1981, Completed 1984.

A PRECISION MEASUREMENT OF THE $\pi^- - \pi^0$ MASS DIFFERENCE

VIRGINIA U - J Comiso, R C Minehart, K O H Ziock (Spokesperson)

Accelerator LAMPF Detector Counter

Reactions

$\pi^- p \rightarrow \pi^0 n$ 25-50 MeV (T_{lab})

Particles studied π^-, π^0

Comments An attempt to measure the $\pi^- - \pi^0$ mass difference to an accuracy of 500 eV by measuring the neutron energy. Ran for 133 hours.

LAMPF-225 (Feb 1975) Started Sep 1983; Completed Dec 1985.

A STUDY OF NEUTRINO-ELECTRON SCATTERING

UC, IRVINE - R C Allen, H H Chen (Spokesperson), P J Doe, W P Lee, X Q Lu, M Potter
LOS ALAMOS - T J Bowles, R L Burman, R D Carlini, D R F Cochran, J S Frank, E Piasetzky, V D Sandberg
MARYLAND U - D A Krakauer, R L Talaga

Accelerator LAMPF Detector Counter

Reactions

$\nu_e e^- \rightarrow \nu_e e^-$ 20-53 MeV (T_{lab})

Comments A 15-ton detector system giving 120 elastic events in two years. Measures cross sections. Subsidiary results would be a test of multiplicative lepton-number conservation in μ^+ decay, a search for $\bar{\nu}_\mu \rightarrow \bar{\nu}_e$ oscillations, a measurement of the inverse beta cross section in ^{12}C , and a search for anomalous neutrino events.

Papers PRL 55 (1985) 2401.

LAMPF-336 (Jun 1977) Completed Jul 1982.

STUDY OF THE SPIN DEPENDENCE OF pp PION PRODUCTION REACTIONS

RICE U - S D Baker, J M Clement, I M Duck, G S Mutchler (✓ Spokesperson), G P Pepin, G C Phillips, E A Umlond
HOUSTON U - A D Hancock, E V Hungerford, B W Mayes, L S Pinsky (✓ Spokesperson), T M Williams
LOS ALAMOS - C F Hwang, M W McNaughton
BOSKOVIC INST, ZAGREB - M Furic

Accelerator LAMPF Detector Spectrometer

Reactions Polarized beam

$p p \rightarrow p \pi^+ n$ 500, 650, 800 MeV (T_{lab})

$p p \rightarrow p \pi^0 p$ "

Comments The first kinematically complete measurements using a polarized proton beam. Analyzing powers and cross sections were measured for 12 angle pairs.

Papers PR C27 (1983) 2742.

LAMPF-392 (May 1978) Started 1980; Completed 1983.

A MEASUREMENT OF THE TRIPLE-SCATTERING PARAMETERS $D, R, A, R',$ AND A' FOR pp AND pn SCATTERING AT 800 MeV

LOS ALAMOS - J F Amann, B E Bonner, J B McClelland
TEXAS U - M L Barlett, R W Ferguson, G W Hoffmann (Spokesperson), J A Marshall, J A McGill, E C Milner

Accelerator LAMPF Detector Counter

Reactions Polarized beam

$p n \rightarrow p n$ 500, 600 MeV (T_{lab})

$p p \rightarrow p p$ "

Comments Ran for 1227 hours.

Papers PR C30 (1984) 279.

LAMPF-400-445 (Jun 1979) Started Dec 1983; Completed 1985.

STUDY OF $\pi^0 \rightarrow 3\gamma$ AND $\pi^+ \rightarrow e^+ \gamma \nu$ DECAYS, AND SEARCH FOR LEPTON FLAVOR-VIOLATING DECAYS $\mu^+ \rightarrow e^+ e^+ e^-$, $\mu^+ \rightarrow e^+ 2\gamma$, AND $\mu^+ \rightarrow e^+ \gamma$

LOS ALAMOS - R D Bolton, J D Bowman, R Carlini, M D Cooper, M Duong-Van, J S Frank, A L Hallin, P Heusi, C M Hoffman (✓ Spokesperson), G E Hogan, F G Mariam, H S Mattis, R E Mischke, D E Nagle, L Pilonen, V D Sandberg, G H Sandner, U Sennhauser, R L Talaga, R Werbeck, R A Williams

STANFORD U - D Hofstadter, E B Hughes, M Ritter, S Wilson
CHICAGO U - D Grossnick, S C Wright
TEMPLE U - V Highland, J McDonough

Accelerator LAMPF Detector CRYSTAL-BOX

Reactions

$\pi^0 \rightarrow 3\gamma$ 0 MeV/c

$\pi^+ \rightarrow e^+ \gamma \nu_e$ "

$\mu^+ \rightarrow e^+ e^+ e^-$ "

$\mu^+ \rightarrow e^+ \gamma \gamma$ "

$\mu^+ \rightarrow e^+ \gamma$ "

Particles studied μ^+, π^0, π^+

Comments Measures branching ratios for the rare muon decays of order 10^{-11} , two orders better than before. Ran for 3655 hours.

Papers PRL 53 (1984) 1415, PRL 56 (1986) 2461, PRL 57 (1986) 1402, PRL 57 (1986) 3241, PR D36 (1987) 1543, PRL 59 (1987) 2716, NIM 264 (1988) 263, PR D38 (1988) 2077, and PR D38 (1988) 2121.

LAMPF-455 (Nov 1978) Started Jul 1981; Completed.

HIGH-PRECISION STUDY OF THE μ^+ DECAY SPECTRUM

LOS ALAMOS - H L Anderson (Spokesperson), J D Bowman (Spokesperson), C M Hoffman, H S Mattis, R J McKee, D E Nagle

CHICAGO U - W W Kinnison
NATIONAL RESEARCH COUNCIL, OTTAWA - C K Hargrove, H Mes
CARLETON U - A L Carter, D Kessler

Accelerator LAMPF Detector Spectrometer

Reactions Polarized beam

$\mu^+ \rightarrow e^+ \nu_e \bar{\nu}_\mu$ 0 MeV/c

SUMMARIES OF LOS ALAMOS EXPERIMENTS

Particles studied μ^+

Comments By measuring the asymmetry of the e^+ over the energy range, the decay parameters ρ , η , ξ , and δ are determined better than before. Tests $V-A$ theory accuracy.

LAMPF-508 (Jun 1979) Started Jun 1980. Completed 1983.

DIBARYON RESONANCES IN PION PRODUCTION

NORTHWESTERN U - S G Iversen, M O Kaletka, H Nann.

K K Seth (Spokesperson)

LOS ALAMOS - F H Cverna

Accelerator LAMPF **Detector** LAHRS

Reactions Polarized beam

$p p \rightarrow \text{deut } \pi^+$ 400-800 MeV (T_{lab})

Particles studied dibaryon

Comments Measures the polarization asymmetry to determine 1D_2 and 3F_3 partial waves to investigate possible dibaryon resonances.

LAMPF-518 (Jun 1979) Started May 1982; Completed 1983.

POLARIZED BEAM AND TARGET EXPERIMENTS IN THE pp SYSTEM: PHASE II. MEASUREMENTS OF A_{ZZ} AND A_{XZ} FOR THE $d\pi^+$ CHANNEL AND FOR THE ELASTIC CHANNEL FROM 500 TO 800 MeV

LOS ALAMOS - E P Chamberlin, J J Jarmer (Spokesperson).

J E Simmons (Spokesperson), R L York

TEXAS A AND M - T S Bhatia, G Glass, J C Hiebert.

L C Northcliffe (Spokesperson), W B Tippens

Accelerator LAMPF **Detector** Counter

Reactions Polarized beam and target

$p p \rightarrow \text{deut } \pi^+$ 500-800 MeV (T_{lab})

$p p \rightarrow p p$ "

Comments Ran for 1409 hours.

Papers PR C31 (1985) 288.

LAMPF-563 (Jun 1980) Started Jul 1981; Completed Nov 1982.

pp ELASTIC SCATTERING AT 800 AND 500 MeV

TEXAS U - M Barlett, R Ferguson, G W Hoffmann (Spokesperson), B Hoisted, J Marshall, J McGill, E C Milner, L Ray

LOS ALAMOS - J F Amann, B E Bonner, J B McClelland

SOUTH CAROLINA U - G S Blanpied

VIRGINIA TECH - R Arndt

Accelerator LAMPF **Detector** LAHRS

Reactions

$p p \rightarrow p p$ 500, 800 MeV (T_{lab})

Comments Measures the absolute elastic angular distribution and analyzing power to investigate disagreements between data and phase shift analyses and between sets of data. Measures for $8 < \theta_{\text{cm}} < 90^\circ$.

Papers PR C27 (1983) 682.

LAMPF-567 (Jun 1980) Completed 1982.

A STUDY OF THE $\pi^+d \rightarrow pp$ REACTION AT PION ENERGIES 5-200 MeV

SOUTH CAROLINA U - G S Blanpied, R D Edge, B M Freedman.

B G Ritchie (✓ Spokesperson)

VIRGINIA TECH - M Blecher, K Gotow (✓ Spokesperson), R Ng

VIRGINIA U - J Boswell, J F Davis, R C Minehart

(✓ Spokesperson)

MARYLAND U - N S Chant, P G Roos

LOS ALAMOS - R L Burman, M Hynes, M J Leitch

OAK RIDGE - F E Bertrand, E E Gross, F Obenshain

MIT - R P Redwine

Accelerator LAMPF **Detector** Counter

Reactions

$\pi^+ \text{deut} \rightarrow p p$ 65, 72.5, 80, 95, 110, 125, 140 MeV (T_{lab})

$\pi^+ p \rightarrow \pi^+ p$ "

Comments Differential cross section measured for c.m. angles 100 to 168°. Ran for 503 hours

Papers PR C27 (1983) 1685, and PL 125B (1983) 128.

LAMPF-581 Started Feb 1981; Completed Dec 1982.

$\pi^\pm$ ELASTIC SCATTERING FROM DEUTERIUM AT 256 MeV

COLORADO U - J J Kraushaar, D A Lind, T G Masterson (Spokesperson), R J Peterson, R S Raymond, R A Ristinen

LOS ALAMOS - R L Boudrie (Spokesperson)

CAL STATE, SACRAMENTO - E F Gibson

TRIUMF - D Gill

Accelerator LAMPF **Detector** EPICS

Reactions

$\pi^+ \text{deut} \rightarrow \pi^+ \text{deut}$ 256 MeV (T_{lab})

$\pi^- \text{deut} \rightarrow \pi^- \text{deut}$ "

Comments Tests charge symmetry to an accuracy of a few percent.

Papers PR C30 (1984) 2010.

LAMPF-583 (Jun 1980) Started Aug 1983; Completed 1987. MEASUREMENT OF C_{LL} IN THE COULOMB INTERFERENCE REGION

UCLA - B Aas, G J Igo, J B McClelland, G Pauletta

(Spokesperson), C A Whitten

ARGONNE - K Imai, H Spinka

MINNESOTA U - M M Gazzaly

LOS ALAMOS - J J Jarmer

Accelerator LAMPF **Detector** LAHRS

Reactions Polarized beam and target

$p p \rightarrow p p$ 650, 800 MeV (T_{lab})

Comments Measures C_{LL} in the coulomb interference region, $3-30^\circ$ c.m.

Papers PRL 58 (1987) 1084.

LAMPF-b89 (Jun 1980) Completed 1986.

FREE-FORWARD np ELASTIC-SCATTERING ANALYZING POWER MEASUREMENTS AT 800 MeV

TEXAS A AND M - T S Bhatia, G C Glass (Spokesperson),

J C Hiebert, R A Kenefick, L C Northcliffe (Spokesperson),

R W Tippens

LOS ALAMOS - B E Bonner, J E Simmons

TEXAS U - G W Hoffmann, C L Hollas, R D Ransome, P J Riley

Accelerator LAMPF **Detector** Counter

Reactions Polarized beam

$n p \rightarrow n p$ 800 MeV (T_{lab})

Comments Measures the forward-angle neutron analyzing power. Ran for 343 hours.

LAMPF-590 (Jun 1980) Completed 1985.

MEASUREMENT OF $D(\theta)$ IN pn AND np SCATTERING AT 800, 650 MeV AND OTHER ENERGIES WITH ASSOCIATED pp MEASUREMENTS

TEXAS A AND M - T S Bhatia, G C Glass, J C Hiebert,

R A Kenefick, L C Northcliffe (Spokesperson), W B Tippens

LOS ALAMOS - J J Jarmer, J E Simmons (Spokesperson)

Accelerator LAMPF **Detector** Counter

Reactions Polarized beam and target

$p n \rightarrow p n$ 600, 800 MeV (T_{lab})

$n p \rightarrow n p$ "

$p p \rightarrow p p$ "

SUMMARIES OF LOS ALAMOS EXPERIMENTS

Comments Measures the Wolfenstein depolarization parameter $D(\theta)$ over a large angular range for the np ($I = 0$) system using the two reactions for forward and backward angles. $D(\theta)$ for pp scattering is measured to calibrate the polarimeter and verify previous results. Ran for 330 hours.

LAMPF-605 (Jun 1980) Completed 1982.

A DIBARYON SEARCH AT EPICS

NORTHWESTERN U - D Barlow, M Bosco, S G Iversen,
M O Kaletka, A Saha, K K Seth (Spokesperson), D Smith

Accelerator LAMPF **Detector** EPICS

Reactions

π^+ deut $\rightarrow p p$ 200-300 MeV (T_{lab})

Particles studied dibaryon

Comments A search for dibaryons by the inverse of the usual reaction facilitates an examination of fine structure. Ran for 107 hours.

LAMPF-634 (Nov 1980) Started Feb 1981; Completed 1983.
MEASUREMENT OF PARITY VIOLATION IN THE pN TOTAL CROSS SECTIONS AT 800 MeV

LOS ALAMOS - J D Bowman, R Carlini (Spokesperson),
R E Mischke, D E Nagle, R L Talaga (Spokesperson)

ILLINOIS U, URBANA - H Frauenfelder, R Harper, V Yuan (Spokesperson)

Accelerator LAMPF **Detector** Counter

Reactions

p nucleon $\rightarrow p$ nucleon 800 MeV (T_{lab})

Comments Measures the difference in total cross sections for positive and negative helicities of polarized protons on an unpolarized target. The goal is 10^{-7} in the cross section asymmetry. Ran for 770 hours.

Papers PR D31 (1985) 1151.

LAMPF-635 (Nov 1980) Started Feb 1981; Completed Dec 1982.

SPIN MEASUREMENTS IN pd ELASTIC SCATTERING

LOS ALAMOS - B E Bonner ($\checkmark$ Spokesperson). O B van Dyck,
M W McNaughton, H Ohnuma, S Tsu-hsun

UCLA - B Aas, E Bleszynski, M Bleszynski ($\checkmark$ Spokesperson),

G J Igo ($\checkmark$ Spokesperson), G S Weston

TEXAS U - D J Cremans, C L Hollas, K H McNaughton,

P J Riley, R F Rodebaugh, Shen-Wu Xu

RICE U - S F Turpin

Accelerator LAMPF **Detector** JANUS

Reactions

p deut $\rightarrow p$ deut 496, 647, 800 MeV (T_{lab})

Comments An attempt to obtain double spin-flip parts of the $I = 0$ NN interaction by using Glauber theory on the pd results.

Papers PR C31 (1985) 515.

LAMPF-636 (Nov 1980) Completed Dec 1982.

A MEASUREMENT OF THE WOLFENSTEIN POLARIZATION PARAMETERS D_{LL} , D_{SL} , K_{LL} , AND K_{SL} FOR pp ELASTIC SCATTERING

TEXAS U - C L Hollas ($\checkmark$ Spokesperson), R D Ransome,

P J Riley

LOS ALAMOS - B E Bonner, W D Cornelius, O B van Dyck,

E W Hoffman, M W McNaughton, R L York

ARGONNE - K Imai, K Toshioka

Accelerator LAMPF **Detector** JANUS

Reactions

$p p \rightarrow p p$ 650-800 MeV (T_{lab})

Papers PR C25 (1982) 1967, and PR C30 (1984) 1251. No other papers expected.

LAMPF-637 (Nov 1980) Completed Dec 1982.

A MEASUREMENT OF THE VECTOR POLARIZATION OF THE DEUTERON IN THE REACTION $pp \rightarrow d\pi^+$

LOS ALAMOS - B E Bonner ($\checkmark$ Spokesperson), W D Cornelius,

O B van Dyck, E W Hoffman, M W McNaughton

RICE U & LOS ALAMOS - J B Roberts

TEXAS U - C L Hollas, R D Ransome, P J Riley

RICE U - S Turpin

TRIUMF - J A Niskanen

Accelerator LAMPF **Detector** JANUS

Reactions

$p p \rightarrow$ deut π^+ 800 MeV (T_{lab})

Comments Measures the vector polarization and the vector-polarization transfer for the d by measuring the d polarization with unpolarized and polarized proton beams. The d polarization is measured by dissociating it and measuring the polarization of the resultant proton.

LAMPF-645 (Nov 1980)

A SEARCH FOR NEUTRINO OSCILLATIONS AT LAMPF

OHIO STATE U - L S Durkin, R Harper, T Y Ling

($\checkmark$ Spokesperson), J Mitchell, T A Romanowski

($\checkmark$ Spokesperson), E Smith, M Timko

ARGONNE - S Freedman, J Napolitano

LOUISIANA STATE U - W C Choi, A Fazeley, R Imlay,

W J Metcalf

CAL TECH - B Fujikawa, R B McKeown

LOS ALAMOS - R D Carlini, J Donahue, G T Garvey,

V D Sandberg

LBL - K Lesko

Accelerator LAMPF **Detector** Combination

Reactions

$\nu_e \rightarrow \nu_e$ 0-53 MeV (T_{lab})
 $\bar{\nu}_\mu \rightarrow \bar{\nu}_e$ "
 $\nu_\mu \rightarrow \nu_\mu$ "
 $\bar{\nu}_e p \rightarrow e^+ n$ "

Comments A search for neutrino oscillations in the first three reactions. The fourth reaction is the signature for the second reaction.

Papers PRL 61 (1988) 1811.

LAMPF-651 (Apr 1981)

MEASUREMENT OF A LOWER LIMIT FOR THE SUBTHRESHOLD PRODUCTION OF KAONS WITH 800-MeV PROTONS

LOS ALAMOS - J F Amann, R L Boudrie, T A Carey,

N J DiGiacomo, J B McClelland, C L Morris (Spokesperson),

J M Moss, S J Seestrom-Morris

TEXAS U - B Hoistad

Accelerator LAMPF **Detector** EPICS

Reactions

$p \text{ } ^{12}\text{C} \rightarrow$ kaon X 800 MeV (T_{lab})

Comments To place limits on subthreshold K production. The experiment detects delayed μ 's from stopped K 's. The process will be used in future to study hypernuclear levels, etc.

LAMPF-664 (Jun 1981) Completed Dec 1982.

MEASUREMENT OF THE POLARIZATION TRANSFER COEFFICIENTS A_p^+ AND D_p^- AT 500, 650, AND 800 MeV FOR THE REACTION $d(p, n)2p$

TEXAS A AND M - T S Bhatia, G Glass ($\checkmark$ Spokesperson),

L C Northcliffe

ARGONNE - J S Chalmers, W R Ditzler, T Shima, H Shimizu,

H Spinka, R Stanek ($\checkmark$ Spokesperson), D Underwood,

R Wagner, A Yokosawa

LOS ALAMOS - J E Simmons

SUMMARIES OF LOS ALAMOS EXPERIMENTS

NEW MEXICO STATE U - G R Burleson, C Fontenla

Accelerator LAMPF Detector Spectrometer, Ionization chamber, Counter

Reactions Polarized beam

$p \text{ deut} \rightarrow n p p$ 500, 650, 800 MeV (T_{lab})

Comments To permit calculation of the neutron polarization produced in $d(p, n)2p$ with polarized protons for future polarized np scattering experiments. Ran for 426 hours.

Papers PL 153B (1985) 235.

LAMPF-665 (Jun 1981) Completed 1986.

THE MEASUREMENT OF THE INITIAL-STATE SPIN CORRELATION PARAMETERS C_{LL} AND C_{SL} IN np ELASTIC SCATTERING AT 500, 650, AND 800 MeV

NEW MEXICO STATE U - G R Burleson (✓ Spokesperson),

J A Faucett, C Fontenla, R Garnett, M W Rawool

ARGONNE - R Ditzler, D Hill, J Hoftiezer, K F Johnson,

D Lopiano, T Shima, H Shimizu, H Spinka, R Stanek,

D Underwood, R Wagner (✓ Spokesperson), A Yokosawa

LOS ALAMOS - R Damjanovich, J J Jarmer

TEXAS A AND M - T S Bhatia, G Glass, J C Hiebert,

R A Kenefick, S Nath, L C Northcliffe

MONTANA U - R Jeppesen

WASHINGTON STATE U - G Trippard

Accelerator LAMPF Detector Wide-angle spectrometer

Reactions Polarized beam and target

$n p \rightarrow n p$ 500, 650, 800 MeV (T_{lab})

Comments Ran for 2019 hours.

Papers PRL 59 (1987) 1645.

LAMPF-685 (Jun 1981) Started Jan 1983.

SPIN CORRELATIONS IN THE REACTION $d(p, p)d$ AT 500 MeV

UCLA - B Aas, A Azizi, E Bleszynski, M Bleszynski

(✓ Spokesperson), J Geaga, M Hajisaied, G J Igo

(✓ Spokesperson), F Irom, G Pauletta, A Rahbar, J Wagner,

A T M Wang, G Weston

MINNESOTA U - M M Gazzaly

Accelerator LAMPF Detector Counter

Reactions Polarized beam and target

$\text{deut } p \rightarrow p \text{ deut}$ 500 MeV (T_{lab})

Comments Has run for 886 hours and is approved for 360 more.

LAMPF-708 (Nov 1981) Approved Jan 1982; Completed Sep 1984.

A MEASUREMENT OF THE DEPOLARIZATION, THE POLARIZATION, AND THE POLARIZATION ROTATION PARAMETERS AND THE ANALYZING POWER FOR THE REACTION $pp \rightarrow p\pi^+n$

TEXAS U - M Buchman, C L Hollas (✓ Spokesperson),

K H McNaughton, P J Riley, S Xu

LOS ALAMOS - B E Bonner, O van Dyck, E W Hoffman,

M W McNaughton, J C Peng, R R Silber

MASSACHUSETTS U - J Dubach

RUTGERS U - W M Kloet, J A McGill

Accelerator LAMPF Detector Combination

Reactions Polarized beam

$p p \rightarrow p \pi^+ n$ 650, 733, 800 MeV (T_{lab})

Comments Ran for 1727 hours.

Papers PRL 55 (1985) 29, and PL B197 (1987) 23.

LAMPF-709 (Nov 1981, Jun 1987) Started Aug 1983; Completed.

MEASUREMENTS OF A_{NN} , A_{SS} , AND A_{SL} IN THE COULOMB INTERFERENCE REGION AT 650 AND 800 MeV

MINNESOTA U - M Gazzaly (✓ Spokesperson)

UCLA - B Aas, G J Igo, G Pauletta (✓ Spokesperson),

C A Whitten

ARGONNE - K Imai, H Spinka

LOS ALAMOS - J Amann, O van Dyck, J J Jarmer, J B Mc-

Clelland, N Tanaka (✓ Spokesperson)

Accelerator LAMPF Detector LAHRS

Reactions Polarized beam and target

$p p \rightarrow p p$ 650, 800 MeV (T_{lab})

Comments Measures in the coulomb interference region, 3-30° c.m.

Papers PRL 58 (1987) 1084, and PL B211 (1988) 19.

LAMPF-726 (Nov 1981) Completed Sep 1985.

SEARCH FOR THE C-NONINVARIANT DECAY $\pi^0 \rightarrow 3\gamma$

TEMPLE U - L B Auerbach, V L Highland (✓ Spokesperson),

W K McFarlane

LOS ALAMOS - L S Bayliss, R D Bolton, J D Bowman, R D Car-

lini, M D Cooper, J S Frank, T A Gordon, C M Hoffman,

G Hogan (✓ Spokesperson), W W Kinnison, R J Macek,

H S Matis, R E Mischke, D E Nagle, V D Sandberg,

G H Sanders, R D Werbeck, R A Williams

Accelerator LAMPF Detector CRYST-BOX

Reactions

$\pi^0 \rightarrow \gamma \gamma \gamma$ 0 MeV/c

Particles studied π^0

Comments To detect the C-noninvariant process at a branching ratio of 10^{-9} , two orders of magnitude better than before. Ran for 570 hours.

Papers PR D38 (1988) 2121. No other papers expected.

LAMPF-764 (Nov 1982) Approved Jan 1983; Started Aug 1984; Completed Jul 1986.

SEARCH FOR NEUTRINO OSCILLATIONS AND MEASUREMENTS OF NUCLEAR CROSS SECTIONS USING A LIQUID SCINTILLATOR DETECTOR IN A ν_μ BEAM AT LAMPF

LOS ALAMOS - T J Bowles, R L Burman, D Clark,

S Clearwater, D R F Cochran, T W Dombeck (Spokesperson),

H Kruse (Spokesperson), D Lee, V D Sandberg

NEW MEXICO U - B Bassalleck, B D Dieterle, J Kang,

K Leavitt

UCLA - B Aas, G Igo

UC, RIVERSIDE - G Van Dalen, S Y Fung, B Gorn

TEMPLE U - L B Auerbach, S Datta, V L Highland, D Huang

VALPARAISO U - R Fisk, D Koetke, R Manweiler

Accelerator LAMPF Detector Counter

Reactions

$\nu_\mu \rightarrow \nu_e$ 0-300 MeV/c

$\nu_\mu^{12}\text{C} \rightarrow \mu^- \text{X}$ "

$\nu_\mu \text{Al} \rightarrow \mu^- \text{X}$ "

$\nu_\mu^{12}\text{C} \rightarrow \mu^-^{12}\text{Nit}$ "

Particles studied ν_μ

Comments Neutrino oscillations are first looked for in the appearance mode ($\nu_\mu \rightarrow \nu_e$) and later in the disappearance mode. Expected sensitivity for 80 running days is $\delta m^2 < 0.1 \text{ eV}^2$ and $\sin^2(2\theta) < 0.001$. The neutrino source is decay of $< 400 \text{ MeV/c } \pi^+$.

Papers PL B194 (1987) 591.

LAMPF-767 (Oct 1982) Approved Jan 1983; Completed 1986.

$\pi^\pm d$ ELASTIC SCATTERING AT THREE ENERGIES BETWEEN 80 AND 80 MeV

VIRGINIA TECH - M Blecher, K Gatoow (Spokesperson)

SUMMARIES OF LOS ALAMOS EXPERIMENTS

OAK RIDGE - F E Bertrand, E E Gross, F E Obenshain,
T P Sjoreen
SOUTH CAROLINA U - G S Blaupied, B M Freedom,
B G Ritchie, C S Whisman (Spokesperson)
LOS ALAMOS - R L Burman, M V Hynes, E Piasetzky
MARYLAND U - N S Chant, P G Roos

Accelerator LAMPF Detector Spectrometer

Reactions

π^+ deut $\rightarrow \pi^+$ deut 30-80 MeV (T_{lab})
 π^- deut $\rightarrow \pi^-$ deut "

Comments Angular dependence at $< 40^\circ$ and $> 120^\circ$ covers the coulomb interference region. The aim is a critical comparison of experimental results with 3-body calculations of the πd system. Ran for 217 hours.

LAMPF-770 (Nov 1982) Approved Jan 1983; Completed Dec 1985.

THE MEASUREMENT OF np ELASTIC-SCATTERING SPIN-CORRELATION PARAMETERS WITH L- AND S-TYPE POLARIZED BEAM AND TARGET BETWEEN 500 AND 800 MeV

ARGONNE - W R Ditzler, D Hill, K Johnson, D Lopiano,
T Shima, H Shimizu, H Spinka ($\checkmark$ Spokesperson), R Stanek,
D Underwood, R Wagner, A Yokosawa
NEW MEXICO STATE U - M Beddo, G R Burleson
($\checkmark$ Spokesperson), J Faucett, R Garnett, G Kyle, M Rawool
LOS ALAMOS - J J Janner
TEXAS A AND M - T S Bhatia, G C Glass, J C Hiebert,
L C Northcliffe
MONTANA U - R H Jeppesen
WASHINGTON STATE U - G Trippard

Accelerator LAMPF Detector Wide-angle spectrometer

Reactions Polarized beam and target
 $n p \rightarrow n p$ 500-800 MeV (T_{lab})

Comments Measures the initial-spin correlation parameters C_{SS} , C_{LS} , and C_{LL} from 35 to 172° c.m. Complementary to LAMPF-665. Ran for 3691 hours.

Papers NIM A270 (1988) 361.

LAMPF-783 (Nov 1982) Approved Jan 1983; Completed Oct 1983.

PION-INDUCED PION PRODUCTION ON DEUTERONS

LOS ALAMOS - R L Burman, P A M Gram (Spokesperson),
E Piasetzky (Spokesperson), H J Ziolk
WYOMING U - G A Rebka, Jr (Spokesperson), D Robertta
TEL AVIV U - J Alster, D Ashery, J Lichtenstadt (Spokesperson),
M A Moinester
COLORADO COLL - C Bordner
NEW MEXICO U - D A Clark
MIT - S Hoibraten, E R Kinney, J L Matthews, S A Wood

Accelerator LAMPF Detector Spectrometer
Reactions

π^+ deut $\rightarrow \pi^+$ X 256, 358, 450 MeV (T_{lab})
 π^+ deut $\rightarrow \pi^-$ X "

Comments Measures the double differential cross sections to about 5%. Among anticipated results is evidence concerning $\Delta\Delta$ or quasi-bound $n\pi\pi^-$ states. Ran for 622 hours.

Papers PRL 53 (1984) 540.

LAMPF-790 (Nov 1982) Approved Jan 1983.

$I = 1$ NN ELASTIC CROSS SECTIONS AND FIRST MEASUREMENTS OF T_{20} FOR THE $pp \rightarrow d\pi^+$ REACTION AT 800 AND 650 MeV

UCLA - B Aas, G J Igo, K Jones, G Pauletta ($\checkmark$ Spokesperson),
F Sperisen, C A Whitten, Jr
MINNESOTA U - M M Gazzaly ($\checkmark$ Spokesperson), N M Hintz
LOS ALAMOS - J F Amann, B E Bonner, J J Jarmer,
J B McClelland, N Tanaka ($\checkmark$ Spokesperson)

TEXAS A AND M - G C Glass
NEW MEXICO STATE U - S J Greene
TEXAS U - B Hostad
ARGONNE - H Spinka

Accelerator LAMPF Detector LAHRS

Reactions Polarized beam and target
 $p p \rightarrow \text{deut } \pi^+$ 650, 800 MeV (T_{lab})

Comments Measures A_{LL} , A_{SL} , A_{SS} , and A_{NN} at forward and backward angles, and A_{SS} at 13° lab. The tensor polarization T_{20} of the deuteron will be deduced. Uses same polarized target as LAMPF-583 and -700. Approved for 80 hours. None has been run yet (as of April 89).

LAMPF-792 (Nov 1982) Approved Jan 1983; Started Aug 1983; Completed Jul 1984.

MEASUREMENT OF PARITY VIOLATION IN THE pp AND pN TOTAL CROSS SECTIONS AT 800 MeV

ILLINOIS U, URBANA - H Frauenfelder, R W Harper, Y Yuan
(Spokesperson)
LOS ALAMOS - J D Bowman, R D Carlini, D MacArthur,
R E Mischke, D E Nagle
MARYLAND U - R L Talaga
PRINCETON U - A B McDonald

Accelerator LAMPF Detector Counter

Reactions Polarized beam
 $p p \rightarrow X$ 800 MeV (T_{lab})
 $p n \rightarrow X$ "

Comments Uses LH_2 and LD_2 targets. A continuation of LAMPF-634. Parity violation in the scattering of polarized protons by an unpolarized target is used to study the weak contribution to the $\Delta S = 0$ hadronic interaction. The experiment is sensitive to a parity-violating signal at about the 10^{-7} level. Ran for 864 hours.

LAMPF-795 (Nov 1983) Approved Jan 1983.

A PRECISION TEST OF CHARGE INDEPENDENCE

NORTHWESTERN U - M Artuso, D Barlow, L Casey, C Magno,
A Saha, K K Seth (Spokesperson)

Accelerator LAMPF Detector LAHRS

Reactions Polarized beam
 $p \text{ deut} \rightarrow \text{trit } \pi^+$ 800 MeV (T_{lab})
 $p \text{ deut} \rightarrow {}^3\text{He } \pi^0$ "

Comments Measures the difference in analyzing powers $A_{Y0}(\theta)$ for the two reactions to a precision of ≤ 0.002 or 0.4%. Probes a possible charge-dependent np spin-orbit force. Approved for 200 hours.

LAMPF-804 (Nov 1982) Approved Jan 1983; Started Dec 1983; Completed Aug 1984.

MEASUREMENT OF THE ASYMMETRY PARAMETER IN $\pi^- p \rightarrow \gamma n$ USING A TRANSVERSE POLARIZED TARGET

UCLA - A Eichon, G Kim, A Mokhtari, B M K Nefkens
(Spokesperson), J A Wightman
GEORGE WASHINGTON U - W J Briscoe
ABILENE CHRISTIAN U - M E Sadler
CATHOLIC U - D I Sober
LOS ALAMOS - D H Fitzgerald

Accelerator LAMPF Detector Combination

Reactions Polarized target
 $\pi^- p \rightarrow \gamma n$ 247-687 MeV/c
 $\pi^- p \rightarrow \pi^0 n$ "

Particles studied $\Delta(1232 P_{33})^0$, $N^*(\text{unspec})^0$

Comments Adds new information on photoproduction amplitudes. Also tests time-reversal invariance comparing P with A_N . Ran for 808 hours.

Papers PRL 56 (1986) 1779

SUMMARIES OF LOS ALAMOS EXPERIMENTS

LAMPF-806 (Nov 1982) Approved Jan 1983. Completed 1986 MEASUREMENT OF SPIN-ROTATION PARAMETERS A AND R IN $\pi^+ p \rightarrow \pi^+ p$ AND $\pi^- p \rightarrow \pi^- p$

UCLA - D B Barlow, R S Kessler, G Kim, B M K Nefkens
(Spokesperson), C Pillai, J W Price, J A Wightman
GEORGE WASHINGTON U - S D Adrian, W J Briscoe
(Spokesperson), L H Kramer, A Mokhtari, A M Petrov,
C J Seftor, M F Taragin
ABILENE CHRISTIAN U - S Hall, D W Lane, S R Lee,
L K Morton, M E Sadler (Spokesperson)
LOS ALAMOS - J F Davis
BOSKOVIC INST, ZAGREB - I Supek

Accelerator LAMPF Detector Wide-angle spectrometer

Reactions Polarized target

$\pi^+ p \rightarrow \pi^+ p$ 471-625 MeV/c

$\pi^- p \rightarrow \pi^- p$ "

Comments Completes a set of five πN experiments at identical energies designed to provide a complete set of scattering amplitudes. Ran for 1604 hours.

Papers PRL 62 (1989) 1009.

LAMPF-808 (Jan 1983) Approved Jan 1983. Started Nov 1983. Completed Mar 1986.

0° EXCITATION FUNCTION FOR $\pi^- p \rightarrow \pi^0 n$

LOS ALAMOS - H W Baer, J D Bowman, M D Cooper
(✓ Spokesperson), D H Fitzgerald (✓ Spokesperson), F Irons,
N S P King, M J Leitch, E Piasetzky
GEORGE WASHINGTON U - W J Briscoe
ABILENE CHRISTIAN U - M E Sadler, K J Smith
ARIZONA STATE U - J N Knudson

Accelerator LAMPF Detector Photon spectrometer

Reactions

$\pi^- p \rightarrow \pi^0 n$ 100-150 MeV/c

Comments Established the depth of the πN destructive interference minimum between the S and P waves. Ran for 21 hours.

Papers PR C34 (1986) 619. No other papers expected

LAMPF-815 (Nov 1983) Started Jun 1984. Completed Jul 1985.

MEASUREMENT OF A_{NO} , A_{SL} , AND A_{LL} IN $\bar{p}p \rightarrow p\pi^+\pi^-$ AT 500, 580, 650, 720, AND 800 MeV

QUEEN MARY COLL - D V Bugg (✓ Spokesperson), R Shypit
SURREY U - A S Clough
BEDFORD COLL - N M Stewart
TEXAS U - C Hollas, K H McNaughton, P J Riley
LOS ALAMOS - M W McNaughton, R Silbar

Accelerator LAMPF Detector Ionization chamber, Counter

Reactions Polarized beam and target

$p p \rightarrow p \pi^+ \pi^-$ 492, 576, 643, 729, 796 MeV (T_{lab})

Particles studied dibaryon

Comments Measures A_{NO} , A_{SL} , A_{LL} , A_{NL} , A_{SO} , A_{LO} , and A_{OL} . The analysis gives strong evidence against the 1D_2 , 3F_3 , and 3P_2 dibaryons. Ran for 1497 hours.

Papers PRL 60 (1988) 901, PRL 61 (1988) 2385, and PR C (submitted).

LAMPF-818 (Nov 1983) Approved Jan 1984. Started Dec 1986. Completed Sep 1987

pd ELASTIC SCATTERING AT 800 MeV: TWO- AND THREE-SPIN OBSERVABLES

UCLA - D Adams, E Gueñez, G J Igo (✓ Spokesperson), A Ling,
M Moshe
MINNESOTA U - M M Gazzaly
LOS ALAMOS - M McNaughton

TEXAS U - K H McNaughton, P Riley

Accelerator LAMPF Detector JANUS

Reactions Polarized beam and target

$p \text{ deut} \rightarrow p \text{ deut}$ 800 MeV (T_{lab})

Comments Extends results of LAMPF-685 to larger momentum transfers

LAMPF-825 (Nov 1983) Approved Jan 1984. Started Aug 1984. Completed Sep 1984

INVESTIGATION OF THE $N\Delta$ INTERACTION VIA $\pi^- d \rightarrow \pi^+ n$

RICE U - S D Baker, J A Buchanan, J M Clement,
M D Corcoran, I M Duck, J W Kruk, G S Mutchler
(✓ Spokesperson), P V Pancelli, G C Phillips
HOUSTON U - B W Mayes, L S Pinsky
BONN U - W V Witsch

Accelerator LAMPF Detector Spectrometer

Reactions

$\pi^+ \text{ deut} \rightarrow p \pi^+ n$ 275-600 MeV/c

Particles studied dibaryon, $\Delta(1232 P_{33})^{++}$

Comments A kinematically complete experiment. The Δ^{++} production excitation is measured for $\theta_{cm} = 35$ and 90° and the angular distribution for 30 to 150° at 350 and 425 MeV/c. A search for the 1D_2 , 3F_3 , and 1G_4 dibaryons. Ran for 416 hours.

Papers PR C38 (1988) 2716. No other papers expected

LAMPF-828 (Nov 1983) Approved Jan 1985

TOTAL AND DIFFERENTIAL CROSS SECTIONS FOR $\pi^+ d \rightarrow pp$ BELOW 20 MeV

VIRGINIA TECH - M Blecher, B I Fick, K Gotow
(✓ Spokesperson), D Wright
VIRGINIA U - G Das, R C Minehart (✓ Spokesperson)
MARYLAND U - N S Chant, B G Ritchie (✓ Spokesperson),
P G Roos
SOUTH CAROLINA U - G S Adams, G S Blanpied, B M Priedom, C S Whisnant

Accelerator LAMPF Detector Counter

Reactions

$\pi^+ \text{ deut} \rightarrow p p$ 5, 10, 15 MeV (T_{lab})

Comments The aim is to determine the S-wave π absorption amplitude. The expected errors for the total cross section are about 4%. Ran for 258 hours.

LAMPF-849 (Nov 1983) Approved Jan 1984

A MEASUREMENT OF THE DIFFERENTIAL CROSS SECTION FOR $\pi^- p \rightarrow \pi^0 n$ AT 0 AND 180° IN THE MOMENTUM REGION 471-687 MeV/c

LOS ALAMOS - H W Baer, J D Bowman, M D Cooper,
D H Fitzgerald (Spokesperson), N S P King, J C Peng,
E Piasetzky, N Stein
GEORGE WASHINGTON U - W J Briscoe (Spokesperson),
M F Taragin

ABILENE CHRISTIAN U - M E Sadler (Spokesperson)

CATHOLIC U - D I Soler

TEL AVIV U - M A Moinester

Accelerator LAMPF Detector Spectrometer

Reactions

$\pi^- p \rightarrow \pi^0 n$ 471-687 MeV/c

$\pi^- p \rightarrow \pi^- p$ "

$\pi^+ p \rightarrow \pi^+ p$ "

Comments The charge-exchange reaction is measured from 0 to 40° and 150 - 180° , the elastic scattering reactions at 180° .

LAMPF-853 (Nov 1983) Approved Jan 1984. Completed 1986

MEASUREMENT OF WOLFENSTEIN PARAMETERS AT 650 AND $da/d\Omega$ AT 500, 650, AND 800 MeV FOR $pd \rightarrow pd$ ELASTIC SCATTERING

SUMMARIES OF LOS ALAMOS EXPERIMENTS

UCLA - B Aas, D Adams, A Azizi, E Bleszynski, M Bleszynski,
G J Igo (✓ Spokesperson), D Lopiano, F Sperisen, A T M Wang,
C A Whitten

Accelerator LAMPF Detector LAHRS

Reactions Polarized beam:

$p \text{ deut} \rightarrow p \text{ deut}$ 500, 650, 800 MeV (T_{lab})

Comments The angular range is $3-36^\circ$ in the lab. Measures the differential cross section and D_{SS} , D_{SL} , D_{LL} , and A_Y . Ran for 404 hours

LAMPF-869 (Nov 1983) Approved Jan 1984: Completed 1988. HIGHER PRECISION MEASUREMENT OF THE LAMB SHIFT IN MUONIUM

YALE U - A Badertscher (Spokesperson), S Dhawan, V W Hughes

(Spokesperson), D C Lu, M Ritter, K Woodlee

HEIDELBERG U. PHYS INST - M W Gladiach (Spokesperson),

H Orth, G zu Putlitz

WILLIAM AND MARY COLL - M Eckhause, J Kato

MISSISSIPPI U - J Reidy

LOS ALAMOS - F G Mariam

Accelerator LAMPF Detector ?

Reactions

$\mu^+ e^- \rightarrow \text{muonium}$ 5 MeV/c

Comments An extension of LAMPF-724. Measures the Lamb shift to 0.1% and the hfs interval in the $2^2P_{1/2}$ state. Ran for 2046 hours

Papers PRL 52 (1984) 914

LAMPF-876 (May 1984) Approved Aug 1984. SPIN TRANSFER MEASUREMENTS FOR np ELASTIC SCATTERING

LOS ALAMOS - O van Dyck, D Lee, J McGill, M W McNaughton

(✓ Spokesperson), R York

TEXAS U - K H McNaughton, P Riley

UCLA - G Igo, C Newsome

RUTGERS U - R D Ransome

Accelerator LAMPF Detector Spectrometer, JANUS

Reactions Polarized beam

$n p \rightarrow n p$ 647, 800 MeV (T_{lab})

Comments Measure the spin-transfer parameters K_{NN} , K_{SS} , K_{LL} , and K_{LS} from 50 to 180° c.m. Requires an intense polarized source not yet available. Expected to run in 1990.

LAMPF-885 (Jul 1984) Approved Aug 1984: Started Apr 1985: Completed Jul 1985

MEASUREMENT OF K_{SS} FOR THE $\bar{p}p \rightarrow d\pi^-$ REACTION AT 650 AND 800 MeV

TEXAS U - M Barlett, G W Hoffmann, G Pauletta

(✓ Spokesperson),

MINNESOTA U - M Gazzaly (✓ Spokesperson)

LOS ALAMOS - B E Bonner, J McClelland, N Tanaka

(✓ Spokesperson)

UCLA - B Aas, G Igo, Y Ohashi, F Sperisen

UPPSALA U - B Hoinstad

UDINE U - L Santi, E Waldner

Accelerator LAMPF Detector LAHRS

Reactions Polarized beam

$p \text{ deut} \rightarrow \pi^-$ 650, 800 MeV (T_{lab})

Comments Measures K_{SS} over a wide angular range. Ran for 157 hours.

Papers PR C37 (1988) 2071. No other papers expected.

LAMPF-888 (Jun 1984) Approved Aug 1984: Started Apr 1985: Completed Dec 1985

STUDY OF THE DECAYS $\pi^+ \rightarrow e^+ \nu_e \gamma$ AND $\pi^+ \rightarrow e^+ e^- e^+ \nu_e$

LOS ALAMOS - R Bolton, J D Bowman, M D Cooper,

J Frank, A Hallin (Spokesperson), P Heusi, C M Hoffman,

G Hogan, F Mariam, R E Mischke, D E Nagle, V D Sandberg,

G H Sanders, R Werbeck, R A Williams

STANFORD U - R Hofstadter, E B Hughes, M Ritter, S L Wilson

CHICAGO U - D Grosnick, S C Wright

TEMPLE U - V Highland, J McDonough

Accelerator LAMPF Detector CRY-BOX

Reactions

$\pi^+ \rightarrow e^+ \nu_e \gamma$ 140 MeV/c

$\pi^+ \rightarrow e^+ e^- e^+ e^- \nu_e$ "

Particles studied π^+

Comments Measures the ratio of the axial-vector to vector form factors in $\pi^+ \rightarrow e^+ \nu_e \gamma$. Ran for 494 hours.

Papers PRL 57 (1986) 1402. No other papers expected.

LAMPF-898 (Jul 1984) Approved Aug 1984: Started Apr 1985: Completed 1986.

PION ELASTIC SCATTERING FROM ^4He — A TEST OF CHARGE SYMMETRY

LOS ALAMOS - C L Morris (Spokesperson)

MINNESOTA U - C L Billie, D Dehnard, S K Nanda,

S J Seestrom-Morris

TEXAS U - M Bryan, C F Moore

Accelerator LAMPF Detector EPICS

Reactions

$\pi^+ \text{He} \rightarrow \pi^+ \text{He}$ 140, 260 MeV (T_{lab})

$\pi^- \text{He} \rightarrow \pi^- \text{He}$ "

Comments Tests charge symmetry by estimating the mass splitting between charge states of the $\Delta(1232)$. Ran for 125 hours.

LAMPF-905 (Jul 1984) Approved Aug 1984: Started Apr 1985: Completed Jul 1985.

ELASTIC AND INELASTIC SCATTERING OF π^+ AND π^- ON ^3H AND ^3He TO TEST CHARGE SYMMETRY, COMPARE FORM FACTORS, AND INVESTIGATE THE REACTION MECHANISM

UCLA - S Adrian, A D Eichen, J M Engelage, G J Kim,

A A Mokhtari, B M K Nefkens (Spokesperson), J A Wightman,

H J Ziock

GEORGE WASHINGTON U - W J Briacoe, C J Sefor,

M Taragin

ABILENE CHRISTIAN U - M E Sadler

LOS ALAMOS - R Boudrie, C L Morris

Accelerator LAMPF Detector EPICS

Reactions

$\pi^+ ^3\text{He} \rightarrow \pi^+ ^3\text{He}$ 141-296 MeV (T_{lab})

$\pi^+ \text{trit} \rightarrow \pi^+ \text{trit}$ "

$\pi^- ^3\text{He} \rightarrow \pi^- ^3\text{He}$ "

$\pi^- \text{trit} \rightarrow \pi^- \text{trit}$ "

Comments Tests charge symmetry by measuring $R = [d\sigma(\pi^+ ^3\text{H}) \times d\sigma(\pi^- ^3\text{H})] / [d\sigma(\pi^+ ^3\text{He}) \times d\sigma(\pi^- ^3\text{He})]$. Ran for 329 hours.

LAMPF-951 (Nov 1984) Approved Feb 1985.

A SYSTEMATIC SEARCH FOR NARROW DIBARYONS IN THE $\bar{p}d \rightarrow pX$ REACTION

NORTHWESTERN U - M Artuso (Spokesperson), G Garino,

B Parker, K K Seth (Spokesperson), M Sethi, R Soundra

Accelerator LAMPF Detector LAHRS

Reactions Polarized beam

$p \text{ deut} \rightarrow p X$ 800 MeV (T_{lab})

Particles studied dibaryon

Comments Measures $\sigma(\theta)$ and $A_Y(\theta)$ as a function of missing mass to search for dibaryons.

SUMMARIES OF LOS ALAMOS EXPERIMENTS

LAMPF-960 (Jul 1985) Approved Aug 1985.

MEASUREMENT OF $\Delta\sigma_L$ AND $\Delta\sigma_T$ IN FREE np SCATTERING BETWEEN 300 AND 800 MeV

ARGONNE - D Hill, K F Johnson (Spokesperson), I Ohashi,
T Shima, H Spinka, R Stanek, D Underwood, A Yokosawa
LOS ALAMOS - J J Jarmer
NEW MEXICO STATE U - M Beddo, G R Burleson
(Spokesperson), J Faucett, G Kyke, M Rawool
TEXAS A AND M - T S Bhatia, G Glass, J C Hiebert,
R A Kenefick, L C Northcliffe (Spokesperson)
MONTANA U - R Jeppesen
WASHINGTON STATE U - G E Tripard

Accelerator LAMPF Detector Counter

Reactions Polarized beam and target
 $n p \rightarrow n p$ 300-800 MeV (T_{lab})

Comments Measures at seven energies. A new beam buncher allows time-of-flight neutron energy measurements. Has run for 2217 hours as of October 88, and is approved for another 1000 hours.

LAMPF-961 (Jul 1985) Approved Aug 1985; Completed Oct 1986.

MEASUREMENT OF THE SPIN-CORRELATION PARAMETER $A_{NN}(\theta)$ FOR np ELASTIC SCATTERING AT 800 MeV

TEXAS A AND M - G Glass, J C Hiebert, J A Holt,
R A Kenefick, S Nath, L C Northcliffe (Spokesperson)
LOS ALAMOS - T S Bhatia, J J Jarmer
NEW MEXICO STATE U - J A Faucett, G Kyle
MONTANA U - R H Jeppesen
WASHINGTON STATE U - G E Tripard
ARGONNE - D P Grosnick, D Lopiano, I Ohashi, T Shima,
H Spinka, R Stanek
TEXAS U - P J Riley, S Sen

Accelerator LAMPF Detector Ionization chamber

Reactions Polarized beam and target
 $n p \rightarrow n p$ 790 MeV (T_{lab})

Comments Measures A_{NN} from 48 to 149°. Ran for 986 hours.

Papers PR D39 (1989) 3520.

LAMPF-969 (Jul 1985) Approved Aug 1985.

MEGA — SEARCH FOR THE RARE DECAY $\mu^+ \rightarrow e^+ \gamma$

UCLA - D Barlow, B M K Nefkens, C Pillai
CHICAGO U - S C Wright
FERMILAB - P S Cooper
HOUSTON U - E V Hungerford, K Lan, B W Mayes, R Phelps,
L Pinsky, W von Witch
LOS ALAMOS - J F Amann, K Black, R D Bolton, S Carius,
M D Cooper (✓ Spokesperson), W Foreman, C M Hoffman,
G E Hogan, T Kozlowski, R E Mischke, F J Naivar,
M A Outhoudt, J Szymanski, R D Werbeck, D Whitehouse,
C Wilkinson
PRINCETON U - A Hallin
STANFORD U - E B Hughes, C Jui, J Otis, M W Ritter
TEXAS A AND M - L Van Ausdell, C Gagliardi, G Kim, F Liu,
R E Tribble
VALPARAISO U - R Fisk, D Koetke, R Manweiler
VIRGINIA U - R Marshall, B Tippens, K O H Ziolk
VIRGINIA TECH - L Pilonen
WYOMING U - A R Kunselman
YALE U - J Markey

Accelerator LAMPF Detector MEGA

Reactions Polarized beam:
 $\mu^+ \rightarrow e^+ \gamma$ 0 MeV c
 $\mu^+ \rightarrow e^+ \gamma \gamma$ "
 $\mu^+ \rightarrow e^+ \gamma \nu \nu$ "

Particles studied μ^+

Comments Also searches for a $V+A$ contribution to radiative decay. Approved for 4000 hours. Looks for $\mu^+ \rightarrow e^+ \gamma$ at a level of 2×10^{-13} , a factor of 250 better than the crystal box. Scheduled to begin taking data in 1990.

LAMPF-973 (Jul 1985) Approved Aug 1985; Started Oct 1985; Completed Dec 1985.

SEARCH FOR NARROW RESONANCES IN THE $B = 2$ MISSING-MASS SPECTRUM FROM p He REACTIONS AND IN THE EXCITATION FUNCTIONS OF THE $pp\pi$ PRODUCTION

TEXAS U - M Barlett, D Ciskowski, G Hoffmann, G Pauletta
(✓ Spokesperson), M Purcell
UDINE U - R Garfagnini, L Santi
MINNESOTA U - M Gazzaly (✓ Spokesperson), S Seestrom-Morris
LOS ALAMOS - K Jones, C Morris, N Tanaka (✓ Spokesperson)
VIRGINIA U - L C Smith, R Whitney

Accelerator LAMPF Detector LAHRS

Reactions Polarized beam
 $p {}^3\text{He} \rightarrow \text{deut } X$ 370, 630, 730, 800 MeV (T_{lab})
 $p \text{ He} \rightarrow \text{trit } X$ "
 $p \text{ He} \rightarrow {}^3\text{He } X$ "

Particles studied dibaryon

Comments Ran for 72 hours. Another run is being requested.

Papers PR C38 (1988) 2466.

LAMPF-979 (Nov 1985) Approved Aug 1985; Completed Sep 1985.

A SEARCH FOR $T = 2$ DIBARYON PRODUCTION IN THE $d(\pi^+, \pi^-)X$ REACTION

RUTGERS U - C Glashauser
LOS ALAMOS - K W Jones, J A McGill (Spokesperson),
C L Morris (Spokesperson)
TEXAS U - G W Hoffmann, C F Moore, G Pauletta
MINNESOTA U - M Gazzaly, S J Seestrom-Morris

Accelerator LAMPF Detector Spectrometer

Reactions
 $\pi^+ \text{ deut} \rightarrow \pi^- X$ 200-300 MeV (T_{lab})

Particles studied dibaryon

Comments Uses the clamshell spectrometer. Ran for 150 hours.

LAMPF-981 (Jul 1985) Approved Aug 1985.

DO BOUND STATES OF REAL PIONS EXIST?

NORTHWESTERN U - M Artuso, G Garino, B Parker, K K Seth
(Spokesperson), M Sethi, R Soundra

Accelerator LAMPF Detector Spectrometer

Reactions
 $\pi^- \text{ deut} \rightarrow \pi^+ n n \pi^-$ 292 MeV (T_{lab})

Particles studied dibaryon

Comments Searches for an $nn\pi^-$ bound state. Approved for 80 hours.

LAMPF-985 (Nov 1985) Approved Feb 1985; Completed 1986.
SEARCH FOR MUONIUM-TO-ANTI-MUONIUM SPONTANEOUS CONVERSION

HEIDELBERG U, PHYS INST - M Gladisch, G ZuPutlitz
LOS ALAMOS - M Cooper, C Hoffman, G Hogan, F Mariam,
R Mischke, L Pilonen, V Sandberg
WILLIAM AND MARY COLL - M Eckhause, P Guss, J Kane
(Spokesperson)
YALE U - K P Arnold, F Chmely, V W Hughes (Spokesperson),
S Kettell, Y Kuang, J Markey, B Matthias, B Ni, H Orth
(Spokesperson), R Schaefer, K Woodle
MISSISSIPPI U - J J Reidy

Accelerator LAMPF Detector CRY-BOX

SUMMARIES OF LOS ALAMOS EXPERIMENTS

Reactions

muonium 10 MeV/c

Comments A search at a level of sensitivity of about G_F for the conversion coupling constant (compared to a best so far of less than $42 G_F$). Ran for 564 hours.

LAMPF-998 (Nov 1985) Approved Feb 1986; Completed Aug 1986.

THE ${}^4\text{He}(\pi, \pi p){}^3\text{H}$ REACTION — A TEST OF CHARGE SYMMETRY

MINNESOTA U — D Dehnhard (Spokesperson), S K Nanda,

S J Seestrom-Morris

LOS ALAMOS — C L Morris (Spokesperson)

TEXAS U — M Bryan, C F Moore

PENN U — J D Zumbro

Accelerator LAMPF **Detector** EPICS, Counter

Reactions

$\pi^+ \text{He} \rightarrow \text{trit } p \pi^+$ 180 MeV (T_{lab})

$\pi^- \text{He} \rightarrow \text{trit } p \pi^-$ "

Comments A test of charge symmetry by measuring the ratio of the cross sections. Ran for 180 hours.

LAMPF-1015 Approved Feb 1986.

LARGE CHERENKOV DETECTOR

LOS ALAMOS — R Burman, J Donahue, D Fitzgerald,

W Foreman, M Hoehn, T Kozlowski, D Lee, W C Louis.

R Macek, J McGill, E C Milner, M Oothoudt, V Sandberg.

G H Sanders, M Schillaci, R Werbeck, R Westervelt, D H White ($\checkmark$ Spokesperson), D Whitehouse

UC, IRVINE — R C Allen, X-Q Lu

UCLA — E Gulmez, G Igo, C Whitten

UCLA, RIVERSIDE — S Y Fung, J Kang, J Layter, B C Shen,

G VanDalen

COLORADO U — R Ristinen, W R Smythe

CEBAF & WILLIAM AND MARY COLL — R C Carlini

WILLIAM AND MARY COLL — R T Seigel

NEW MEXICO U — M L Brooks, B B Dieterle, C P Leavitt,

R Reeder

PENN U — R Van Berg, W Frati, A Mann, M Newcomer

TEMPLE U — L A Auerbach, V L Highland, W K McFarlane

Accelerator LAMPF **Detector** Counter

Reactions Polarized beam and target

$\nu_\mu e^- \rightarrow \nu_\mu e^-$ 0-50 MeV (T_{lab})

$\bar{\nu}_\mu e^- \rightarrow \bar{\nu}_\mu e^-$ "

$\nu_e e^- \rightarrow \nu_e e^-$ 30 MeV (T_{lab})

Comments Uses a water Čerenkov detector. Measures $\sin^2(\theta_W)$ to an accuracy of 1% by measuring the ratio $\sigma(\nu_\mu e)/[\sigma(\nu_e e) + \sigma(\bar{\nu}_\mu e)]$.

LAMPF-1027 (Jul 1988, Aug 1988) Approved Aug 1986;

Started Jun 1987; Completed Aug 1987.

DEVELOPMENT OF A HIGH ENERGY POLARIMETER BASED ON COULOMB-NUCLEAR INTERFERENCE AND MEASUREMENT OF THE SPIN-AVERAGED SLOPE PARAMETER FOR pp ELASTIC SCATTERING BETWEEN 1.1 AND 1.5 GeV/c

TEXAS U — M Barlett, D Ciskowski, G Hoffman, G Pauletta

(Spokesperson), M Purcell

UDINE U — R Garfagnini, L Santi

MINNESOTA U — M Gazzaly, N Hintz, S Nanda

ANNIECY — K Kuroda, A Michalowicz

TRIESTE U — A Penzo

LOS ALAMOS — N Tanaka

Accelerator LAMPF **Detector** LAHRS, Counter

Reactions Polarized beam

$p p \rightarrow p p$ 1.1-1.5 GeV/c

Comments Measures the differential cross section and analyzing power from 3 to 15° θ_{lab} at eight energies. Ran for 272 hours.

LAMPF-1035 (Nov 1986) Started Aug 1987; Completed Dec 1987.

TWO- AND THREE-SPIN MEASUREMENTS IN $pp \rightarrow pp$

LOS ALAMOS — M McNaughton ($\checkmark$ Spokesperson), S Penttila

UCLA — D Adams, J Bystrycky, E Gulmez, G Igo, A Ling,

M Moshi, M Nasser

TEXAS A AND M — G Glass, L Northcliffe

TEXAS U — B Kielhorn, K McNaughton, G Pauletta, P Riley,

S Sen

Accelerator LAMPF **Detector** Spectrometer, JANUS

Reactions Polarized beam and target

$p p \rightarrow p p$ 733 MeV (T_{lab})

Comments Covers between 35 and 76° c.m. Measures $P, A_{\text{LV}}, A_{\text{SV}}, D_{\text{NN}}, D_{\text{LV}}, D_{\text{SV}}, K_{\text{VS}}, K_{\text{VL}}, (NV, SO), (NV, LO), (SV, NO),$ and (LV, NO) , where V is the target polarization, oriented between L and S , perpendicular to the recoil proton in the lab frame. The addition of the differential cross section makes this a complete set.

LAMPF-1054 (Dec 1986) Approved Feb 1987.

ULTRAHIGH PRECISION MEASUREMENTS ON THE MUONIUM GROUND STATE: HYPERFINE STRUCTURE AND MUON MAGNETIC MOMENT

LOS ALAMOS — F G Mariam

HEIDELBERG U, PHYS INST — K P Arnold, H J Mundinger,

G Zu Putlitz (Spokesperson)

SYRACUSE U — P A Souder (Spokesperson)

WILLIAM AND MARY COLL — M Eckhause, P Guas, J Kane

YALE U — S Dhawan, V W Hughes (Spokesperson), S Kettel,

Y Kuang, B Matthias, B Ni, R Schaefer

Accelerator LAMPF **Detector** ?

Particles studied muon, muonium

Comments An ultrahigh precision measurement of the muonium hyperfine structure interval $\Delta\nu$ and of the microwave magnetic moment ratio μ_μ/μ_p with the goal of determining $\Delta\nu$ to 5 ppb and μ_μ/μ_p to 50 ppb. Uses the microwave magnetic resonance spectroscopy method, with an intense and pure subsurface μ^+ beam, a large homogeneous solenoid, and a line-narrowing method involving a chopped μ^+ beam. Approved for 1200 hours.

LAMPF-1072 (Jun 1987) Approved Aug 1987; Started Jun

1988; Completed Oct 1988.

pp ELASTIC ABSOLUTE CROSS SECTION

TEXAS A AND M — G Glass, J Hiebert, S Nath, L Northcliffe

LOS ALAMOS — J Amann, L Attencio, O van Dyck, R Harrison,

N Hoffman, K Jones, D Lee, M McNaughton ($\checkmark$ Spokesperson),

C Morris, J Novak

TEXAS U — M Barlett, G Hoffman, K McNaughton, P Riley

RUTGERS U — R Ransome

Accelerator LAMPF **Detector** Ionization chamber, Counter

Reactions

$p p \rightarrow p p$ 500-800 MeV (T_{lab})

Comments Measures the differential elastic cross section from $15-90^\circ$ c.m. to an absolute accuracy of 1%. Ran for 732 hours.

LAMPF-1073 (Jun 1987) Approved Aug 1987; Started Jun

1988.

MEASUREMENT OF MUONIUM TO ANTIMUONIUM CONVERSION WITH IMPROVED SENSITIVITY

WILLIAM AND MARY COLL — M Eckhause, J Kane

HEIDELBERG U, PHYS INST — H J Mundinger, G zu Putlitz,

H J Rosnekranz

MISSISSIPPI U — J Reidy

YALE U — H Ahn, V W Hughes (Spokesperson), S Kettel,

Y Kuang, B Matthias, B Ni, H R Schaefer (Spokesperson)

Accelerator LAMPF **Detector** Spectrometer, Ionization chamber

SUMMARIES OF LOS ALAMOS EXPERIMENTS

Reactions

muonium $\rightarrow$ muonium

Particles studied muonium

Comments The proposed sensitivity is $G_M \approx 10^{-2} G_F$, an improvement by a factor 100 over previous experiments. Ran for 590 hours.

LAMPF-1085 (Jul 1987) Approved Aug 1987; Started Aug 1988; Completed Oct 1988.

TOTAL AND DIFFERENTIAL CROSS SECTIONS FOR $\pi^+ d \rightarrow pp$ BELOW 20 MeV

VIRGINIA U - R C Minehart ($\checkmark$ Spokesperson)
ARIZONA STATE U - B G Ritchie ($\checkmark$ Spokesperson)
SOUTH CAROLINA U & VIRGINIA TECH - et al

Accelerator LAMPF Detector Counter

Reactions

π^+ deut $\rightarrow p p$ 5, 10, 15, 20 MeV (T_{lab})

Comments Ran for 613 hours.

LAMPF-1096 (Dec 1987) Approved Jan 1988; Started Jun 1988; Completed Jul 1988.

STUDY OF THE $(\pi NN)_{T=2}$ BOUND SYSTEM BY $d(\pi^{\pm}, \pi^{\mp})$ REACTIONS

LOS ALAMOS - C L Morris (Spokesperson), J D Zumbro
TEL AVIV U - D Ashery (Spokesperson), J Lichtenstadt,

E Piasetzky
ARGONNE - R Gilman
NEW MEXICO STATE U - M W Rawool
TEXAS U - B Boyer, A Fuentes, K Johnson, J McDonald,
C F Moore, S Mordechai, M J Smithson, A Williams, S H Yoo

Accelerator LAMPF Detector Spectrometer, Counter

Reactions

π^+ deut $\rightarrow p p \pi^+ \pi^-$ 220-300 MeV (T_{lab})
 π^- deut $\rightarrow n n \pi^- \pi^+$ "

Comments Measures the angular distribution of pions at 256 MeV lab kinetic energy in 5 or 10° steps and excitation functions at fixed angle and fixed momentum transfer at 220 and 300 MeV. The presumed $pp\pi^+$ and $nn\pi^-$ bound states decay only weakly in these charge states, so resonances should be narrow. Ran for 396 hours.

Papers PL B215 (1988) 41.

LAMPF-1119 (Jun 1988) Approved Aug 1988; Started Aug 1988; Completed Oct 1988.

UNPOLARIZED DIFFERENTIAL CROSS SECTION FOR pd ELASTIC SCATTERING AT INTERMEDIATE ENERGIES

TEXAS A AND M - A J Simon
LOS ALAMOS - M McNaughton, J R Santana
TEXAS - M L Barlett, K McNaughton, P J Riley
UCLA - S Beedoe, E Gulmez ($\checkmark$ Spokesperson), A G Ling,
C A Whitten

RUTGERS U - V Cupps
RICE U - D L Adams

Accelerator LAMPF Detector Ionization chamber, Counter

Reactions

p deut $\rightarrow p$ deut 650, 800 MeV (T_{lab})

Comments Measures the absolute pd elastic scattering cross sections from 35 to 115° c.m. at 650 MeV and from 31 to 140° c.m. at 800 MeV with a typical accuracy of 2 or 3%. Ran for 170 hours.

LAMPF-1135 (Jul 1988) Approved Aug 1988

FEASIBILITY STUDY OF TAGGED η MESON PRODUCTION IN $p^3\text{H} \rightarrow {}^4\text{He} \eta$

UCLA - D B Barlow ($\checkmark$ Spokesperson), R S Kessler,
B M K Nefkens, C Pillai ($\checkmark$ Spokesperson), J W Price,
J A Wightman

LOS ALAMOS - J Kapustinsky, M J Leitch, L C Liu, C S Mishra
($\checkmark$ Spokesperson), C L Morris, J-C Peng
BOSKOVIC INST, ZAGREB - I Slaus

Accelerator LAMPF Detector LAHRS

Reactions Polarized beam

p trit $\rightarrow \text{He} \eta$ 756.5, 785, 800 MeV (T_{lab})

Comments Aims to obtain η 's tagged by ${}^4\text{He}$ detectors for use in investigating rare and weak η decays. Measures the angular distribution and energy dependence of the reaction. May also measure the analyzing power from the polarized proton beam. Scheduled to run Summer 89.

LAMPF-XXX Started Oct 1987.

SEARCH FOR TIME REVERSAL SYMMETRY VIOLATION AND PARITY VIOLATION AT THE PROTON STORAGE RING

LOS ALAMOS - C D Bowman, J D Bowman (Spokesperson),
J J Szymanski, V Yuan
PRINCETON U - D Benton, G Cates, K P Coulter,

A B McDonald
HARVARD U - T E Chupp
CHALK RIVER, AECL - E D Earle

Accelerator LAMPF Detector Counter

Reactions Polarized beam and target
 n nucleus

Comments Searches for time-reversal and parity violation in low-lying nuclear states. Preliminary results have detected parity violation in states of ${}^{139}\text{La}$, ${}^{165}\text{Ho}$, ${}^{232}\text{Th}$, ${}^{235}\text{U}$, and ${}^{238}\text{U}$. The neutron beam is 57% polarized from 1 to 20,000 eV.

NOVOSIBIRSK Experiments

NOVOSIBIRSK-CMD (1970) Approved 1971; Started 1978; Completed 1984.

THE CRYOGENIC MAGNETIC DETECTOR EXPERIMENT AT VEPP-2M

NOVOSIBIRSK, IYF - L M Barkov (Spokesperson), G A Bli-nov, B I Khazin, V S Okhapkin, S I Redin, N M Ryskulov, Yu M Shatunov, A I Shekhtman, V P Smakhtin, E P Solodov

Accelerator NOVO-VEPP-2M Detector CMD

Reactions

$e^+ e^- \rightarrow \text{hadrons}$	0.36-1.4 GeV (E_{cm})
$e^+ e^- \rightarrow \pi^+ \pi^-$	"
$e^+ e^- \rightarrow \pi^+ \pi^- \pi^0$	"
$e^+ e^- \rightarrow K_L K_S$	"

Particles studied ρ, ω, ϕ

Comments Studies $\pi^+ \pi^-$ decays of the ρ and ω and $\pi^+ \pi^- \pi^0$ and $K_L^0 K_S^0$ decays of the ϕ , etc. The magnetic detector consists of a 3 T superconducting solenoid and an optical spark chamber with 50 μ spatial resolution.

Papers NIM 204 (1983) 379, NP B256 (1985) 365, ZETFP 42 (1985) 113 = JETPL 42 (1985) 138, ZETFP 46 (1987) 132 = JETPL 46 (1987) 164, YF 46 (1987) 1088 = SJNP 46 (1987) 630, and YF 47 (1988) 393 = SJNP 47 (1988) 248.

NOVOSIBIRSK-MD-1 (1972) Approved 1973; Started 1980; Completed 1985.

THE MD-1 EXPERIMENT AT VEPP-4

NOVOSIBIRSK, IYF - A S Artamonov, V M Aulchenko, S E Baru, A E Blinov, V E Blinov, A E Bondar, A D Bukin, N F Denisov, Yu I Eidelman, G S Filimonov, V R Grochev, N I Inozemtsev, G Ya Kezerashvili, V A Kiselev, S G Klimenko, G M Kolachev, E A Kuper, L M Kurdadze, G D Minakov, S I Mishnev, S A Nikitin, A P Onuchin (Spokesperson), V S Panin, V V Petrov, I Ya Protopopov, V A Rodyakin, E L Saldin, A G Shamov, Yu M Shatunov, V A Sidorov, Yu I Skovpen, A N Skrinsky, V A Tayursky, V I Telnov, A B Temnykh, Yu A Tikhonov, G M Tumaikin, A E Undrus, A I Vorobiov, M V Yurkov, V N Zhilich, A A Zholents

Accelerator NOVO-VEPP-4 Detector MD-1

Reactions

$e^+ e^- \rightarrow \text{hadrons}$	7.2-10.4 GeV (E_{cm})
$e^+ e^- \rightarrow \mu^+ \mu^-$	"
$e^+ e^- \rightarrow e^+ e^- \text{ leptons}$	"
$e^+ e^- \rightarrow e^+ e^- \text{ meson}$	"
$e^+ e^- \rightarrow e^+ e^- \text{ hadrons}$	"

Particles studied $T(1S), T(2S), T(3S), X(2220), \eta', a_2(1320), \eta_c(1S)$

Comments Studies the T mesons and 2- γ reactions.

Papers PL 113B (1982) 423, PL 118B (1982) 225, PL 137B

(1984) 272, NIM A241 (1985) 80, ZPHY C30 (1986) 551, ZPHY C32 (1986) 622 (erratum), YF 44 (1986) 626 = SJNP 44 (1986) 405, NIM A252 (1986) 267, YF 45 (1987) 1008 = SJNP 45 (1987) 624, and YF 47 (1988) 889 = SJNP 47 (1988) 563.

NOVOSIBIRSK-ND (1978) Approved 1979; Started 1982; Completed 1987.

THE NEUTRAL-SPECTROMETER EXPERIMENT AT VEPP-2M

NOVOSIBIRSK, IYF - S I Dolinsky, V P Druzhinin, M S Dubrovinn, S I Eidelman, V B Golubev, V N Ivanchenko, E V Pakhtusova, A N Peryshkin, S I Serednyakov (Spokesperson), Yu M Shatunov, V A Sidorov

Accelerator NOVO-VEPP-2M Detector NEUTSPEC

Reactions

$e^+ e^- \rightarrow \pi^0 \gamma$	<1.4 GeV (E_{cm})
$e^+ e^- \rightarrow \eta \gamma$	"
$e^+ e^- \rightarrow \omega \pi^0$	"
$e^+ e^- \rightarrow \eta \pi^+ \pi^-$	"
$e^+ e^- \rightarrow 2\text{pion}$	"
$e^+ e^- \rightarrow 4\gamma$	"
$e^+ e^- \rightarrow 3\text{pion}$	"

Particles studied ρ, ω, ϕ

Comments Studies $\pi^0 \gamma$ and $\eta \gamma$ decays of the vector mesons, $\pi \pi$ decays of the ϕ , etc. The neutral detector consists of 168 NaI(Tl) counters. Studies annihilation into neutral final states.

Papers NIM 227 (1984) 467, PL 144B (1984) 136, YF 41 (1985)

1176 = SJNP 41 (1985) 752, YF 41 (1985) 1183 = SJNP 41 (1985) 756, PL 174B (1986) 115, PL 174B (1986) 453, YF 44 (1986) 633 = SJNP 44 (1986) 409, ZETFP 44 (1986) 493 = JETPL 44 (1986) 634, PL B186 (1987) 432, ZPHY C37 (1987) 1, YF 47 (1988) 1635 = SJNP 47 (1988) 1035, YF 48 (1988) 436 = SJNP 48 (1988) 273, and YF 48 (1988) 442 = SJNP 48 (1988) 277.

SUMMARIES OF PSI/SIN EXPERIMENTS

PSI/SIN Experiments

The Schweizerisches Institut für Nuklearforschung and the Eidgenössisches Institut für Reaktorforschung merged to form the Paul Scherrer Institute. SIN and PSI experiments are here merged together by experiment number.

SIN-R-71-07 (Apr 1977) Approved Jun 1977; Started Dec 1977; Completed May 1982.

pp ELASTIC SCATTERING BETWEEN 400 AND 600 MeV

GENEVA U - E Aprile-Giboni, D Besset, C Cantale, C Eisenegger, R Hausammann, E Heer, R Hess (Spokesperson), C Lechanoin-Leluc, W R Leo, S Morenzoni, Y Onel, D Rapin
PSI, VILLIGEN - S Jaccard, S Mango

Accelerator SIN **Detector** Ionization chamber

Reactions Polarized beam and target
 $p p \rightarrow p p$ 0.8-1.2 GeV/c

Comments Complete experiment for determining the pp scattering matrix. Ran for 5000 hours.

Papers PRL 46 (1981) 1047, and PRL 47 (1981) 1360.

SIN-R-71-08 (Mar 1979) Approved Apr 1979; Started Nov 1980; Completed Aug 1983.

PRECISION MEASUREMENT OF THE MUON MOMENTUM IN PION DECAY AT REST

PSI, VILLIGEN - R Abela, M Daum, R Froesch (✓ Spokesperson), B Jost, P-R Kettle, E Steiner

Accelerator SIN **Detector** Spectrometer

Reactions
 $\pi^+ \rightarrow \mu^+ \nu_\mu$ 0 MeV/c

Particles studied ν_μ, π^+

Comments The muon decay momentum is (29.79139 ± 0.00083) MeV/c, and the ν_μ mass is less than 0.25 MeV (90% CL). To be improved in a new experiment, PSI-R-87-01

Papers PL 146B (1984) 431. No other papers expected.

SIN-R-72-02 (Nov 1972) Approved 1973; Started 1976; Completed May 1988.

EXPERIMENTS WITH NEUTRON BEAMS

FREIBURG U - R Buechle, J Franz, V Grundig, A Klett, P Koncz, M Krauth, R Peschiera, E Roessle (✓ Spokesperson), H Schmitt (✓ Spokesperson), L Schmitt

Accelerator SIN **Detector** Spectrometer

Reactions
 $n p \rightarrow n p$ 0.6-1.2 GeV/c
 $n p \rightarrow X$ "
 $n \text{ deut} \rightarrow n \text{ deut}$ "
 $n \text{ deut} \rightarrow X$ "

Comments Measures energy spectra and differential cross sections.

Papers PL 90B (1980) 367, PL 91B (1980) 214, PL 93B (1980) 384, ZPHY A298 (1980) 253, NIM 192 (1982) 407, PL 141B (1984) 170, ZPHY A316 (1984) 43, PL 153B (1985) 382, PL 158B (1985) 15, NP A472 (1987) 733, PL B213 (1988) 125, and NP A490 (1988) 667.

SIN-R-73-01.2 (Mar 1977) Approved May 1980; Started Jul 1980; Completed 1984.

ENERGY AND ANGLE DEPENDENCE OF THE TENSOR POLARIZATION T_{20} IN πd ELASTIC SCATTERING

ZURICH, ETH - M Bittcher, K Elsener, C Forstner, W Grueebler (Spokesperson), V Koenig, P A Schmelzbach, D Singy, J Ulbricht, B Vuaridel
AUCKLAND U - A Chisholm

Accelerator SIN **Detector** Counter

Reactions
 $\pi^+ \text{ deut} \rightarrow \pi^+ \text{ deut}$ 220-260 MeV/c
 $\text{deut } ^3\text{He} \rightarrow p \text{ He}$ "

Particles studied dibaryon

Comments Measures tensor polarization of the recoil deuteron at backward pion scattering angles.

Papers PRL 48 (1982) 311, PRL 49 (1982) 444, JPHY G9 (1983) L211, and NIM 227 (1984) 57.

SIN-Z-75-02 (May 1975) Approved May 1975; Started 1976; Completed 1985.

PARITY VIOLATION IN pp SCATTERING

ZURICH, ETH - J Lang, T Maier, R Mueller, F Nessi-Tedaldi, T Roser, M Simonius (✓ Spokesperson)
PSI, VILLIGEN - S Jaccard
WISCONSIN U - W Haeberli

Accelerator SIN **Detector** Ionization chamber

Reactions Polarized beam
 $p p \rightarrow p p$ 300 MeV/c

Comments The parity-violating longitudinal analyzing power obtained is $A_L = \{-1.50 \pm 0.22\} \times 10^{-7}$.

Papers PRL 44 (1980) 699, PR C30 (1984) 1409, and PRL 58 (1987) 1616. No other papers expected.

SIN-R-78-05.4 (Apr 1981) Approved May 1981; Started Aug 1982; Completed Aug 1983.

MEASUREMENT OF THE A_{zz} PARAMETER IN THE REACTION $pp \rightarrow \pi^+ d$

THE NESIKA COLLABORATION

NEUCHÂTEL U - A Berdoz, P Chatelain, B Favier, F Foroughi, C Nussbaum
KERNFORSCHUNGSZENTRUM, KARLSRUHE & KARLSRUHE U - J Hoffmeier, G Mutchler, P Walden, Ch Weddigen (✓ Spokesperson)
PSI, VILLIGEN - S Jaccard, J A Konter, S Mango, J Piffaretti

Accelerator SIN **Detector** Counter

Reactions Polarized beam and target
 $p p \rightarrow \pi^+ \text{ deut}$ 1.2 GeV/c

Comments Ran for 300 hours. Measures the angular distribution of the parameter A_{zz} at proton lab energies 516, 542, and 582 MeV.

Papers NP A312 (1978) 330, PL 100B (1981) 462, JPHY G8 (1982) 1363, JPHY G9 (1983) L261, NP A402 (1983) 429, NP A412 (1984) 273, and NP A412 (1984) 286.

SIN-R-78-13.1 (Sep 1978) Approved Oct 1978; Started Jan 1981; Completed 1984.

STUDY OF THE RADIATIVE DECAY OF THE PION

LAUSANNE U - A Bay, C Joseph, J-F Loude, J-P Perroud (Spokesperson), D Ruegger, O Shoeri, D Steiner, M T Tran
ZURICH U - L Van Elmbt, M Lebrun, J M Martoff, P Truol

Accelerator SIN **Detector** Spectrometer, Calorimeter

Reactions
 $\pi^+ \rightarrow e^+ \nu_e \gamma$ 0 MeV/c

Particles studied π^+

Comments Measures the absolute ratio of axial to vector weak form factors with an uncertainty better than 10%.

Papers PL B174 (1986) 445.

SUMMARIES OF PSI/SIN EXPERIMENTS

SIN-R-78-15.1 (Nov 1979) Approved May 1980; Started Mar 1981; Completed Dec 1982.

MEASUREMENT OF THE 2P-2S ENERGY DIFFERENCE IN MUONIC HYDROGEN

ZÜRICH, ETH - H P von Arb, C Brandes, F Dittus, H R Heeb, H Hofer, F Kottmann (✓ Spokesperson), C Luechinger, R Schaeren, D Taquq, J Unteraehrer
PSI, VILLIGEN - Ch Tschalaeher

Accelerator SIN Detector Counter

Reactions

$$\begin{aligned}\pi^- &\rightarrow \mu^- \bar{\nu}_\mu & 40 \text{ MeV/c} \\ \mu^- p &\rightarrow \mu^- p \gamma & 0 \text{ GeV/c}\end{aligned}$$

Comments The lifetime of the 2S state of the $\mu^- p$ atom is less than 100 ns at gas pressures above 6 torr. At 0.25 torr, the relative initial population of 2S states is $(2.2 \pm 0.2)\%$.

Papers PL 101B (1981) 151, and PL 143B (1984) 65.

SIN-R-78-18 (Dec 1978) Approved Nov 1979; Started Nov 1979; Completed 1983.

DETERMINATION OF THE VECTOR ANALYZING POWER IN πd SCATTERING

KARLSRUHE U - J Bolger, E T Boschitz, E L Mathie, C R Ottermann, G R Smith (Spokesperson)
PSI, VILLIGEN - J Arvieux, M Daum, J A Konter, S Mango, G Mutchler
ERLANGEN U - M Meyer, F Vogler
BRITISH COLUMBIA U - R R Johnson

Accelerator SIN Detector Counter, Spectrometer

Reactions

$$\begin{aligned}\pi^+ \text{ deut} &\rightarrow \pi^+ \text{ deut} & 117\text{--}325 \text{ MeV } (T_{\text{lab}}) \\ \pi^+ \text{ deut} &\rightarrow \pi^+ p n & 228 \text{ MeV } (T_{\text{lab}})\end{aligned}$$

Particles studied

Comments Measured angular distributions of the vector analyzing power at 12 energies.

Papers PRL 46 (1981) 167, PRI 48 (1982) 1667, PR C28 (1983) 2558, PR C29 (1984) 2206, PL 154B (1985) 28.

SIN-R-79-05 (Aug 1980) Approved Sep 1980; Started 1980.

π^+ AND π^- ABSORPTION IN LIGHT NUCLEI

BASEL U - G Backenstoss (✓ Spokesperson), R Powers, P Salvisberg, M Steinacher, H J Weyer
KERNFORSCHUNGSZENTRUM, KARLSRUHE & KARLSRUHE U - A Hoffart, H Ullrich (✓ Spokesperson)

Accelerator SIN Detector Counter

Reactions

$$\begin{aligned}\pi^- {}^3\text{He} &\rightarrow n n p & 0\text{--}220 \text{ MeV } (T_{\text{lab}}) \\ \pi^- {}^3\text{He} &\rightarrow n \text{ deut} & \text{"} \\ \pi^+ {}^3\text{He} &\rightarrow p p p & 50\text{--}220 \text{ MeV } (T_{\text{lab}})\end{aligned}$$

Papers PL 112B (1982) 129, PL 115B (1982) 445, NP A412 (1984) 253, PL 137B (1984) 320, PRL 55 (1985) 2782, NP A445 (1986) 557, NP A448 (1986) 567, C&JP B36 (1986) 243, C&JP B36 (1986) 895, PRL 59 (1987) 767, PRL 61 (1988) 923, NIM A273 (1988) 833, and PL B222 (1989) 7.

SIN-R-79-07 (Nov 1979) Approved Sep 1980; Started Oct 1980; Completed May 1984.

THE STUDY OF THE REACTION $\pi^+ d \rightarrow pp$ WITH A VECTOR POLARIZED d TARGET

KARLSRUHE U - E Boschitz, W Gyles, E L Mathie, C R Ottermann, G R Smith (Spokesperson)
PSI, VILLIGEN - B Van Den Brandt, J A Konter, S Mango
ERLANGEN U - R Olszewski
BRITISH COLUMBIA U - R R Johnson

Accelerator SIN Detector Counter

Reactions

$$\pi^+ \text{ deut} \rightarrow p p \quad 112\text{--}294 \text{ MeV } (T_{\text{lab}})$$

Particles studied

Comments Measures the angular distribution of the vector analyzing power.

Papers PR C25 (1982) 3228, and PR C30 (1984) 980.

SIN-Z-80-01 (Jul 1980) Approved Sep 1980; Started Jan 1981; Completed 1984.

PARITY VIOLATION IN pa SCATTERING

ZÜRICH, ETH - J Lang, T Maier, R Mueller, F Nessi-Tedaldi, T Roser, M Simonius (✓ Spokesperson)
WISCONSIN U - W Haeblerli
PSI, VILLIGEN - S Jaccard

Accelerator SIN Detector Ionization chamber

Reactions

$$p \text{ He} \rightarrow p \text{ He} \quad 300 \text{ MeV/c}$$

Comments The parity-violating longitudinal analyzing power obtained is $A_L = -(3.3 \pm 0.9) \times 10^{-7}$.

Papers PRL 54 (1985) 170, and PR C34 (1986) 1545. No other papers expected.

SIN-R-80-06 (Nov 1981) Approved Jan 1982; Started 1984.
SEARCH FOR RARE MUON AND PION DECAYS WITH A LARGE SOLID ANGLE MAGNETIC SPECTROMETER (SINDRUM I)

ZÜRICH, ETH - R Eichler, C Niebuhr, S Playfer, H K Walter (✓ Spokesperson)
ZÜRICH U - S Egli, R Engfer, M Grossmann, E A Hermes, F Muheim, H Pruis, A van der Schaaf, D Vermeulen
PSI, VILLIGEN - W Berti, N Lordong
SACLAY - J Martino
AACHEN, TECH HOCHSCH, III PHYS INST - U Bellgardt, G Otter

Accelerator SIN Detector SINDRUM

Reactions

$$\begin{aligned}\mu^+ &\rightarrow e^+ e^+ e^- & 0.0 \text{ MeV/c} \\ \mu^+ &\rightarrow e^+ e^+ e^- \nu_e \bar{\nu}_\mu & \text{"} \\ \pi^+ &\rightarrow e^+ e^+ e^- \nu_e & 0 \text{ MeV/c} \\ \pi^0 &\rightarrow e^+ e^+ & \text{"}\end{aligned}$$

Particles studied

Papers NIM 217 (1983) 367, PL 140B (1984) 299, NP A434 (1985) 409, NP B260 (1985) 1, NIM A240 (1985) 370, PL B175 (1986) 97, PL B175 (1986) 101, ARNPS 36 (1986) 327, NP B279 (1987) 133, NP B299 (1988) 1, and NP A485 (1988) 606.

SIN-R-80-10 (Dec 1980) Approved Jan 1981; Started 1981.

MEASUREMENT OF INCLUSIVE SPECTRA FROM REACTIONS INDUCED BY PROTONS AND NEUTRONS

FREIBURG U - J Franz, E Roessle, C Sauerwein, H Schmitt, H L Woolverton
BUDAPEST, CRIP - J Eroe (✓ Spokesperson), Z Fodor, J Kecskemeti, P Koncz, Z Seres

Accelerator SIN Detector Counter

Reactions

$$\begin{aligned}n \text{ nucleus} &\rightarrow \text{pion X} & 0.8\text{--}1.2 \text{ GeV/c} \\ n \text{ nucleus} &\rightarrow p X & \text{"} \\ n \text{ nucleus} &\rightarrow \text{deut X} & \text{"} \\ n \text{ nucleus} &\rightarrow \text{trit X} & \text{"}\end{aligned}$$

Comments The nuclear targets are carbon, copper, and bismuth. Measures energy spectra of π^+ , π^- , p , d , and t from 51 to 165°.

Papers PL 153B (1985) 382, NP A472 (1987) 733, and PL B213 (1988) 125.

SUMMARIES OF PSI/SIN EXPERIMENTS

SIN-R-80-11 (Dec 1980) Approved Jan 1981; Started Feb 1982.

SEARCH FOR ADMIXTURE OF HEAVY NEUTRINOS IN $\pi^+ \rightarrow \mu^+ \nu_\mu$ DECAY

VIRGINIA U - R C Minehart (Spokesperson), K O H Ziock (Spokesperson)

PSI, VILLIGEN - M Daum, P R Kettle
ZURICH, ETH - B Jost

Accelerator SIN Detector Counter

Reactions

$$\pi^+ \rightarrow \mu^+ \nu_\mu \quad 90 \text{ MeV/c}$$

Particles studied hvy- ν_μ

Comments The muon energy resolution is better than 6 keV FWHM.

Papers PRL 52 (1984) 804, and PR D36 (1987) 2624.

SIN-R-81-01 (Apr 1981) Approved May 1981; Started Nov 1982; Completed Oct 1984.

EXPERIMENTAL DETERMINATION OF THE STRONG INTERACTION SHIFT IN THE 2P-1S TRANSITION OF PIONIC HYDROGEN AND DEUTERIUM ATOMS USING CRYSTAL DIFFRACTION

NEUCHÂTEL U - E Boyet (✓ Spokesperson), J P Egger
CAL TECH - J Gimlett (✓ Spokesperson), H Kwon
PSI, VILLIGEN - K Gabathuler

Accelerator SIN Detector X-ray spectrometer, Counter

Reactions

$$\pi^- p \rightarrow \pi^- p X \quad 0 \text{ MeV/c}$$

$$\pi^- \text{deut} \rightarrow \pi^- \text{deut} X \quad "$$

Papers PL 153B (1985) 231, and NIM A239 (1985) 635.

SIN-R-81-02 (Aug 1981) Approved Sep 1981.

STUDY OF THE FORMATION OF MUONIC ATOMS IN LOW Z GASEOUS MATERIALS IN A CYCLOTRON TRAP

KERNFORSCHUNGSZENTRUM, KARLSRUHE &
KARLSRUHE U - P Blum, E Borie, D Gotta, H Koch,
W Kunold, M Schneider, L M Simons (Spokesperson)
PSI, VILLIGEN - R Abela

Accelerator SIN Detector Counter

Reactions

$$\mu^- \text{nucleus} \quad 0 \text{ MeV/c}$$

Comments Approved for 240 hours.

Papers PR A38 (1988) 4395, and PS T22 (1988) 90.

SIN-R-81-06 (Apr 1983) Approved May 1983; Started Feb 1984; Completed Jan 1985.

IMPROVED DETECTION OF 2- γ EVENTS FROM THE SIN BEAM DUMP AND MEASUREMENT OF THEIR INVARIANT MASS

AACHEN, TECH HOCHSCH, III PHYS INST - H Faissner (Spokesperson), W Heinrigs, A Preussger, J Reitz, D Samm, H Tuchscherer

BERLIN-ZEUTHEN ADW - P Kostka, K Lanius, S Nowak, C Spiering, M Walter

PSI, VILLIGEN - A Badertscher, M Daum, R Dietlicher, A Zehnder

Accelerator SIN Detector Optical spark chamber

Reactions

$$p \text{ nucleus} \rightarrow \text{axion } X \quad 1.2 \text{ GeV/c}$$

Particles studied axion

Comments A search for axions produced in the 590-MeV proton beam dump and decaying into e^+e^- . No signal observed.

Papers ZPHY C37 (1988) 231.

SIN-R-81-09 (Dec 1981) Approved Jan 1982; Started Mar 1982; Completed Sep 1983.

SEARCH FOR HEAVY NEUTRINOS IN $\pi \rightarrow e \nu$ DECAY

LOUVAIN U - J P Deutsch, M Lebrun, N De Leener-Rosier, O Navillat-Cuncic, R Prieels (✓ Spokesperson)

ZURICH U - C Amisler, L van Elmbt, M Schaad, P Truol
LAUSANNE U - Cl Joseph, J P Perroud, M T Tran

Accelerator SIN Detector Spectrometer

Reactions

$$\pi^+ \rightarrow e^+ \nu_e \quad 0 \text{ MeV/c}$$

Particles studied hvy- ν_e

Comments Obtains good reduction of the $\mu^+ \rightarrow e^+ \nu_e \bar{\nu}_\mu$ noise. The best background to signal ($\pi^+ \rightarrow e^+ \nu_e$) ratio is 1.3. The resolution is 1.3 MeV/c at 70 MeV/c. Upper limits for $|U_{E\tau}|^2$ are 7×10^{-6} for $m_\mu = 20 \text{ MeV}$, 1.5×10^{-6} for $m_\nu = 70 \text{ MeV}$, etc.

Papers PL B177 (1986) 228.

SIN-R-82-01 (Apr 1982) Approved Jun 1982; Started Aug 1982; Completed 1982.

SEARCH FOR AN ADMIXTURE OF HEAVY NEUTRINOS IN THE DECAY OF PIONS AT REST

PSI, VILLIGEN - R Abela, M Daum, R Froesch (✓ Spokesperson), B Jost, P R Kettle, E Steiner

Accelerator SIN Detector Counter

Reactions

$$\pi^+ \rightarrow \mu^+ \nu_\mu \quad 100 \text{ MeV/c}$$

Particles studied hvy- ν_μ

Comments No evidence for a heavy ν_μ (heavy ν_μ mass range 5 to 30 MeV). Ran for 200 hours, then terminated in favor of experiment R-80-11.

Papers A result from an early test: PL 105B (1981) 263. No other papers expected.

SIN-R-82-03.1 (Apr 1982) Approved Jun 1982; Started Nov 1982; Completed Aug 1983.

MEASUREMENT OF THE LIFETIME OF THE 2S STATE OF MUONIC HELIUM AT GAS PRESSURES BELOW 5 ATM

ZURICH, ETH - H P von Arb, F Dittus, H R Heeb, H Hofer, F Kottmann (✓ Spokesperson), S Niggli, R Schaeren, D Taqqu, J Unteraehrer

BASEL U - P Egelhof

Accelerator SIN Detector Counter

Reactions

$$\pi^- \rightarrow \mu^- \bar{\nu}_\mu \quad 40 \text{ MeV/c}$$

$$\mu^- \text{He} \rightarrow \mu^- \text{He } \gamma \quad 0 \text{ MeV/c}$$

Comments The lifetime of the 2S state of muonic helium ions is $1116 \pm 96 \text{ ns}$ at 50 torr, $39 \pm 6 \text{ ns}$ at 600 torr, $< 150 \text{ ns}$ at 6 atm (90% CL). The 2S quenching rate is predominantly a quadratic function of pressure with a 3-body rate coefficient $k = (6.24 \pm 0.64) \times 10^{-32} \text{ cm}^6/\text{s}$.

Papers PL 136B (1984) 232.

SIN-R-82-04 (Apr 1983) Approved May 1983; Started 1985; Completed Sep 1988.

PRECISE DETERMINATION OF THE BRANCHING RATIO $R = (\pi \rightarrow e \nu + e \nu \gamma) / (\pi \rightarrow \mu \nu + \mu \nu \gamma)$

BERN U - G Czapek, D Frei, M Hess, C Hug, E Hugentobler, W Krebs, U Moser (✓ Spokesperson), D Muster, G Stucki
PSI, VILLIGEN - R Abela, D Renker, E Steiner

Accelerator SIN Detector Counter, Calorimeter

Reactions

$$\pi^+ \rightarrow e^+ \nu_e \quad 85 \text{ MeV/c}$$

Particles studied π^+

SUMMARIES OF PSI/SIN EXPERIMENTS

Comments The detector includes a 4 π BGO calorimeter with an average thickness of 18 radiation lengths. The resolution for 100 MeV electrons is 4% FWHM.

SIN-R-82-06 (Jul 1982) Approved Aug 1982; Started Mar 1983; Completed 1984.

SPIN TRANSFER PARAMETERS IN THE pp INELASTIC CHANNELS

GENEVA U - E Aprile, G Cantale, E Heer, R Hess (Spokesperson), C Lechanoine-Leluc, W Leo, Y Onel, D Rapin, P Rascher

PSI, VILLIGEN - S Mango

Accelerator SIN **Detector** Ionization chamber

Reactions Polarized beam
 $p p \rightarrow \pi^+ \text{ deut}$ 1.2 GeV/c
 $p p \rightarrow \pi^0 p p$ "

Comments Ran for 2000 hours.

Papers From a similar previous experiment: NP A415 (1984) 365.

SIN-R-82-10 (Dec 1982) Approved Jan 1983; Started Sep 1983; Completed.

PRECISION DETERMINATION OF THE MASS OF THE π^- AND SEARCH FOR STRONG $\pi\pi$ VAN DER WAALS FORCES

ZURICH, ETH - W Beer, G de Chambrier, O Eisenhans, K L Giovanetti, P F A Goudsmit, L Knecht, H J Leisi (Spokesperson), A Ruetschi

FRIBOURG U - B Jeckelmann, T Nakada
 WABERN, EIDG AMT MESSWESEN - O Pillier, W Schwitz
 WILLIAM AND MARY COLL & PSI, VILLIGEN - M Eckhaus

Accelerator SIN **Detector** Counter

Particles studied π^-

Comments The π^-/e^- mass ratio is 273.12877(71), the π^- mass is 139.56871(53) MeV.

Papers PRL 56 (1986) 1444, and NP A457 (1986) 709. No other papers expected.

SIN-R-82-17 (Jan 1983) Approved Jan 1983; Started Apr 1984; Completed Aug 1984.

COULOMB-NUCLEAR INTERFERENCE IN $\pi^+ p$ AND $\pi^- p$ ELASTIC SCATTERING AT 66 MeV

KARLSRUHE U - K Goering, J Jaki, U Klein, W Kluge (Spokesperson), R Koch, H Matthaei, M Metzler, U Wiedner
 PSI, VILLIGEN - E Pedroni (Spokesperson)
 ZURICH, ETH - W Fetscher, H-J Gerber

Accelerator SIN **Detector** Ionization chamber

Reactions
 $\pi^+ p \rightarrow \pi^+ p$ 140 MeV/c
 $\pi^- p \rightarrow \pi^- p$ "

Comments The measured angular distributions agree with Karlsruhe-Helsinki phase-shift predictions and so reinforce the value of the σ term, 65 ± 8 MeV, calculated by R. Koch. The discrepancy with the value of 35 ± 5 MeV calculated by Gasser and Leutwyler using chiral perturbation theory of QCD persists.

Papers PRL 58 (1987) 848.

SIN-R-83-20-2 (Nov 1983) Approved Jan 1984; Started Jun 1984.

MEASUREMENT OF THE 2S-2P ENERGY DIFFERENCE IN MUONIC ^4He AT LOW GAS DENSITY

ZURICH, ETH - H P von Arb, P Hauser, H Hofer, F Kottmann (Spokesperson), C Luechinger, R Schaefer, D Taquu, J Untermaier

BASEL U - P Egelhof

Accelerator SIN **Detector** Counter

Comments Measures the 2S-2P energy difference in muonic ^4He ions by means of laser spectroscopy. The He gas pressure is low enough (0.04 atm) to prevent collisional quenching of the metastable 2S state.

SIN-R-83-29 (Dec 1983) Approved Ja. 1984; Started Dec 1985.

MEASUREMENT OF THE ξ PARAMETER IN μ DECAY

ZURICH, ETH - H Burkard, R von Dinkelage, W Fetscher (Spokesperson), H-J Gerber, K Goering, I. F Johnson
 PSI, VILLIGEN - M Salzmann
 MAINZ U, INST KERNPHYS - F Scheck

Accelerator SIN **Detector** Ionization chamber

Reactions
 $\mu^+ \rightarrow e^+ \nu_e \bar{\nu}_\mu$ 150 MeV/:

Particles studied μ^+

Comments Approved for 600 hours.

Papers HPA 60 (1987) 1, and PL B194 (1987) 326.

PSI-Z-84-02 (Dec 1984) Approved Jan 1985; Started May 1986; Completed Jul 1988.

HIGH PRECISION ANALYZING POWER MEASUREMENTS OF PROTON-PROTON SCATTERING AT ENERGIES AROUND $E_p = 26$ MeV

ERLANGEN U - M Haller, W Kretschmer (Spokesperson), H Loeh, F Post, A Rauscher, R Schmitt, W Schuster, D Voetisch
 ZURICH, ETH - M Bittcher, C Forstner, W Gruebler (Spokesperson), V Koenig, P A Schmelzbach, D Singy, J Ulbricht, B Vuuridel

Accelerator PSI **Detector** Counter

Reactions Polarized beam
 $p p \rightarrow p p$ 221, 272 MeV/c

PSI-Z-85-06 (Nov 1985) Approved Nov 1985; Started 1986; Completed 1987.

PARITY VIOLATION IN PROTON-DEUTERON SCATTERING

ZURICH, ETH - S Kystrin, J Lang, J Leichti, Th Maier, R Mueller, M Simonius (Spokesperson), J Smirsky
 WISCONSIN U - W Haeberli

Accelerator PSI **Detector** Ionization chamber

Reactions Polarized beam
 $p \text{ deut} \rightarrow p X$ 300 MeV/c

Comments The parity-violating longitudinal analyzing power obtained is $A_z = (0.39 \pm 0.74) \times 10^{-7}$.

Papers PL B219 (1989) 58. No other papers expected.

SIN-R-85-10 (Jan 1985) Approved Mar 1985; Started Aug 1984; Completed Aug 1985.

PRECISION MEASUREMENT OF THE $\pi^- \pi^0$ MASS DIFFERENCE

PSI, VILLIGEN - J F Crawford, M Daum (Spokesperson), R Froesch (Spokesperson), B Jost, P-R Kettle
 VIRGINIA U - R M Marshall, B K Wright, K O R Ziolk

Accelerator SIN **Detector** Counter

Reactions
 $\pi^- p \rightarrow \pi^0 n$ 0.0 MeV/c
 $\pi^- p \rightarrow \gamma n$ "

Particles studied π^0

Comments The $\pi^- \pi^0$ mass difference is 4.59366 ± 0.00048 MeV. The kinetic energy distribution of the $\pi^- p$ atoms in liquid hydrogen at the time of charge exchange has a component extending up to about 1 eV, and a tail up to about 70 eV.

Papers PRL 56 (1986) 1043, and PL B213 (1988) 391.

SUMMARIES OF PSI/SIN EXPERIMENTS

SIN-R-85-11 (1985) Approved 1985; Started 1986.

PION ABSORPTION ON TRITIUM

BASEL U - G Backenstoss (✓ Spokesperson), R Powers,
P Salviseberg, M Steinacher, H J Weyer
KERNFORSCHUNGSZENTRUM, KARLSRUHE &
KARLSRUHE U - A Hoffart, H Ullrich (✓ Spokesperson)
ZAGREB - M Furic, T Petkovic

Accelerator SIN Detector Counter

Reactions

π^- trit $\rightarrow$ n n n	50-220 MeV (T_{lab})
π^+ trit $\rightarrow$ p p n	"
π^+ He	"
π^- He	"

Comments The ^4He reactions are for quasifree $2N$ absorption and exclusive $3N$ absorption.

PSI-R-85-13 (May 1987) Approved Jun 1987; Started Nov 1987.

MEASUREMENT OF ELASTIC π^+p SCATTERING BELOW 100 MEV

KERNFORSCHUNGSZENTRUM, KARLSRUHE &
KARLSRUHE U - W Gyles, J Jaki, Ch Joram, W Kluge,
H Matthaei (✓ Spokesperson), M Metzler, R Tacik, U Wiedner
TUBINGEN U - B M Barnett, H Clement, S Krell, G J Wagner
TRIUMF - R R Johnson
HEIDELBERG, MAX PLANCK INST - C A Wiedner

Accelerator PSI Detector Spectrometer

Reactions

$\pi^+ p \rightarrow \pi^+ p$	100-200 MeV/c
$\pi^- p \rightarrow \pi^- p$	"

Comments Angular distributions between 10 and 135° are measured to determine the s and p wave phase shifts below 100 MeV pion energy with high accuracy. The goal is a test of the chiral perturbation theory of QCD outlined in a recent series of papers by Gasser and Leutwyler. The size of the σ term evaluated from experimental data by means of forward dispersion relations is a crucial number.

SIN-R-85-14 (Feb 1985) Approved Mar 1985; Started Oct 1985; Completed 1987.

MEASUREMENT OF THE $\pi^0 \rightarrow e^+e^-$ BRANCHING RATIO WITH SINDRUM

ZURICH U - S Egli, R Engfer, M Grossmann-Handschin,
E A Hermes, F Muheim, H S Pruis, A van der Schaaf
(✓ Spokesperson), D Vermeulen
ZURICH, ETH - R Eichler, L Felawka, T Kozlowski, C Niebuhr
(✓ Spokesperson), S M Playfer, H K Walter
PSI, VILLIGEN - W Bertl, N Lordong
SACLAY - J Martino
AACHEN, TECH HOCHSCH. III PHYS INST - U Bellgard
BRITISH COLUMBIA U - R Meijer-Drees, C E Waltham

Accelerator SIN Detector SINDRUM

Reactions

$\pi^- p \rightarrow \pi^0 n$	0.0 MeV/c
$\pi^- p \rightarrow e^+ e^- n$	"
$\pi^0 \rightarrow e^+ e^-$	"
$\pi^0 \rightarrow e^+ e^- \gamma$	"

Particles studied π^0

Papers PR D (submitted).

ZURICH U - S Egli (✓ Spokesperson), R Engfer, C Grab,
E A Hermes, A Kersch, N Kraus, H S Pruis, A van der Schaaf,
D Vermeulen
ZURICH, ETH - W Bertl, R Eichler, C Niebuhr, H K Walter
PSI, VILLIGEN - N Lordong
SACLAY - J Martino
AACHEN, TECH HOCHSCH. III PHYS INST - U Bellgard,
G Otter

Accelerator SIN Detector SINDRUM

Reactions

$$\pi^+ \rightarrow e^+ e^+ e^- \nu_e \quad 0.0 \text{ MeV}/c$$

Particles studied π^+ , higgs

Comments First observation of the decay $\pi^+ \rightarrow e^+ e^+ e^- \nu_e$. No evidence for axions.

Papers PL B175 (1986) 97, PL B175 (1986) 101, and PL B222 (1989) 533.

SIN-R-86-02 (Dec 1985) Approved Jan 1986; Started Sep 1986.

STUDY OF THE REACTION $\pi^- p \rightarrow \pi^+ \pi^- n$ IN THE REGION OF Δ -DOMINANCE

ERLANGEN U - R Baran, U Bohnert, M Dillig, P Helbig,
G Herrmann, A Hoffmann (Spokesperson), O Jaekel, H Krueger,
D Malz, W Menzel, R Mueller, H-W Ortner (Spokesperson),
L Schweinzer, S Wirth
KERNFORSCHUNGSZENTRUM, KARLSRUHE - W Kluge,
H Matthaei

Accelerator SIN Detector Spectrometer

Reactions

$$\pi^- p \rightarrow \pi^+ \pi^- n \quad 350-450 \text{ MeV}/c$$

Comments Approved for 1300 hours.

PSI-R-86-05 (Jun 1987) Approved Jun 1987; Started Nov 1988.

CRYSTAL DIFFRACTION OF PIONIC HYDROGEN AND DEUTERIUM X-RAYS

NEUCHÂTEL U - D Bovet, E Bovet (✓ Spokesperson),
J P Egger, G Fiorucci, J L Vuilleumier
ZURICH, ETH - W Beer (✓ Spokesperson), J F Gilot,
P Goudsmid, H J Leisi
PSI, VILLIGEN - K Gabathuler, L Simons

Accelerator PSI Detector Photon spectrometer

Reactions

$\pi^- p \rightarrow \pi^- p X$	0 MeV/c
$\pi^- \text{ deut} \rightarrow \pi^- \text{ deut} X$	"

PSI-R-86-14 (Apr 1986) Approved Apr 1986; Started Apr 1986; Completed Mar 1988.

EXPERIMENTS WITH POLARIZED NEUTRONS IN nE1: SPIN CORRELATIONS AND TOTAL CROSS SECTIONS

FREIBURG U - J Franz, N Hamann, R Peschina, E Roessle,
H Schmitt (Spokesperson), H L Woolverton
GENEVA U - Ph Demierre, R Hess (Spokesperson), C Leluc-
Lechanoine, P Rapin
PSI, VILLIGEN - B Van den Brandt, M Daum, J Jaccard,
J A Konter, S Mango

Accelerator PSI Detector Ionization chamber, Counter

Reactions Polarized beam and target

$$n p \rightarrow p n \quad 0.55-1.2 \text{ GeV}/c$$

Comments Ran for 800 hours. Measured $\Delta\sigma_L$ and $\Delta\sigma_T$. The parameters A_{00NN} , etc. are being analyzed.

PSI-R-87-01 (Nov 1986) Approved Jan 1987; Started Dec 1988.

PRECISION MEASUREMENT OF THE MUON MOMENTUM IN PION DECAY AT REST

SUMMARIES OF PSI/SIN EXPERIMENTS

PSI, VILLIGEN - J F Crawford, M Daum, R Froesch
(✓ Spokesperson), D Herter, R Horisberger, M Janousch, P-
R Kettle
VIRGINIA U - D Pocanic

Accelerator PSI Detector Spectrometer

Reactions

$\pi^+ \rightarrow \mu^+ \nu_\mu$ 0 MeV/c

Particles studied ν_μ, π^+

Comments An improvement of SIN-R-72-02. First run of 200 hours in December 86. The muon momentum is to be measured to about 10 ppm.

PSI-R-87-03 (Nov 1986) Approved Jan 1987.

SEARCH FOR $\mu^- \rightarrow e^-$ CONVERSION

PSI, VILLIGEN - A Badertscher (✓ Spokesperson), W Bertl,
J Egger, W D Herold, H Kaspar, N Lordong, C Petitjean,
D Renker, M Salzmann, L Simons
ZURICH, ETH - C Niebuhr, S M Playfer, H K Walter
(✓ Spokesperson)

ZURICH U - R Engfer, M Gossmann-Handschin, E A Hermes,
F Muheim, H S Pruys, A v d Schaaf, D Vermeulen
AACHEN, TECH HOCHSCH, III PHYS INST - K D Groth,
B Krause, G Otter
SACLAY - J Martino
SWIERK, INST ATOMIC ENERGY - T Kozlowski

Accelerator PSI Detector SINDRUM-II

Reactions

$\mu^- \text{ nucleus} \rightarrow e^- \text{ nucleus}$ 90 MeV/c

Particles studied μ^-

Comments Scheduled to run in Summer 89.

PSI-R-87-08 (Dec 1986) Approved Jan 1987; Started May 1987.

DIFFUSION OF MUONIC HYDROGEN ATOMS

WILLIAM AND MARY COLL - G Chen, A Hancock, J Kraman,
R Siegel (Spokesperson), W Vulcan, R Welsh
PSI, VILLIGEN - C Petitjean, A Zehnder
VIENNA, OAW - W Breunlich, P Kammel (Spokesperson),
J Marton, J Zmeskal

MISSISSIPPI U - J Reidy (Spokesperson), H Wolverton
MUNICH, TECH U - F Hartmann

Accelerator PSI Detector Counter

Reactions

μ^- 34 MeV/c

Comments Measures initial velocity distribution and scattering cross sections for $(\mu^- p)$ and $(\mu^- d)$ atoms in ^2H and ^2D .

PSI-R-87-12 (May 1987) Approved Jun 1987.

n p ELASTIC SCATTERING: AN EXPERIMENT WITH POLARIZED NEUTRONS

FREIBURG U - R Binz, J Franz, N Hamann, R Peschina,
E Roessle, H Schmitt (Spokesperson)
GENEVA U - G Gaillard, E Heer, R Hess (Spokesperson),
C Lechanoine-Leluc, D Rapin
PSI, VILLIGEN - B van den Brandt, M Daum, A Konter,
S Mango, P A Schmelzbach

Accelerator PSI Detector Ionization chamber, Counter

Reactions

Polarized beam and target
 $n p \rightarrow p n$ 0.5-1.2 GeV/c

SUMMARIES OF SACLAY EXPERIMENTS

SACLAY Experiments

SACLAY-013 (Sep 1979) Approved Oct 1979; Started 1980; Completed 1982.

αα INTERACTIONS

SACLAY - J Banaigs, J Berger, M Boivin, A Codino, J Duflo (✓ Spokesperson), L Goldzahl, D Legrand, J Oostens, F Plouin
ORSAY, IPN - P Berthet, R Frascaria
FRASCATI - A Codino, F L Fabbri, P Picozza, L Satta
CAEN U - G Bizard, F Lefebures, J C Steckmeyer

Accelerator SATURNE-II Detector SPES-IV

Reactions

He He → He X	4.3, 5.0 GeV/c
He ³ He → He X	4.3, 7.0 GeV/c
He deut → He X	"
He p → He X	"

Comments Elastic scattering is measured up to momentum transfers of about 4 GeV². The inelastic spectra are described as an incoherent sum of quasi-elastic scattering on substructures of the targets.

Papers NP A356 (1981) 427, NP A374 (1982) 253, NP A374 (1982) 297, NP A445 (1985) 737, PR C35 (1987) 1416, and PR C36 (1987) 1425. No other papers expected.

SACLAY-017 (Dec 1977) Approved 1980; Started 1980; Completed Nov 1982.

CROSSING JETS

SACLAY - M Garcon (Spokesperson), D Legrand, R Lombard, R Maillard, B Mayer, A Nakach, M Rouger, Y Terrien

Accelerator SATURNE-II Detector Counter

Reactions

p p → p p	1.0-2.0 GeV/c
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Comments Uses an internal jet target. Measures the energy dependence of the 90° cross section.

Papers NIM 204 (1982) 53, and NP A445 (1985) 669. No other papers expected.

SACLAY-037 (Dec 1978) Approved Jun 1979; Started 1979; Completed 1982.

MEASUREMENT OF $pd \rightarrow \gamma \text{ } ^3\text{He}$ TO TEST DETAILED BALANCE

SACLAY - A Boudard, G Bruge, J Soudinos
UCLA - W Briscoe, D Fitzgerald, B M K Nefkens (✓ Spokesperson), M Sadler

Accelerator SATURNE-II Detector SPES-I

Reactions

p deut → $\gamma \text{ } ^3\text{He}$	---
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Papers PRL 45 (1980) 168, and PR C32 (1985) 1956. No other papers expected.

SACLAY-038-2 (Nov 1984) Approved Mar 1985; Started Jul 1985; Completed Mar 1986.

dp ELASTIC SCATTERING AS A SOURCE OF INFORMATION ABOUT THE DEUTERON D-WAVE AND THE SPIN STRUCTURE OF THE NN AMPLITUDES

UCLA - B Aas, D Adama, M Bleszynski, J Bystricky, V Ghazikhanian, G J Igo (Spokesperson), C A Whitten, Jr
SACLAY - J Ball, P Chaumette, J Deregé, J Fabre, F Lehar, A de Lesquen, F Perrot, L van Rossum

Accelerator SATURNE-II Detector Combination

Reactions

deut p → deut p	1.6 GeV (T _{lab})
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Particles studied deut

Comments The original Saclay-038 never ran.

SACLAY-050 (Jan 1980) Approved Mar 1980; Started 1980; Completed Jun 1983.

STUDY OF THE DIBARYONIC COMPONENT

($\Delta^{++}, 2N$) AND EVENTUALLY DIBARYONIC ($T = 1$) IN ^3He USING THE TRANSFER REACTIONS $^3\text{He}(p, t)$, $^3\text{He}(p, d)$, AND $p(^3\text{He}, d)$.

ORSAY, IPN - P Berthet, M P Combes, J P Didelez, R Frascaria, B Tatischeff (Spokesperson)

SACLAY - R Beurtey, Y Le Bornec, A Boudard, J M Durand, J L Escudie, L Farvacque, M Garcon, J C Lugol, Y Terrien

Accelerator SATURNE-II Detector SPES-I

Reactions

$p \text{ } ^3\text{He} \rightarrow \text{trit X}$	1.4, 1.6 GeV/c
$p \text{ } ^3\text{He} \rightarrow \text{deut X}$	"
$^3\text{He p} \rightarrow \text{deut X}$	4.74 GeV/c

Particles studied dibaryon

Comments Narrow isovector structures in 2-baryon invariant masses found.

Papers PRL 52 (1984) 2022, and PL 154B (1985) 107.

SACLAY-052 (Dec 1977) Approved Jun 1978; Started Nov 1980; Completed Feb 1982.

STUDY OF NN SCATTERING AT SATURNE II

SACLAY - J Ball, J Bystricky, P Chaumette, J Deregé, F M Fontaine, J Gosset, T Hasegawa, F Lehar (✓ Spokesperson), C Newsom, F Perrot, F Petit, T Siemiarczuk, J Simmons, J Vrzal, C A Whitten

CAEN U - J Yonnet

MONTREAL U - L Vinet, P Winternitz

ANNECY - H Azaiez, A Michalowicz

TRIESTE U - S Dalla-Torre, A Martin, A Penzo, A Villari

GENEVA U - W R Leo, Y Onel

Accelerator SATURNE-II Detector Combination

Reactions

Polarized beam and target	
p p → p p	1.0-3.8 GeV/c

Comments Measurements of $\Delta\sigma_{\text{transfer}}$, analyzing powers, and spin correlations.

Papers LNC 40 (1984) 466, NC 82A (1984) 385, LNC 41 (1984) 285, NIM A239 (1985) 131, NP B262 (1985) 715, NP B262 (1985) 727, NC 94A (1986) 319, and NP B278 (1986) 881.

SACLAY-052-2 (Nov 1981) Approved Nov 1981; Started Feb 1982; Completed Feb 1983.

MEASUREMENT OF pp ELASTIC SCATTERING IN THE COULOMB-NUCLEAR INTERFERENCE REGION USING THE POLARIZED PROTON BEAM FROM SATURNE II

ANNECY - H Azaiez, K Kuroda, A Michalowicz (Spokesperson)
TRIESTE U - R Birsá, F Bradamante, S Dallatorre-Colautti, M Giorgi, L Lancieri, A Martin, A Penzo, P Shavon, A Villari

Accelerator SATURNE-II Detector Combination

Reactions

Polarized beam	
p p → p p	1.3-3.2 GeV/c

Comments Uses a scintillating target.

SACLAY-057 (Sep 1979) Approved Oct 1979; Started 1980; Completed 1983.

SEARCH FOR BARYONIUM STATES NEAR THE NN THRESHOLD BY THE DETECTION OF RECOIL NUCLEI WITH SPES-IV

LYON, IPN & ORSAY, IPN & SACLAY - D Bachelier, M Bedjidian, J L Boyard, E Descroix, J Y Grossiord, A Guichard, M Gusakov, T Hennino, J C Jourdain, J R Pizzi, P Radvanyi (Spokesperson), M Roy-Stephan (Spokesperson)

SUMMARIES OF SACLAY EXPERIMENTS

Accelerator SATURNE-II Detector SPES-IV

Reactions

p nucleus $\rightarrow$ nucleus nucleon nucleon 3.7 GeV/c

Particles studied baryonium

SACLAY-060 (Oct 1979) Approved Oct 1979; Started 1981; Completed 1982.

ANGULAR AND ENERGY DEPENDENCE OF THE CROSS SECTION AND THE ANALYZING POWER OF THE REACTION $pp \rightarrow d\pi^+$ BETWEEN 725 AND 1000 MeV

SACLAY - J Arvieux, S D Baker, R Bertini ($\checkmark$ Spokesperson), P Catillon, H Catz, J M Durand, L Farvacque, G P Gervino, C M Glashauser, D A Hutcheon, J C Lugol, B Mayer ($\checkmark$ Spokesperson), C A Whitten, A I Yavin
KERNFORSCHUNGSZENTRUM, KARLSRUHE & KARL-SRUHE U - G Smith

Accelerator SATURNE-II Detector SPES-I

Reactions Polarized beam

$p p \rightarrow \text{deut } \pi^+$ < 1.7 GeV/c

Particles studied dibaryon

Papers PL 162B (1985) 77, NP A437 (1985) 630, and PL B203 (1988) 18.

SACLAY-066 (Feb 1980) Approved Jun 1980; Started Nov 1980; Completed.

MEASUREMENT OF THE $dd \rightarrow {}^4\text{He} \gamma$ REACTION FOR A TEST OF THE MICROSCOPIC REVERSIBILITY PRINCIPLE

SACLAY - A Boudard, G Bruge, P Couvert, L Farvacque, D Legrand
UCLA - W Briscoe, D Fitzgerald, B M K Nefkens ($\checkmark$ Spokesperson), B Silverman

Accelerator SATURNE-II Detector SPES-I

Reactions

$\text{deut deut} \rightarrow \text{He } \gamma$ —

$\text{deut } p$ —

Comments A continuation of SACLAY-037.

Papers PR C29 (1984) 35. No other papers expected.

SACLAY-068 (Feb 1981) Approved Jun 1980; Started Jun 1981; Completed 1982.

STUDY OF REACTIONS $pd \rightarrow \pi^0 {}^3\text{He}$, $pd \rightarrow \gamma {}^3\text{He}$, AND $pd \rightarrow \pi^+ {}^3\text{H}$

SACLAY - A Boudard, G Bruge, P Couvert ($\checkmark$ Spokesperson), L Farvacque, D Legrand
UCLA - W J Briscoe, D Fitzgerald, B M K Nefkens ($\checkmark$ Spokesperson), B Silverman

Accelerator SATURNE-II Detector SPES-I

Reactions

$p \text{ deut} \rightarrow \text{trit } \pi^+$ 1.03 GeV/c

$p \text{ deut} \rightarrow {}^3\text{He } \pi^0$ "

$p \text{ deut} \rightarrow {}^3\text{He } \gamma$ "

Papers NP A444 (1985) 621, and PR C32 (1985) 1956. No other papers expected.

SACLAY-070 (Apr 1980) Approved Mar 1982; Started 1982; Completed Feb 1983.

SEARCH FOR DIBARYONIC RESONANCES IN pp ELASTIC SCATTERING BETWEEN 600 AND 1000 MeV

SACLAY - R Beurtey, J C Duchazeaubeneix, J C Faivre, M Garcon, B Guillerminet, D Legrand (Spokesperson), M Rouger, J Sudinos, Y Terrien

Accelerator SATURNE-II Detector Combination

Reactions Polarized beam

$p p \rightarrow p p$ 1.0-1.7 GeV/c

Particles studied dibaryon

SACLAY-078 (Jan 1981) Approved Jan 1983; Started Feb 1983; Completed.

np ELASTIC SCATTERING AT SMALL ANGLES

SACLAY - J C Lugol, J Saudinos, Y Terrien ($\checkmark$ Spokesperson), F Wellers
LENINGRAD, INP - A V Khanzadeev, G Korolev ($\checkmark$ Spokesperson), N Terentiev, A Vorobyov

Accelerator SATURNE-II Detector Ionization, Counter

Reactions Polarized beam

$n p \rightarrow n p$ 0.95-2.0 GeV/c

Comments Detects the recoil proton using an ionization chamber.

Papers PL 165B (1985) 262, JdeP 46 (1985) 1873, PRL 59 (1987) 1534, NIM A270 (1988) 419, and NP (to be published).

SACLAY-080 (Apr 1981) Approved Jun 1981; Started Nov 1981; Completed Jun 1982.

STUDY OF ISOSCALAR DIBARYONIC RESONANCES

SACLAY - J Banaigs, J Berger, P Berthet, R Beurtey, M Boivin, Y Le Bornec, A Codino, M P Combes, J Duffo, R Frascaria (Spokesperson), D Hutcheon, C F Perdrisat, F Plouin, B Tatischeff (Spokesperson), N Willis (Spokesperson)
STRASBOURG, CRN - E Aslanides, O Bing, F Hibou
FRASCATI - F Fabbri, G Piccozza, L Satta
CAEN U - J Yonnet

Accelerator SATURNE-II Detector SPES-IV

Reactions

$\text{deut deut} \rightarrow \text{deut } X$ 2.98, 3.39, 3.72 GeV/c

Particles studied dibaryon

Comments No resonance found.

Papers NP A431 (1984) 703, and NP A431 (1984) 713.

SACLAY-085 (Sep 1981) Approved Nov 1981; Started 1982.

THE (${}^3\text{He}, t$) REACTION AT INTERMEDIATE ENERGIES

LUND U - I Bergquist, A Brockstedt, L Carlen, P Ekstrom, B Jakobsson
COPENHAGEN U - C Ellegaard, C Gaarde (Spokesperson), J Syrak-Larsen

INDIANA U - C Goodman

LYON, IPN - M Bedjidian, D Contardo, J Y Grossiord,

A Guichard, R Haroutunian, J R Pizzi

ORSAY, IPN - D Bachelier, J L Boyard, T Hennino, M Roy-

Stephan

SACLAY - M Boivin, P Radvaanyi

Accelerator SATURNE-II Detector SPES-IV

Reactions

${}^3\text{He } p \rightarrow \Delta(1232 P_{33})^{++} \text{ trit}$ 1.8-4.3 GeV/c

${}^3\text{He nucleus} \rightarrow \text{nucleus trit}$ "

Comments Studies spin-isospin correlations in nuclei — the low-lying collective states of different multiplicities and the Δ excitations. The $p({}^3\text{He}, {}^3\text{H})\Delta^{++}$ reaction is an important test case.

Papers PRL 50 (1983) 17, PL 154B (1985) 110, and PL 168B (1986) 331.

SACLAY-087 (Feb 1982) Approved Mar 1982; Started Jun 1982; Completed Oct 1983.

MEASUREMENT OF THE TOTAL CROSS SECTION DIFFERENCE $\Delta\sigma_L(pp)$ IN THE ENERGY RANGE FROM 0.52 TO 2.8 GeV

SUMMARIES OF SACLAY EXPERIMENTS

SACLAY - M Arignon, J Ball, J Bystricky, P Chaumette, J Derégel, J Fabre, J M Fontaine, J Gosset, T Hasegawa, F Lehar (✓ Spokesperson), A de Lesquen, C R Newsom, F Perrot, L van Rossum, J Yonnet
GENEVA U - W R Leo, Y Onel
INFN, TRIESTE - A Penzo
ANNECY - H Azaiez, A Michalowicz

Accelerator SATURNE-II Detector Combination

Reactions Polarized beam and target

$p p \rightarrow p p$ 1.12-3.62 GeV/c

Comments Uses a coded transmission detector.

Papers PL 142B (1984) 130, and NIM A235 (1985) 523.

SACLAY-088 (Feb 1982) Approved Mar 1982; Started Jul 1983; Completed Jul 1983.

MEASUREMENT OF THE SPIN CORRELATION PARAMETER A_{poh} FOR pp ELASTIC SCATTERING IN THE ENERGY REGION 720 TO 1100 MeV

SACLAY - J Ball, J Bystricky, P Chaumette, J Derégel, J Fabre, J M Fontaine, T Hasegawa, F Lehar (✓ Spokesperson), A de Lesquen, C R Newsom (✓ Spokesperson), F Perrot, L van Rossum

GENEVA U - Y Onel
INFN, TRIESTE - A Penzo
ANNECY - H Azaiez

Accelerator SATURNE-II Detector Combination

Reactions Polarized beam and target

$p p \rightarrow p p$ 1.37, 1.51, 1.56, 1.62, 1.70, 1.81 GeV/c

Comments Ran simultaneously with SACLAY-089.

Papers NP B258 (1985) 483.

SACLAY-089 (Feb 1982) Approved Mar 1982; Started Jul 1983; Completed Jul 1983.

EXPERIMENTAL CONFIRMATION OF THE PHASE-SHIFT ANALYSIS PREDICTIONS IN THE DIBARYON REGION

SACLAY - J Ball, J Bystricky, P Chaumette, J Derégel, J Fabre, J M Fontaine, T Hasegawa, F Lehar (✓ Spokesperson), A de Lesquen, C R Newsom, F Perrot, L van Rossum

GENEVA U - Y Onel
INFN, TRIESTE - A Penzo (✓ Spokesperson)
ANNECY - H Azaiez

Accelerator SATURNE-II Detector Combination

Reactions Polarized beam and target

$p p \rightarrow p p$ 1.37, 1.51, 1.56, 1.62, 1.70, 1.81 GeV/c

Particles studied dibaryon

Comments Ran simultaneously with SACLAY-088.

Papers NP B258 (1985) 483.

SACLAY-092 (Feb 1982) Approved Mar 1982; Started Oct 1982; Completed Oct 1982.

COHERENT PRODUCTION OF PIONS IN THE REACTION $^3\text{He}(\pi^+, \pi^+)^6\text{Li}$ AS A FUNCTION OF INCIDENT ENERGY

STRASBOURG, CRN - E Aslanides, G Bergdolt, P Fassnacht, C Roca

ORSAY, IPN - L Bimbot (✓ Spokesperson), T Hennino, J C Jourdain, F Reide, B Tatischeff, N Willis

SACLAY - A Boudard, G Bruege, J C Lugol
STRASBOURG, CRN & SACLAY - F Hibou (✓ Spokesperson)
ORSAY, IPN & SACLAY - Y Le Bornec (✓ Spokesperson)

Accelerator SATURNE-II Detector SPES-I

Reactions

$^3\text{He } ^3\text{He} \rightarrow \pi^+ + ^6\text{Li}$ —

Papers PL 113B (1983) 149.

SACLAY-095 (Oct 1982) Approved Dec 1982; Started 1983; Completed.

COHERENT PRODUCTION OF THE η IN THE BACKWARD DIRECTION IN pd AND dd SYSTEMS

SACLAY - J Banaigs, J Berger, M Boivin, A Codino, J Dufo, L Goldzahl (✓ Spokesperson), F Plouin

ORSAY, IPN - P Berthet (✓ Spokesperson), J P Didelez, R Frascaria (✓ Spokesperson), G Pignault
FRASCATI - F Fabbri, G Picozza, L Satta
WILLIAM AND MARY COLL - M Boivin
WILLIAM AND MARY COLL & ORSAY, IPN - C Perdrisat

Accelerator SATURNE-II Detector SPES-IV

Reactions

$p \text{ deut} \rightarrow ^3\text{He } \eta$ 0.92-2.6 GeV (T_{lab})

$p \text{ deut} \rightarrow \text{trit } \pi^+$ 0.6-2.3 GeV (T_{lab})

$p \text{ deut} \rightarrow ^3\text{He } \pi^0$ "

Papers NP A443 (1985) 4, and PR C32 (1985) 1448.

SACLAY-099 (Oct 1982) Approved Nov 1983; Completed.

MEASUREMENT OF THE ANGULAR DISTRIBUTION OF THE DIFFERENTIAL CROSS SECTION AND POLARIZATION A_{p0} IN THE REACTION $pd \rightarrow ^3\text{H } \pi^+$ BETWEEN 900 AND 1480 MeV

SACLAY - R Bertini, A Boudard, J Cameron, H Catz, J M Durand, G P Gervino, J L Lugol, B Mayer

(✓ Spokesperson), D M Sheppard, B M Silverman
GRENOBLE U & SACLAY - J Arvieux, G Gallord, N Van Sen
LYON, IPN - M Bedjidian, E Descroix, J Y Grossiord, A Guichard, R Haroutunian, J R Pizzi
TRIUMF - R Abegg, D Hutcheon

Accelerator SATURNE-II Detector Spectrometer

Reactions Polarized beam

$p \text{ deut} \rightarrow \text{trit } \pi^+$ 1.58-2.2 GeV/c

Papers PL B181 (1986) 25.

SACLAY-101 (Dec 1982) Approved Jun 1983; Started Oct 1983.

NOVEL TECHNIQUE FOR THE BEAM POLARIZATION MEASUREMENT AT HIGH ENERGIES

SACLAY - J Bystricky, J Derégel, J M Fontaine, F Lehar (✓ Spokesperson), G Leleux, A de Lesquen, A Nakach (✓ Spokesperson), F Perrot, L van Rossum (✓ Spokesperson)
INFN, TRIESTE - A Penzo

Accelerator SATURNE-II Detector Counter

Reactions Polarized beam

$p p \rightarrow p p$ 1-3.8 GeV/c

Comments Uses a nucleon-nucleon polarimeter.

Papers NIM A234 (1985) 412.

SACLAY-104 (Feb 1983) Approved Jun 1983; Started Dec 1984; Completed Nov 1985.

MEASUREMENT OF WOLFENSTEIN PARAMETERS IN pp SCATTERING BETWEEN 600 MeV AND 3 GeV

SACLAY - J Ball, J Bystricky, P Chaumette, J Derégel, J Fabre, J M Fontaine (✓ Spokesperson), F Lehar (✓ Spokesperson), A de Lesquen, F Perrot, L van Rossum

ANNECY - H Azaiez
INFN, TRIESTE - A Penzo
GENEVA U - Y Onel

Accelerator SATURNE-II Detector Combination

Reactions Polarized beam and target

$p p \rightarrow p p$ 1.2-3.9 GeV/c

Comments A 'complete' experiment. Measures 11 to 13 independent observables over the angular range 20 to 100° at 11 incident kinetic energies from 840 to 2700 MeV.

Papers NIM A262 (1987) 207, EPL 3 (1987) 1175, JdeP 48 (1987) 199, JdeP 48 (1987) 1273, JdeP 48 (1987) 1901, NP B294

SUMMARIES OF SACLAY EXPERIMENTS

(1987) 1001, NP B294 (1987) 1013, NP B296 (1988) 527, NP B296 (1988) 535, NP B297 (1988) 653, NP B315 (1989) 269, and NP B315 (1989) 284.

SACLAY-105 (Feb 1983) Approved Nov 1983; Started Jan 1984.

TEST OF CHARGE SYMMETRY IN THE REACTION
 $dd \rightarrow {}^4\text{He } \pi^0$

SACLAY - J Banaigs, J Berger, M Boivin, A Boudard, L Goldzahl, C Kerboul, F Plouin (Spokesperson), B Silverman, J Yonnet

FRASCATI - F L Fabbri, L Satta

UCLA - J Carroll, G Igo

ECOLE POLYTECHNIQUE - P Fleury

Accelerator SATURNE-II Detector SPES-IV

Reactions

deut deut $\rightarrow$ He π^0 0.8-1.35 GeV (T_{lab})

Comments Tests charge symmetry violation at the level of 1 pb/sr.

Papers PRL 58 (1987) 1922.

SACLAY-106 (Feb 1983) Approved Mar 1983; Started Jul 1983.

SIMULTANEOUS MEASUREMENT OF THE ASYMMETRIES $\epsilon(pp)$ AND $\epsilon(np)$

SACLAY - J Arvieux, J Ball, J Bystricky, J Deregel, J M Fontaine, T Hasegawa, F Lehar ($\checkmark$ Spokesperson), A de Lesquen, C R Newsom, F Perrot, C Raymond, L van Rossum

ANNECY - H Aziaez, A Michalowicz

INFN, TRIESTE - A Penzo

GENEVA U - Y Onel

Accelerator SATURNE-II Detector Counter

Reactions

p p $\rightarrow$ p p 1.0-2.0 GeV/c

n p $\rightarrow$ n p "

Comments Uses a nucleon-nucleon polarimeter with neutron counters.

Papers NP A444 (1985) 597, NP B286 (1987) 635, and NP B304 (1988) 673.

SACLAY-107 (Feb 1984) Approved Mar 1984; Started Apr 1984.

ANOMALOUS PION PRODUCTION IN THE PROTON NUCLEUS INTERACTION AT INTERMEDIATE ENERGIES

SACLAY - M Bolore, J-M Hialeur, J Julien (Spokesperson), J Martino, B Pappalardo, L Roussel, B Saghai

ORSAY, IPN - L Bimbot

GRENOBLE U - O Lebrun

MOSCOW, INR - V K Gorbunov, F F Gruber, V A Krasnov,

A B Kurepin (Spokesperson), V S Pantuev, A I Reshetin

CRACOW - H Dabrowski

Accelerator SATURNE-II Detector Combination

Reactions

p Cu $\rightarrow$ π^+ X 0.88 GeV/c

p Cu $\rightarrow$ π^- X "

SACLAY-108 (Jun 1984) Approved Jun 1984; Completed Jun 1984.

MEASUREMENT OF VECTOR AND TENSOR ANALYZING POWERS FOR THE CONSTRUCTION OF THE DEUTERON POLARIMETER IN THE ENERGY REGION 150-600 MeV

SACLAY - B Bonin, A Boudard ($\checkmark$ Spokesperson), G Bruge,

J C Duchazeaubeneix, J M Durand, M Garcon, B Mayer,

M Rouger, J Saudinos, D Sheppard, B Silverman, F Soga

GRENOBLE U - J Arvieux, G Gaillard, Nguyen

ALBERTA U - J Cameron ($\checkmark$ Spokesperson), G C Neilson, W C Olsen

Accelerator SATURNE-II Detector Ionization chamber

Reactions Polarized beam

deut p $\rightarrow$ deut p 0.77-1.5 GeV/c

Papers NP A458 (1986) 287. No other papers expected.

SACLAY-113 (Feb 1983) Approved Mar 1984; Completed.

SEARCH FOR MULTIBARYONIC RESONANCES BY A STUDY OF MISSING MASS SPECTRA IN THE REACTIONS $pp \rightarrow \pi^- X$ AND $pd \rightarrow \pi^- X$

ORSAY, IPN - M P Combes, R Frascaria, B Tatischeff, N Willis (Spokesperson)

SACLAY & ORSAY, IPN - Y Le Bornec

SACLAY & TOKYO U - F Soga

STRASBOURG, CRN - E Aslanides, G Bergdolt, O Bing,

P Fasnacht (Spokesperson), F Hibou, C Kerboul

Accelerator SATURNE-II Detector SPES-III

Reactions

p p $\rightarrow$ π^- X —

p deut $\rightarrow$ π^- X —

Particles studied dibaryon

SACLAY-115 (Jan 1984) Approved Mar 1984; Started Oct 1984.

THE ($d, {}^2\text{He}$) REACTION

LUND U - I Bergquist, A Brockstedt, L Carlen, P Ekstrom

COPENHAGEN U - C Ellegaard, C Gaarde (Spokesperson),

J Syrak-Larsen

INDIANA U - C Goodman

LYON, IPN - M Bedjidian, D Contardo, J Y Grossiord,

A Guichard, R Haroutunian, J R Pizzi

ORSAY, IPN - D Bachelier, J L Boyard, T Hennino, M Roy-

Stephan

SACLAY - M Boivin, P Radvanyi

Accelerator SATURNE-II Detector SPES-IV

Reactions Polarized beam

deut p $\rightarrow$ ${}^2\text{He } n$ 1.6-3.6 GeV/c

deut p $\rightarrow$ ${}^2\text{He } \Delta(1232 P_{33})^0$ "

deut nucleus $\rightarrow$ ${}^2\text{He nucleus}$ "

Comments The ($d, {}^2\text{He}$) reaction is a charge-exchange spin-transfer reaction like the (n, p) reaction. Measures the tensor analyzing power.

SACLAY-117 (Nov 1985) Approved Nov 1985; Started 1986; Completed.

MEASUREMENT OF T_{20} AT 0 AND 180° AND OF DIFFERENTIAL CROSS SECTIONS FOR THE REACTION $dp \rightarrow {}^3\text{He } \pi^0$ FROM 700 TO 2200 MeV

SACLAY - L Antonuk, J Arvieux, J Berger, R Bertini, M Boivin,

A Boudard (Spokesperson), J M Durand, C Kerboul, B Mayer,

A Stetz, J Tinsley, J Yonnet

GRENOBLE U - Nguyen Van Sen, Y Yanlin

ALBERTA U - J Cameron, C Lapointe, D M Sheppard

NEUCHÂTEL U - J F Germond

UNIVERSITY COLL, LONDON - C Wilkin

Accelerator SATURNE-II Detector SPES-IV

Reactions Polarized beam

deut p $\rightarrow$ ${}^3\text{He } \pi^0$ 0.7-2.2 GeV (T_{lab})

Papers PL B181 (1986) 28.

SACLAY-118 (Mar 1984) Approved Mar 1984; Started Apr 1984; Completed.

RESEARCH ON DIBARYON RESONANCES AROUND 350 MeV

SUMMARIES OF SACLAY EXPERIMENTS

SACLAY - B Bonin, A Boudard, J C Duchazeaubeneix,
M Garcon, D Legrand, M Rouger, J Saudinos (✓ Spokesperson)
GRENOBLE U - J Arvieux, G Gaillard

Accelerator SATURNE-II Detector Combination

Reactions

$p \rightarrow \text{deut } \pi^+$ 328, 340, 354, 358 MeV (T_{lab})
 $p p \rightarrow p p$ "

Particles studied dibaryon

Comments See also SACLAY-123.

SACLAY-121 (Sep 1984) Approved Nov 1984; Started 1985.
**SEARCH FOR DIBARYONS OF STRANGENESS $S = -1$
BETWEEN ΛN AND ΣN THRESHOLDS**

ORSAY, IPN - J P Didelez (✓ Spokesperson), R Frascaria

(✓ Spokesperson), E Warde

SOUTHERN CALIFORNIA U - G Adams, G Blanpied,

G Pignault, B Freedom (✓ Spokesperson)

NEUCHÂTEL U - E Bovet, J P Egger

GRENOBLE U - C Perrin

CAEN U - J Yonnet

SACLAY - M Boivin, B Saghai

BONN U - J Ernst, T Mayer Kuckuck, R Siebert

Accelerator SATURNE-II Detector SPES-IV, Counter

Reactions

$p p \rightarrow K^+ X$ —

Particles studied dibaryon ($S = -1$)

Comments Scheduled to run June 89.

Papers LNC (to be published).

SACLAY-123 (Oct 1985) Approved Nov 1985; Started 1986;
Completed.

**STUDY OF NARROW STRUCTURES IN THE INVARIANT
MASSES OF TWO BARYONS**

SACLAY - J Arvieux, R Beurtey, B Bonin, A Boudard, J C Duchazeaubeneix, J C Faivre, M Garcon, R Rouger, J Saudinos
(✓ Spokesperson), Y Terrien

Accelerator SATURNE-II Detector Combination

Reactions

$p p \rightarrow \text{deut } \pi^+$ 336, 344, 350 MeV (T_{lab})

Particles studied dibaryon

Comments A continuation of SACLAY-118.

SACLAY-124 (Nov 1984) Approved Nov 1984; Started Mar
1985; Completed 1985.

**SEARCH FOR NARROW DIBARYON RESONANCES
IN THE REACTION $pp \rightarrow d\pi^+$ AT 90° C.M.**

SACLAY - J Arvieux, J Bystricky, J Deregé, F Lehar
(✓ Spokesperson), A de Lesquen, B Mayer (✓ Spokesperson),
F Perrot, L Van Rossum

INFN, TRIESTE - A Penzo

GENEVA U - Y Onel

Accelerator SATURNE-II Detector Combination

Reactions

Polarized beam and target
 $p p \rightarrow \text{deut } \pi^+$ 328, 340, 354, 368, 510, 525, 560
MeV (T_{lab})

Particles studied dibaryon

Comments Measures spin correlations and analyzing power at
 90° c.m.

SACLAY-125 (Oct 1985)

**COMPARISON OF COHERENT AND INCOHERENT
PRODUCTION OF π^0 AND η ON NUCLEI**

INFN, TURIN & TURIN U - G B Bonazzola, E Chiavassa,
G Dellacasa, N Demarco, F Ferrero, M Gallio, A Musso,
A Piccotti, E Vercellin

INFN, CATANIA - V Bellini, A S Figuera, R Fonte
SACLAY - R Bertini (✓ Spokesperson), M Boivin, A Boudard,
P Couvert, J M Durand, F Plouin, B Silverman

STRASBOURG, CRN - F Brochard, P Fassnacht

Accelerator SATURNE-II Detector PINOT

Comments PINOT is a high-resolution π^0 and η detector.
Taking data.

SACLAY-126 (Feb 1985) Approved May 1985; Started Nov
1985; Completed Nov 1985.

**STUDY OF NARROW STRUCTURES BY THE TRANSFER
REACTION (p, d) IN THE INVARIANT MASSES
OF TWO BARYONS**

ORSAY, IPN - Y Le Bornec, M P Comets, B Tatischeff

(Spokesperson), N Willis

SACLAY - R Beurtey, B Bonin, A Boudard, J M Durand,

M Garcon, J C Lugol, B Mayer, Y Terrien

STRASBOURG, CRN - P Fassnacht, F Hibou

Accelerator SATURNE-II Detector SPES-I

Reactions

$p {}^3\text{He} \rightarrow \text{deut } X$ 0.75 GeV (T_{lab})

Particles studied dibaryon

Comments Finds narrow isovector structures in 2-baryon
invariant masses.

SACLAY-128 (Mar 1985) Started Aug 1986.

**FULL CALIBRATION OF THE SPES-I POLARIMETER
FOR DEUTERONS BETWEEN 150 AND 400 MEV**

SACLAY - L Antonuk (Spokesperson), J Arvieux, R Bertini,
B Bonin, A Boudard, J M Durand, B Silverman, J Tineley,
J Yonnet

ALBERTA U - J Cameron, G Roy, D Sheppard

TRIUMF & ALBERTA U - D Hutcheon (Spokesperson)

Accelerator SATURNE-II Detector SPES-I

Reactions Polarized beam

deut 150, 200, 250, 300, 350, 400 MeV (T_{lab})

SACLAY-129 (Nov 1985) Started 1985; Completed.

**EXCITATION FUNCTION OF THE REACTION $pp \rightarrow$
DIBARYON(2124) $\rightarrow \pi^0 pp$ AT 0°**

ORSAY, IPN - J P Didelez, R Frascaria (Spokesperson),

R Siebert, E Warde

SOUTHERN CALIFORNIA U - G Adams, G Blanpied,

G Pignault, B Freedom

NEUCHÂTEL U - E Bovet, J P Egger (Spokesperson)

GRENOBLE U - C Perrin

SACLAY - H Dabrowski, J Julien, B Saghai

KERNFORSCHUNGSANLAGE, JULICH - K Killian

UPPSALA U - J Johanson

Accelerator SATURNE-II Detector SPES-0

Reactions

$p p \rightarrow p p \pi^0$ 450-590 MeV (T_{lab})

Particles studied dibaryon

SACLAY-132 (Nov 1985) Approved Nov 1985; Started May
1986.

**STUDY OF REACTIONS $pp \rightarrow pn\pi^+$ AND $pp \rightarrow pp\pi^+\pi^-$
WITH POLARIZED PROTONS FROM 800 MeV TO 2.5
GeV**

SACLAY - G Audit, R Babinet, G Bruge, J M Durand, Z Fodor,
G Fournier, J Gosset (✓ Spokesperson), D L'Hôte, M C Lemaire,
B Mayer, J Poitou, B Saghai (✓ Spokesperson), O Valette,

J Yonnet

CLERMONT-FERRAND U - J Augerat, J Berthot, P Y Bertin,

H Fonvieille

STRASBOURG, CRN - F Brochard

Accelerator SATURNE-II Detector DIOGENE

SUMMARIES OF SACLAY EXPERIMENTS

Reactions Polarized beam
 $p p \rightarrow p n \pi^+$ 800, 1500, 2000, 2500 MeV (T_{lab})
 $p p \rightarrow p p \pi^+ \pi^-$ "

SACLAY-133 (Oct 1985) Approved Nov 1985; Started Jun 1986.

DEPENDENCE ON A OF PION PRODUCTION IN THE REACTION p NUCLEUS $\rightarrow \pi X$

STRASBOURG, CRN - D Benabdelouahed, G Bergdolt, O Bing, P Fassnacht, F Hibou (✓ Spokesperson)

ORSAY, IPN - Y Le Bornec (✓ Spokesperson), M P Comets, R Frascaria, B Tatischeff

SACLAY - M Boivin

Accelerator SATURNE-II **Detector** SPES-III

Reactions
 p nucleus $\rightarrow$ pion X 2.1, 2.7 GeV (T_{lab})

SACLAY-134 (Oct 1985) Approved Nov 1985; Started Mar 1986.

STUDY OF DEUTERON BREAKUP IN THE REACTION d NUCLEUS $\rightarrow p X$ AT 3.72 GeV/c

ORSAY, IPN - J P Didelez, R Frascaria

SACLAY - R Beurtey, M Boivin, A Boudard, F Plouin, J Yonnet (Spokesperson)

WILLIAM AND MARY COLL - J M Finn, H Funsten,

C F Perdrisat (Spokesperson)

VIRGINIA U - P C Gugelot

Accelerator SATURNE-II **Detector** SPES-IV

Reactions Polarized beam
 d nucleus $\rightarrow p X$ 3.72 GeV/c

Comments Targets are H, He, and C. Measures the cross section and analyzing power T_{20} at 0° .

SACLAY-136 (Oct 1985) Approved Nov 1985, May 1986; Started Jul 1986.

MEASUREMENT OF ANALYZING POWER OF THE REACTION $np \rightarrow d \gamma$ BETWEEN 500 AND 1100 MeV

SACLAY - R Beurtey, B Bonin, A Boudard, G Bruge, P Couvert, J C Duchazeaubeneix, J C Faivre, J C Lugol, B Mayer,

M Rouger, J Saudinos, B Silverman (Spokesperson), Y Terrien, F Wellers

GEORGE WASHINGTON U - W Briscoe

Accelerator SATURNE-II **Detector** Combination

Reactions Polarized beam
 $n p \rightarrow d$ deut γ 500-1100 MeV (T_{lab})

SACLAY-137 (Oct 1985) Approved Jun 1986; Completed.

FULL CALIBRATION OF THE "AHEAD" (ALBERTA HIGH EFFICIENCY ANALYZER FOR DEUTERONS) POLARIMETER FOR DEUTERONS BETWEEN 100 AND 260 MeV

SACLAY & ALBERTA U - L Antonuk (Spokesperson), G Roy

SACLAY - J Arvieux, B Bonin, A Boudard, J M Durand,

M Garcon, J Tinsley, Y Yonnet

ORSAY, IPN - D Bachelier

ALBERTA U - E B Cairns, J Cameron (Spokesperson),

H W Fielding, C Lapointe, W J McDonald, G C Neilson,

D M Sheppard, J Soukup, K Starko

Accelerator SATURNE-II **Detector** SPES-I

Reactions Polarized beam
 d deut $p \rightarrow d$ deut p 100-260 MeV (T_{lab})
 d deut $p \rightarrow p p n$ "

SACLAY-138 (Oct 1985) Approved Nov 1985; Started Jul 1986.

TEST OF CHARGE SYMMETRY BY COMPARISON OF ANALYZING POWERS T_{20} IN REACTIONS $dp \rightarrow {}^3\text{He } \pi^0$ AND $dp \rightarrow {}^3\text{H } \pi^+$

SACLAY - J Banaigs, J Berger (Spokesperson), M Boivin, A Boudard, L Goldzahl (Spokesperson), F Plouin, J Yonnet
 ALBERTA U - Roy
 FRASCATI - F Fabbri, G Picozza, L Satta
 UCLA - V Ghazikhanian, Gordon

Accelerator SATURNE-II **Detector** SPES-IV

Reactions
 d deut $p \rightarrow {}^3\text{He } \pi^0$ 600, 900, 1100 MeV (T_{lab})
 d deut $p \rightarrow \text{trit } \pi^+$ "

SACLAY-140 (Oct 1985) Approved Nov 1985; Started Jul 1986.

FIRST MEASUREMENT OF DIFFERENTIAL CROSS SECTIONS AND ANALYZING POWERS FOR THE REACTIONS $np \rightarrow pp \pi^-$ AND $np \rightarrow d \pi^+ \pi^-$

SACLAY - R Beurtey, B Bonin, A Boudard, G Bruge, P Couvert, J-C Duchazeaubeneix, J-C Faivre, J-C Lugol, B Mayer, M Rouger, J Saudinos, B Silverman, Y Terrien (✓ Spokesperson), F Wellers

Accelerator SATURNE-II **Detector** Combination

Reactions Polarized beam
 $n p \rightarrow p p \pi^-$ 650-1000 MeV (T_{lab})
 $n p \rightarrow d$ deut $\pi^+ \pi^-$ "

SACLAY-144 (Oct 1985) Approved Nov 1985; Started Dec 1985; Completed Dec 1988.

NUCLEON-NUCLEON PROGRAM PART II: np SCATTERING UP TO 1.2 GeV

SACLAY - J Ball, J M Fontaine, C D Lac, F Lehar (✓ Spokesperson), A de Lesquen, M de Mali, F Perrot (✓ Spokesperson), L van Rossum

GENEVA U - J Bach, G Gaillard, R Hess (✓ Spokesperson),

D Rapin, P Sormani

FREIBURG U - R Binz, R Peschina, E Roessle, H Schmitt

Accelerator SATURNE-II **Detector** Combination

Reactions Polarized beam and target
 $n p \rightarrow n p$ 0.312-1.10 GeV (T_{lab})
 $p p \rightarrow p p$ "

Comments Measures $np \rightarrow np$ and $pp \rightarrow pp$ using a polarized deuteron beam, and also $np \rightarrow np$ using a free polarized neutron beam (the polarized neutrons come from polarized deuteron breakup). Measures $\Delta\sigma_L$, $\Delta\sigma_T$, the correlation parameter, Wolfenstein parameters, and 3-spin index parameters. Compares results for free and quasi-free scattering.

Papers PL B169 (1986) 241, JdeP 48 (1987) 985, NP B286 (1987) 635, PL B189 (1987) 241, NP B304 (1988) 673, and ZPHY C40 (1988) 193.

SACLAY-145 (Jun 1987) Approved Nov 1987, Oct 1988.

MEASUREMENTS OF A_{ZZ} AND P_Z FOR THE REACTION $dp \rightarrow ppn$ IN COMPLETE KINEMATICS

LENINGRAD, INP - S L Belostotsky (Spokesperson),

G A Korolev, O V Miklukho, V N Nikolin, M G Strikman,

A A Vorobyov

BUDAPEST, CRIP - J Eroe

SACLAY - A Boudard

Accelerator SATURNE-II **Detector** SPES-IV

Reactions Polarized beam
 d deut $p \rightarrow p p n$ 2 GeV (T_{lab})

Comments A complete kinematics experiment to study the behavior of the S and D waves in the deuteron.

SACLAY-155 (Nov 1986) Approved Jun 1987.

ABNORMAL PRODUCTION OF LOW-ENERGY NEUTRAL PIONS IN THE REACTION $pA \rightarrow \pi^0 X$ BETWEEN 300 AND 420 MEV BEAM KINETIC ENERGY

SUMMARIES OF SACLAY EXPERIMENTS

SACLAY - D Bachelier, C Cerruti, J M Hisleur, J Julien (Spokesperson), B Saghai
GRENOBLE U - D Lebrun, V S Nguyen
KERNFORSCHUNGSANLAGE, JULICH - K Kilian
UPPSALA U - T Johansson
MOSCOW, INR - A Kurepin

Accelerator SATURNE-II Detector Counter

Reactions

$p \text{ nucleus} \rightarrow \pi^0 X$ 300-420 MeV (T_{lab})

SACLAY-157 (Dec 1986) Approved Jun 1987; Started Jun 1987.

MEASUREMENT OF THE MASS OF THE ETA AND CALIBRATION OF THE SATURNE BEAM ENERGY

SACLAY - J Banaigs, J Berger, R Beurtey, A Boudard, L Goldzahl, A Nakach, F Plouin, G Simonneau, C Whitten
ECOLE POLYTECHNIQUE - P Fleury (Spokesperson)
FRASCATI - L Satta

Accelerator SATURNE-II Detector SPES-IV

Reactions Polarized beam and target

deut $p \rightarrow {}^3\text{He } \pi^0$ 0.65, 1.3, 1.6, 2.1, 2.4, 3.2 GeV/c
deut $p \rightarrow \text{trit } \pi^+$ "
deut $p \rightarrow {}^3\text{He } \eta$ "
deut $p \rightarrow {}^3\text{He } \omega$ "
deut $p \rightarrow {}^3\text{He } \eta'$ "

Particles studied η, ω, η'

Papers PRL 61 (1988) 919.

SACLAY-166 (Feb 1988) Approved Jun 1988; Started Sep 1988.

REACTION $H(d, 2p)n$ WITH POLARIZED DEUTERONS AT 200 MEV

GRENOBLE U - S Kox, F Merchez, C Perrin ($\sqrt{\text{Spokesperson}}$), D Rebreyend
SACLAY - J Arvieux, B Bonin, A Boudard, M Garcon, J Yonnet
ORSAY, IPN - J Guillot
GENEVA U - G Gaillard
STRASBOURG, CRN - G Guillaume
RIKKYO U - T Motobayashi

Accelerator SATURNE-II Detector EMRIC

Reactions Polarized beam

deut $p \rightarrow p p n$ 200, 350 MeV (T_{lab})

Comments Measures the cross section and A_y, A_{zz} , and A_{yy} . Running at 200 MeV is complete. Running at 350 MeV is scheduled for the end of 1989.

SACLAY-173 (Oct 1987) Approved Jun 1987; Started Nov 1987.

ASYMMETRY IN pp SCATTERING IN SMALL STEPS OF ENERGY BETWEEN 180 AND 260 MEV

SACLAY - J Arvieux, R Beurtey (Spokesperson), J M Durand, B Mayer, G Milleret, J Saudinos, Y Terrien

Accelerator SATURNE-II Detector ?

Reactions Polarized beam

$p p \rightarrow p p$ 130-260 MeV (T_{lab})

Comments Uses the beam polarimeter of the SD2 SATURNE extraction.

SACLAY-174 (1987) Approved Oct 1987; Started May 1988.

STUDY OF η PRODUCTION IN pp AND $p {}^{12}\text{C}$ COLLISIONS

STRASBOURG, CRN - A M Bergdolt, G Bergdolt, O Bing ($\sqrt{\text{Spokesperson}}$), F Brochard, P Gorodetzky, F Hibou, C Racca
ORSAY, IPN - L Bimbot, Y Le Bornec, M P Comets, P Courtat, E Loireux, F Reide, B Tatischeff, N Willis
SACLAY - M Boivin, A Moalem, B Nefkens, F Plouin, W Roesch

Accelerator SATURNE-II Detector SPES-III

Reactions Polarized beam

$p p \rightarrow p p X$ 1256, 1258, 1260, 1265, 1300,
1350, 1450, 1550 MeV (T_{lab})
"
 $p p \rightarrow p p \eta$ "
 $p {}^{12}\text{C} \rightarrow p p X$ 1260, 1450, 1550 MeV (T_{lab})
 $p {}^{12}\text{C} \rightarrow p {}^{11}\text{B} \gamma$ "

Comments Measures η production near threshold in $pp \rightarrow pp\eta$ and searches for bound states of the η in $p {}^{12}\text{C} \rightarrow pp(\eta {}^{11}\text{B})$. Reconstructs the missing mass spectrum by detecting two photons in coincidence and at 0° .

SACLAY-177 (Oct 1988) Approved Jun 1988.

DEUTERON VECTOR POLARIZATION AND POLARIZATION TRANSFER COEFFICIENTS IN THE REACTION $pp \rightarrow d\pi^+$

SACLAY - M Boivin, B Bonin, A Boudard, G Bruge, P Couvert, J M Durand, M Garcon, C Kerboul, B Mayer ($\sqrt{\text{Spokesperson}}$), Y Terrien, J Yonnet

ALBERTA U - R Abegg, L G Greeniaus, D A Hutcheon ($\sqrt{\text{Spokesperson}}$), W J McDonald, G A Moss

Accelerator SATURNE-II Detector SPES-IV

Reactions Polarized beam

$p p \rightarrow \text{deut } \pi^+$ 1.2-2.9 GeV (T_{lab})

Comments Also uses the POMME polarimeter. Scheduled to run September 89.

SACLAY-190 (Mar 1988) Approved Dec 1988.

SPIN STRUCTURE OF THE Δ EXCITATION

COPENHAGEN U & LUND U & LYON, IPN & ORSAY & SACLAY - D Bachelier, C Gaarde (Spokesperson), J C Jourdain, P Zupranski (Spokesperson)

Accelerator SATURNE-II Detector SPES-IV

Reactions Polarized beam

deut $p \rightarrow {}^2\text{He } \Delta(1232 P_{33})^0$ —

Comments Measures T_{20} and T_{22} . A continuation of SACLAY-115.

SACLAY-192 (Mar 1988) Approved Jun 1988; Started Sep 1988; Completed Sep 1988.

STUDY OF p NUCLEUS INTERACTIONS AT 800 MEV AND 2 GEV

SACLAY - J Gosset, D L'Hote, M C Lemaire (Spokesperson), B Lucas, J Poitou, O Valette

STRASBOURG, CRN - P Gorodetzky (Spokesperson)
CLERMONT-FERRAND U - J P Alard, J Augerat, N Bastid,

P Chermensat, P Dupieux, J Marrou, G Montarou (Spokesperson), M J Parizet, D Quassoud, A Rahmani

ORSAY, IPN - D Bachelier, J L Boyard, B Faure, T Hennino, J C Jourdain, P Radvanyi, M Roy-Stephan

HEIDELBERG U, IHEP - D Felte, M Trzaska

Accelerator SATURNE-II Detector Spectrometer

Reactions

$p \text{ nucleus}$ 0.8, 2.0 GeV (T_{lab})

SACLAY-197 (Mar 1988) Approved Jun 1988; Started Nov 1988.

STUDY OF $pd \rightarrow {}^3\text{He } X$ AT THRESHOLD FOR $X = \omega$ OR η' AND FOR $m_X = 1-1.5 \text{ GEV}$

SACLAY - R Beurtey, M Boivin, W Briscoe, P Fleury, J Martino, B Mayer, A Moalem, F Plouin (Spokesperson)

ORSAY, IPN - D Bachelier, J L Boyard, T Hennino

UCLA - R Kessler, B M K Nefkens, J Price

Accelerator SATURNE-II Detector ?

Reactions

$p \text{ deut} \rightarrow {}^3\text{He } X$ —

SUMMARIES OF SACLAY EXPERIMENTS

Particles studied ω , η' , ϕ

Comments A continuation of SACLAY-157.

SACLAY-198 (Mar 1988) Approved Dec 1988.

MEASUREMENT OF SOME FUNDAMENTAL DECAY MODES OF THE η

UCLA - R Kessler, B M K Nefkens ($\checkmark$ Spokesperson), J Price

SACLAY - A Chaumeaux, P Fleury, J Martino, B Mayer

($\checkmark$ Spokesperson), A Moalem, F Plouin

ARIZONA STATE U - J Comfort

Accelerator SATURNE-II Detector ?

Reactions

$p \text{ deut} \rightarrow {}^3\text{He } \eta$ $> 896 \text{ MeV } (T_{\text{lab}})$

Particles studied η

Comments Measures the η branching fractions to e^+e^- , $\mu^+\mu^-$, $e\mu$, and $\pi\pi$. In preparation (July 89).

SACLAY-199 (Oct 1988) Approved Dec 1988.

DETERMINATION OF THE PARAMETER g_0 OF RESIDUAL ISOSCALAR SPIN INTERACTIONS

ORSAY, IPN - L Bimbot, C Djalali, T Mach, N Marty, M Morlet

($\checkmark$ Spokesperson), J Van de Wiele, A Willis ($\checkmark$ Spokesperson)

SACLAY - B Bonin

Accelerator SATURNE-II Detector SPES-1

Reactions

$p \text{ Pb}$ Polarized beam
 $200 \text{ MeV } (T_{\text{lab}})$

Comments Uses the polarimeter POMME. First tests completed March 89.

SACLAY-206 (Nov 1988) Approved Dec 1988.

MEASUREMENT OF THE CROSS SECTION NEAR THRESHOLD FOR ${}^6\text{Li } p \rightarrow {}^7\text{Be } \eta$

SACLAY - M Boivin, H Catz, P Couvert, B Mayer, A Moalem,

B Nefkens ($\checkmark$ Spokesperson), E Tomasi, F Wellers

UCLA - D Barlow, R Kessler, C Pillai

ORSAY, IPN - D Bachelier, J L Boyard

GEORGE WASHINGTON U - W Briscoe

TRIUMF - R Abegg

Accelerator SATURNE-II Detector SPES-IV

Reactions

${}^6\text{Li } p \rightarrow {}^7\text{Be } \eta$ $3944\text{--}4500 \text{ MeV } (T_{\text{lab}})$

Comments Running awaits the availability of a ${}^6\text{Li}$ beam. In preparation (July 89).

SERPUKHOV Experiments

SERPUKHOV-100 (May 1974) Approved Jun 1975: Started May 1976. Completed Feb 1984.

STUDY OF LARGE p_t PARTICLE PRODUCTION IN pN COLLISIONS AT 70 GeV

SERPUKHOV - V V Abramov, A V Alekseev, B Y Baldin, S I Bitukov, Y P Dmitrevsky, A S Dyshkant, V N Evdokimov, V Y Glebov, V I Kotov, A N Krinitin, V I Kryshkin, N Y Kulman, V K Myalitsin, R A Rzaev, R M Sulyaev (✓ Spokesperson), L K Turchanovich, Y N Vrazhnev, V V Zmushko

Accelerator SERPUKHOV Detector FODS

Reactions	
$p \rightarrow \pi^+ X$	70 GeV (E_{lab})
$p \rightarrow \pi^- X$	"
$p \rightarrow K^+ X$	"
$p \rightarrow K^- X$	"
$p \rightarrow p X$	"
$p \rightarrow \bar{p} X$	"
$p \text{ deut} \rightarrow \pi^+ X$	"
$p \text{ deut} \rightarrow \pi^- X$	"
$p \text{ deut} \rightarrow K^+ X$	"
$p \text{ deut} \rightarrow K^- X$	"
$p \text{ deut} \rightarrow p X$	"
$p \text{ deut} \rightarrow \bar{p} X$	"

Comments The p_t range is 0.3 to 4.5 GeV, and the mass-squared range is 1 to 9 GeV².

Papers YF 23 (1976) 1195 = SJNP 23 (1976) 636, PTE 4 (1980) 38, NP B173 (1980) 348, YF 31 (1980) 660 = SJNP 31 (1980) 343, YF 31 (1980) 937 = SJNP 31 (1980) 484, YF 31 (1980) 1483 = SJNP 31 (1980) 770, ZETFP 33 (1981) 304 = JETPL 33 (1981) 280, ZETFP 33 (1981) 475 = JETPL 33 (1981) 458, YF 33 (1981) 715 = SJNP 33 (1981) 371, ZETFP 34 (1981) 621 = JETPL 34 (1981) 598, YF 34 (1981) 1271 = SJNP 34 (1981) 706, PL 112B (1982) 170, YF 35 (1982) 1199 = SJNP 35 (1982) 702, ZETFP 38 (1983) 206 = JETPL 38 (1983) 243, ZETFP 38 (1983) 296 = JETPL 38 (1983) 352, NP B245 (1984) 1, ZETFP 39 (1984) 92 = JETPL 39 (1984) 111, YF 40 (1984) 1447 = SJNP 40 (1984) 918, ZPHY C24 (1984) 205, YF 41 (1985) 137 = SJNP 41 (1985) 87, YF 41 (1985) 357 = SJNP 41 (1985) 227, YF 41 (1985) 700 = SJNP 41 (1985) 445, ZPHY C27 (1985) 497, YF 45 (1987) 725 = SJNP 45 (1987) 452, and YF 45 (1987) 1362 = SJNP 45 (1987) 845. No other papers expected.

SERPUKHOV-102 (1975) Approved Jul 1975: Started May 1978: Completed 1985.

STUDY OF HYPERCHARGE EXCHANGE SCATTERING PROCESSES

SERPUKHOV - S A Akimenko, V I Belousov, A M Blick, V M Kutyin (✓ Spokesperson), Y D Prokoshkin, A I Ronzhin, V I Rykalin, V I Solyanik
DUBNA - Y A Budagov (✓ Spokesperson), V P Dzhelepov, V B Flyagin, Y F Lomakin, V B Vinogradov, A G Volodko
TBILISI STATE U - N S Amaglobeli, R G Salukvadze
YEREVAN PHYS INST - A T Amatuni, E M Matevosyan
KOSICE, IEF - Y Dubinski, L Shandor

Accelerator SERPUKHOV Detector Spectrometer

Reactions	
$\pi^+ p \rightarrow K^+ \Sigma^+$	5-20 GeV/c
$\pi^+ p \rightarrow K^+ Y^*(\text{unspec})^+$	"
$\pi^+ n \rightarrow K^0 \Sigma^+$	"
$\pi^+ n \rightarrow K^0 Y^*(\text{unspec})^+$	"
$\pi^+ n \rightarrow K^+ Y^*(\text{unspec})^0$	"
$\pi^+ n \rightarrow K^+ \Lambda$	"
$K^+ n \rightarrow \pi^+ Z^*(\text{unspec})^0$	"
$\pi^+ n \rightarrow K^+ \Lambda(1330 B)$	"

Particles studied $\Lambda(1330 B)$, $Z^*(\text{unspec})^0$

Papers YF 38 (1983) 1212 = SJNP 38 (1983) 732, YF 38 (1983) 1472 = SJNP 38 (1983) 896, YF 39 (1984) 649 = SJNP 39 (1984) 411, NP B260 (1985) 497, PL 167B (1986) 138, YF 43 (1986) 615 = SJNP 43 (1986) 392, and NP B279 (1987) 770.

SERPUKHOV-105 (1975) Approved Jan 1976: Started Jun 1978: Completed 1982.

STUDY OF HADRON INTERACTIONS IN THE ENERGY RANGE 20-40 GeV

BERLIN-ZEUTHEN ADW - J Baehr, G Bohm, K Deiters, A Donat, W Friebe, I Halm, J Harder, U Kundt, R Leiste, S Nowak, G Peter, R Pose, H E Roloff, H Schiller, A Schwind, K Truetschler, H Vogt, H Wenzlaff
BUDAPEST, CRIP - T Gemeshi, D Pinter
WARSAW U, IEP - I Gaevski, Z Tsisek, Y Zakzhevski
DUBNA - D Albrecth, E M Andreev, P Glasnek, Y V Grishkevich, V G Ivanov, G M Kadykov, G Khemnits, B A Khomenko, N N Khrcvansky, Z V Krumshstein, K Lanius, A Majer, Y P Merekov, B A Muravev, G A Ososkov, V I Petrukhin (✓ Spokesperson), D Poze, K Ryuger, G A Shelkov, K Shpiring, J Shyuler, T A Strizh, V M Suvorov, K Tom, L S Vertogradov
PRAGUE, INST PHYS - Y Bern, V Cherny, Z Korbel, M Pishut, L Rob, Y Sedlak, M Seman, K Shafarik
TBILISI STATE U - D M Kotlyarevsky, T A Lomadze, N N Roinishvili

Accelerator SERPUKHOV Detector Wide-angle spectrometer, Streamer chamber

Reactions	
$\pi^- p$	20-40 GeV/c

Comments Studies multiple hadron production without π^0 s, and processes with production of at least one particle with $p_t > 1$ GeV/c.

SERPUKHOV-107 Approved 1976: Started Feb 1976: Completed 1987.

STUDY OF NEUTRINO AND ANTINEUTRINO INTERACTIONS WITH NUCLEI

SERPUKHOV - V V Ammosov (✓ Spokesperson), D S Baranov, N N Chabron, V I Ermolaev, V S Filipov, A A Ivanilov, V I Kheborad, A A Khrunov, B T Konyushko, V M Korabiev, V A Korotkov, V V Makeev, A G Myakev, N A Noryaga, A Y Polarusy, A G Ryabov, A A Sokolov, G G Volkov
LEBEDEV INST - E P Kuznetsov
BERLIN-ZEUTHEN ADW - H J Grabosch, H H Kaufmann, R Nahnauer, S Nowak, H E Roloff, S Schlenstedt

Accelerator SERPUKHOV Detector HLBC-SKAT

Reactions	
$\nu_\mu \text{ nucleus} \rightarrow \nu_\mu X$	3-30 GeV/c
$\nu_\mu \text{ nucleus} \rightarrow \mu^- \text{ hadron } X$	"
$\nu_\mu \text{ nucleus} \rightarrow \mu^- \gamma X$	"
$\nu_\mu \text{ nucleus} \rightarrow \mu^- \pi^0 X$	"
$\nu_\mu \text{ nucleus} \rightarrow \mu^- \pi^+ \text{ nucleus}$	"
$\nu_\mu \text{ nucleus} \rightarrow \nu_\mu \pi^0 \text{ nucleus}$	"
$\nu_\mu \text{ nucleus} \rightarrow \mu^- e^+ X$	"
$\nu_\mu \text{ nucleus} \rightarrow \mu^- e^- X$	"
$\nu_\mu \text{ nucleus} \rightarrow \mu^- \text{ charm } X$	"
$\bar{\nu}_\mu \text{ nucleus} \rightarrow \bar{\nu}_\mu X$	"
$\bar{\nu}_\mu \text{ nucleus} \rightarrow \mu^+ \text{ hadron } X$	"
$\bar{\nu}_\mu \text{ nucleus} \rightarrow \mu^+ \gamma X$	"
$\bar{\nu}_\mu \text{ nucleus} \rightarrow \mu^+ \pi^0 X$	"
$\nu_e \text{ nucleus} \rightarrow e^- X$	"
$\nu_\mu n \rightarrow \mu^- p$	"
$\bar{\nu}_\mu p \rightarrow n \mu^+$	"

Particles studied charm

Comments Studies neutral current processes, neutrino electron scattering, and dilepton production

SUMMARIES OF SERPUKHOV EXPERIMENTS

Papers YF 16 (1972) 546 = SJNP 16 (1972) 304, YF 17 (1973) 805 = SJNP 17 (1973) 420, YF 26 (1977) 110 = SJNP 26 (1977) 57, PL 70B (1977) 269, PL 76B (1978) 336, YF 27 (1978) 1608 = SJNP 27 (1978) 846, YF 29 (1979) 1203 = SJNP 29 (1979) 620, YF 29 (1979) 1206 = SJNP 29 (1979) 622, YF 30 (1979) 146 = SJNP 30 (1979) 75, ZETFP 30 (1979) 390 = JETPL 30 (1979) 362, PL 81B (1979) 255, PL 81B (1979) 258, PL 81B (1979) 267, PL 93B (1980) 191, ZETFP 31 (1980) 772 = JETPL 31 (1980) 725, ZPHY C21 (1984) 189, ZPHY C21 (1984) 197, YF 40 (1984) 1454 = SJNP 40 (1984) 923, YF 41 (1985) 1520 = SJNP 41 (1985) 963, YF 43 (1986) 1186 = SJNP 43 (1986) 759, ZPHY C30 (1986) 175, ZPHY C30 (1986) 183, ZPHY C31 (1986) 203, ZPHY C35 (1987) 329, YF 45 (1987) 1662 = SJNP 45 (1987) 1029, YF 46 (1987) 130 = SJNP 46 (1987) 80, YF 46 (1987) 1673 = SJNP 46 (1987) 998, YF 47 (1988) 113 = SJNP 47 (1988) 73, ZPHY C40 (1988) 487, and ZPHY C40 (1988) 493.

SERPUKHOV-112 (Jan 1976) Approved Jun 1976; Started Apr 1979; Completed 1985.

POLARIZATION MEASUREMENT IN CHARGE-EXCHANGE REACTIONS AT 40 GeV/c

SERPUKHOV - V D Apokin, B N Chuyko, A A Derevshchikov, V A Krendelev, Y A Matulenko, A P Meschanin, A I Mischic, S B Nurushiev (✓ Spokesperson), V I Rykalin, V G Rykov, V L Solovyanov, L F Solov'yev, A N Vasilyev
DUBNA - N S Borisov, E I Bunyotova, Y M Kazarinov (✓ Spokesperson), B A Khachaturov, V S Kiselev, R K Kutuev, M Y Liburg, A B Negarov, B S Negarov, I K Potashnikova, Y A Usov, R Y Zulkarneov

Accelerator SERPUKHOV **Detector** PROZA

Reactions Polarized target

$\pi^- p \rightarrow \pi^0(s) n$	40 GeV/c
$\pi^- p \rightarrow n \eta$	"
$\pi^- p \rightarrow n \eta'$	"
$\pi^- p \rightarrow n \omega$	"
$\pi^- p \rightarrow n f_2(1270)$	"
$\pi^- \text{nucleus} \rightarrow \text{nucleus } \pi^0$	"
$K^- \text{nucleus} \rightarrow \text{nucleus } \pi^0$	"
$K^- p \rightarrow K_L n$	"

Papers YF 35 (1982) 382 = SJNP 35 (1982) 219, YF 35 (1982) 1465 = SJNP 35 (1982) 857, ZPHY C15 (1982) 293, YF 36 (1982) 1191 = SJNP 36 (1982) 694, YF 41 (1985) 116 = SJNP 41 (1985) 74, NP B255 (1985) 253, YF 42 (1985) 1146 = SJNP 42 (1985) 725, YF 42 (1985) 1152 = SJNP 42 (1985) 729, PTE 5 (1987) 46, ZPHY C35 (1987) 173, YF 45 (1987) 1355 = SJNP 45 (1987) 840, YF 47 (1988) 727 = SJNP 47 (1988) 465, YF 47 (1988) 1644 = SJNP 47 (1988) 1041 and YF 49 (1989) 445 = SJNP 49 (1989) 7.

SERPUKHOV-115 (Nov 1975) Approved Jan 1976; Started 1982; Completed 1986

STUDY OF CHARGED PARTICLE RARE DECAYS

MOSCOW, INR - V N Bolotov (✓ Spokesperson), R M Dzhiikibaev, S N Grinenko, V V Isakov, Y M Klubakov, V D Laptev, V M Lobashov, V I Marin, A A Poblavag, V E Postoev, A N Toropin

Accelerator SERPUKHOV **Detector** Counter

Reactions

$\pi^- \rightarrow e^- \bar{\nu}_e \gamma$
$K^- \rightarrow \pi^- \pi^0 \gamma$
$K^- \rightarrow \pi^- \pi^0 \pi^0 (\gamma)$
$K^- \rightarrow \pi^0 e^- \bar{\nu}_e (\gamma)$
$K^- \rightarrow \pi^0 \pi^0 \nu \bar{\nu}_e \gamma$

Particles studied π^-, K^-

Papers ZETFP 42 (1985) 390 = JETPL 42 (1985) 481, ZETFP 43 (1986) 405 = JETPL 43 (1986) 520, YF 44 (1986) 108 = SJNP 44 (1986) 68, YF 44 (1986) 117 = SJNP 44 (1986) 73, YF 45 (1987) 1652 = SJNP 45 (1987) 1023, and ZETFP 47 (1988) 8 = JETPL 47 (1988) 7. No other papers expected

SERPUKHOV-119 (Dec 1976) Approved Jul 1977; Started May 1981.

RELATIVISTIC POSITRONIUM PHYSICS

DUBNA - G D Alekseev, V V Karpukhin, D M Khazins, V V Kruglov, A V Kuptsov, L L Nemenov (✓ Spokesperson), SERPUKHOV - K I Gubrienko, V I Kotor, MOSCOW S'ATE U - O E Gorchakov, A V Kulikov, S V Trusov

Accelerator SERPUKHOV **Detector** Combination

Reactions

$p n \rightarrow \pi^0 X$	< 70 GeV/c
$p n \rightarrow \text{positronium } X$	"

Particles studied positronium

Comments A test of special relativity. Studies $\pi^0 \rightarrow \gamma + \text{positronium decay}$, positronium oscillations, and interactions of relativistic positronium with matter.

Papers YF 40 (1984) 139 = SJNP 40 (1984) 87. For the theory see YF 15 (1972) 1047 = SJNP 15 (1972) 582.

SERPUKHOV-121 (Dec 1976) Approved Jul 1977; Started Feb 1981; Completed 1982.

SEARCH FOR DECAYS OF PARTICLES WITH MEAN LIFETIMES 10^{-11} TO 10^{-12} s

SERPUKHOV - V N Chepegin, G G Gurov, V L Ushkov, DUBNA - L N Strunov, V A Sviridov, Y A Yatsunenko, L S Zolin (✓ Spokesperson)

MOSCOW, ITEP - I V Chuvilo, A B Kaidalov

Accelerator SERPUKHOV **Detector** Combination

Reactions

$p \text{ nucleus} \rightarrow \text{charm } X$	70 GeV (E_{lab})
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Particles studied charm

Comments A search for charmed particle hadronic and semileptonic decay modes.

SERPUKHOV-127 (Feb 1978) Approved Feb 1980; Started Jun 1981; Completed 1982.

STUDY OF HADRON ATOMS AND ELEMENTARY PARTICLE PROPERTIES USING A CRYSTAL-DIFFRACTION SPECTROMETER AT THE SERPUKHOV PROTON SYNCHROTRON

LENINGRAD, INP - A S Denisov, A N Koznov, V M Marushenko, A F Mezentssev, N B Mokhov, A A Petrunin, S G Skorniyakov, V M Smirnov (✓ Spokesperson), V M Suvorov, A V Zhelamkov, V M Zheleznyakov

Accelerator SERPUKHOV **Detector** Spectrometer

Reactions

$p \text{ nucleus} \rightarrow \pi^- X$	1 GeV/c
$p \text{ nucleus} \rightarrow K^- X$	"
$p \text{ nucleus} \rightarrow \Sigma^- X$	"
$\pi^- \text{ nucleus} \rightarrow \gamma X$	"
$K^- \text{ nucleus} \rightarrow \gamma X$	"
$\Sigma^- \text{ nucleus} \rightarrow \gamma X$	"

Particles studied K^-, Σ^-

Comments Studies strong interactions of $\pi^-, K^-,$ and Σ^- with nuclei, and transition radiation energies and level widths of $\pi^- Z, K^- Z, \Sigma^- Z$ atoms.

SERPUKHOV-128 (1977) Approved 1984; Started 1987.

SEARCH FOR NEW SHORT-LIVED PARTICLES IN NEUTRINO INTERACTIONS

SERPUKHOV - V V Ammosov, V I Baranov, A A Ivanilov, P V Ivnov, V M Korablev, V A Kurotkov, V V Makeev, A G Myagkov, P V Pitukhin, A Y Polyarush, V A Smotryaev, A A Sokolov

SUMMARIES OF SERPUKHOV EXPERIMENTS

MOSCOW PHYS ENG INST - E Gushchin, A I Lebedev,
S V Somov (✓ Spokesperson), G I Tipografshchik
MOSCOW ITEP - O K Egorov, V D Khovansky, E O Kolganova,
E A Pozharova, V A Smirnitky, I S Trostin, A O Vaisenberg
LEBEDEV INST - S I Kotelnikov, E P Kuznetsov,
B I Lomonosov, L I Pervov, V A Ryabov, P S Vasiliev
MOSCOW STATE U - P F Ermolov, V S Murzin, S I Sivoklov
DUBNA - Y A Batusov, S A Bunyatov, O M Kuznetsov,
V V Lyukov, V I Tretyak

Accelerator SERPUKHOV Detector Combination

Reactions

ν_μ nucleon $\rightarrow \mu^-$ charm X	3-30 GeV/c
ν_μ nucleon $\rightarrow \Lambda_c^+ \mu^-$ X	"
ν_μ nucleon $\rightarrow \Sigma_c(2455)^+ \mu^-$ X	"
ν_μ nucleon $\rightarrow \Sigma_c(2455)^{++} \mu^-$ X	"
ν_μ nucleon $\rightarrow \mu^-$ charmed-meson X	"
ν_μ nucleon $\rightarrow D_s^+ \mu^-$ X	"

Particles studied charm

Comments The detector is a wide-angle spectrometer with a streamer chamber and emulsions. 2×10^{18} protons on target was taken.

SERPUKHOV-132 (1978) Approved Apr 1978; Started Apr 1980; Completed 1983.

INVESTIGATION OF POSSIBILITY OF FENDING AND COOLING OF BEAMS BY SINGLE CRYSTALS. DESIGN OF NEW TYPE DETECTORS FOR CHARGED PARTICLES

DUBNA - V M Golovatyuk, Z Guzik, R B Kadyrov,
T S Nigmanov, S N Plyashkevich, E N Tsyganov
(✓ Spokesperson), A S Vodopriyov
SUNY, ALBANY - W M Gibson, I J Kim, C R ...
FERMILAB - R Carrigan, B Chrisman, T Toth ...
MOSCOW, ITEP - I V Chuvilo, L I Kondratiev, ... G Koshkarev,
Y Y Lapitsky
KHARKOV STATE U - I A Grishaev, E V Inopi, P V Sorokin
TOMSK POLYTECHNIC INST - A N Didenko, V Kaplin,
S A Vorobiev

Accelerator SERPUKHOV Detector Combination

Reactions

charged ⁺	10-40 GeV/c
charged ⁻	"

Comments Ran for 1062 hours.

Papers PL 88B (1979) 387, and ZETFP 30 (1979) 474 = JETPL 30 (1979) 442. No other papers expected.

SERPUKHOV-133 (Jan 1978) Approved Apr 1978; Started Apr 1978; Completed 1984.

EXTENSION OF THE 82 GeV/c K⁺p EXPERIMENT IN THE MIRABELLE BUBBLE CHAMBER WITH UP TO 1 MILLION PICTURES

SERPUKHOV - I V Azhinenko, Yu A Belokopytov,
O G Chikilev, A B Fenjuk, L N Gerdnyukov, P A Gorbunov,
S V Klimentov, V V Knyazev, S B Lugovsky, B A Manyukov,
L P Petrovich, V N Ryadovikov, A M Rybin, P V Shlyapnikov
(✓ Spokesperson), V A Uvarov, A P Vorobyev
MONS U - C Dujardin, F Garod, R Windmolders
BRUSSELS U - M Csejthely-Barth, J J Dumont, M Gijzen,
S Tavernier, F Verbeure, E De Wolf

Accelerator SERPUKHOV Detector HBC-MIR

Reactions

K ⁺ p	32.1 GeV/c
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Papers ZPHY C3 (1980) 285, PL 95B (1980) 45 PL 121B (1983) 183, PL 130B (1983) 432, ZPHY C23 (1984) 307, ZPHY C25 (1984) 103, YF 39 (1984) 1448 = SJNP 39 (1984) 914, YF 41 (1985) 338 = SJNP 41 (1985) 214, YF 41 (1985) 925 = SJNP 41 (1985) 593, YF 41 (1985) 1535 = SJNP 41 (1985) 972, YF 43 (1986) 95 = SJNP 43 (1986) 61, and YF 43 (1986) 1195 = SJNP 43 (1986). No other papers expected.

SERPUKHOV-136 (1978) Approved Apr 1978; Started 1985.

NEUTRINO DETECTOR

SERPUKHOV - A A Borisov, A P Bugorsky, Y B Bushnin,
S K Chernichenko, A F Dunaitsev, R M Fakhrutdinov,
V Y Glebov, V N Goryachev, V I Kochetkov, V A Krendelev,
A V Kulikov, V I Kurbakov, A I Mukhin, V I Poletaev,
V N Rukhovich, R A Rzaev, Y I Salomatin, Y G Stroganov,
A A Volkov, A S Vovenko (✓ Spokesperson), V A Yarba,
V P Zhigunov, Y A Zudin
DUBNA - L S Barabash, S A Bunyatov (✓ Spokesperson),
I A Golutvin, V S Khabarov, Y T Kiryushin, D Kish, E Kish,
A Kondor, V A Kopylov-Sviridov, I Manno, D Vestergombi,
A V Vishnevsky, B Z Zalikhanov, A V Zarubin
BERLIN-ZEUTHEN ADW - J Bluemlein, H J Grabosch,
W Lange, H E Kyseck, C Spierling, M Walter

Accelerator SERPUKHOV Detector Calorimeter

Reactions

p nucleon $\rightarrow e^\pm$ X	70 GeV/c
p nucleon $\rightarrow$ charm X	"
ν_μ nucleon $\rightarrow \mu^-$ X	5-30 GeV/c
ν_μ nucleon $\rightarrow \mu^+ \mu^-$ X	"
ν_μ nucleon $\rightarrow$ charm X	"
$\bar{\nu}_\mu$ nucleon $\rightarrow \mu^+$ X	"
$\bar{\nu}_\mu$ nucleon $\rightarrow \mu^+ \mu^-$ X	"
$\bar{\nu}_\mu$ nucleon $\rightarrow$ charm X	"
ν_e nucleon $\rightarrow e^\pm$ X	"
$\bar{\nu}_e$ nucleon $\rightarrow e^\pm$ X	"

Particles studied charm

Comments This includes the design and construction of a new neutrino detector.

SERPUKHOV-138 (Jan 1979) Approved Feb 1979; Started 1980; Completed 1982.

STUDY OF MULTIPARTICLE $\bar{p}p$ INTERACTIONS AT 32 GeV/c WITH STATISTICS OF 10 EVENTS/ μ b IN MIRABELLE

SERPUKHOV - G M Aleksandrov, Y I Arestov, V V Babintsev,
M Y Bogolyubsky, V A Bumazhnov, E A Kozlovsky,
M S Levitsky, V K Malyaev, A A Minaenko, A M Moiseev
(✓ Spokesperson), E A Parshin, D I Patalakha, A V Pleskach,
G I Selivanov, E A Starchenko, M N Ukhonov, E A Vlasov
MOSCOW STATE U - L J Belzer, P F Ermolov, N A Kruglov,
V S Murzin, A S Proskuryakov, L I Sarycheva, L N Smirnova,
L A Tosunyan

ALMA ATA, PHYS INST - E G Boos, E S Lukin, A M Mosienko,
G K Zaytsev, B O Zhautykov

Accelerator SERPUKHOV Detector HBC-MIRA

Reactions

$\bar{p} p$	32 GeV/c
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Particles studied exotic-meson, baryonium, $N_{5/2}^*$ (unspec), charm

Comments Stage I of this experiment was SERPUKHOV-122.

Papers YF 39 (1984) 1189 = SJNP 39 (1984) 750, YF 39 (1984) 1436 = SJNP 39 (1984) 907, YF 40 (1984) 162 = SJNP 40 (1984) 103, and YF 40 (1984) 927 = SJNP 40 (1984) 590. No other papers expected.

SERPUKHOV-139 (Jan 1979) Approved Feb 1979; Started 1979.

STUDY OF $\bar{d}p$ AND $\bar{d}d$ INTERACTIONS IN LUDMILLA

DUBNA - B V Batyunya, I V Boguslavsky, Y P Bushuev,
I M Gramenitsky (✓ Spokesperson), Y V Khrenov, B P Kostin,
E V Kozubsky, P Lednitski, E M Leykin, A V Pozharsky,
V I Rud, V A Rusakov, Y Sedlak, B Shimak, M I Solov'yev,
L A Tikhonova, V T Tolmachev, P Ustenko, A Valkarova,
N M Vyrasov, S Vysokochil, Y D Zernin

Accelerator SERPUKHOV Detector HBC-2M

SUMMARIES OF SERPUKHOV EXPERIMENTS

Reactions

deut $p \rightarrow p \bar{n} \bar{p}$ pions	12-13 GeV/c
deut $p \rightarrow \pi^+ X$	"
deut $p \rightarrow p \bar{n} \bar{p} \pi^+ 2\pi^-$	"
deut $p \rightarrow p \bar{n} \bar{p}$ pions	"
deut $p \rightarrow \text{annihil}$	"
deut $p \rightarrow \text{nucleon } 2\text{nucleon } X$	"
deut $p \rightarrow 2\text{nucleon nucleon } X$	"

Particles studied $N_{5/2}^*$ (unspec), baryonium

Papers YF 42 (1985) 903 = SJNP 42 (1985) 573, YF 46 (1987) 1449 = SJNP 46 (1987) 856, YF 47 (1988) 127 = SJNP 47 (1988) 83, YF 47 (1988) 731 = SJNP 47 (1988) 468, and YF 47 (1988) 1278 = SJNP 47 (1988) 813.

SERPUKHOV-140 (Dec 1976) Approved Jul 1977; Started Apr 1980; Completed Sep 1987.

STUDY OF CHARGE-EXCHANGE REACTIONS AND SEARCH FOR NEW PARTICLES

SERPUKHOV - S V Donskov, A V Inyakin, V A Kachanov, D B Kakauridze, G V Khaustov, A V Kulik, A A Lednev, Y M Melnik, Y V Mikhailov, Yu D Prokoshkin (✓ Spokesperson), Y V Rodnov, S A Sadovsky, V D Samoylenko, P M Shagin, A V Shvannikov, A V Singovsky, A V Startsev, V P Sugonyayev

BRUSSELS U. IISN - F Binon, C Bricman, P Duteil.

J P Lagnaux, D Michotte, T Mouthuy, J P Stroet

ANNECY - J Dufournaud, M Gouanere, J P Peigneux, D Sillou.

M Spighe

TBILISI STATE U - M D Tabidze

LOS ALAMOS - D Alde, E A Knapp, T Lopez

CERN - A Possoz

Accelerator SERPUKHOV Detector GAMS-2000

Reactions

$\pi^- p \rightarrow n \gamma^*$	38 GeV/c
$\pi^- p \rightarrow n \pi^0$	"
$\pi^- p \rightarrow n \eta$	"
$\pi^- p \rightarrow n \omega$	"
$\pi^- p \rightarrow n \text{meson}^0$	"
$\pi^- p \rightarrow n J/\psi(1S)$	"
$\pi^- p \rightarrow n \psi(2S)$	"
$\pi^- p \rightarrow n D^0 \bar{D}^0$	"

Comments Studies charge-exchange production of the $b_1(1235)^0$, $f_2(1270)$, $f_0(1500)$, $f_4(2030)$, $X(2220)$, etc. and decays of the mesons.

Papers YF 33 (1981) 1534 = SJNP 33 (1981) 825, LNC 32 (1981) 45, YF 36 (1982) 670 = SJNP 36 (1982) 391, NC 71A (1982) 497, YF 38 (1983) 934 = SJNP 38 (1983) 561, YF 38 (1983) 1199 = SJNP 38 (1983) 723, NC 78A (1983) 313, NIM A206 (1983) 373, NIM A214 (1983) 269, NIM A215 (1983) 103, PL 140B (1984) 264, YF 39 (1984) 640 = SJNP 39 (1984) 405, YF 39 (1984) 831 = SJNP 39 (1984) 526, YF 39 (1984) 1429 = SJNP 39 (1984) 903, LNC 39 (1984) 41, NP B239 (1984) 311, NC 80A (1984) 363, ZPHY C25 (1984) 225, YF 40 (1984) 1447 = SJNP 40 (1984) 918, NIM A240 (1985) 343, NIM A248 (1986) 86, PL 177B (1986) 115, PL 177B (1986) 120, PL 182B (1986) 105, ZETFP 44 (1986) 441 = JETPL 44 (1986) 567, EPL 3 (1987) 553, ZPHY C36 (1987) 603, YF 45 (1987) 117 = SJNP 45 (1987) 75, YF 45 (1987) 405 = SJNP 45 (1987) 255, YF 45 (1987) 1341 = SJNP 45 (1987) 830, NIM A268 (1988) 112, YF 47 (1988) 385 = SJNP 47 (1988) 243, YF 48 (1988) 1724 = SJNP 48 (1988) 1035, YF 49 (1989) 1021 = SJNP 49 (1988) ?, PL B216 (1989) 447, and PL B216 (1989) 451.

SERPUKHOV-142 (Jan 1980) Approved Feb 1980; Started Feb 1981; Completed 1983.

INVESTIGATIONS OF ELECTROMAGNETIC DECAYS OF MESONS

SERPUKHOV - R I Dzheyladin, S V Golovkin, V A Kachanov, D V Kakauridze, A S Konstantinov, V F Konstantinov, V P Kubarovsky, A V Kulik, L G Landsberg (✓ Spokesperson),

V M Leontiev, V A Mukhin, V F Obratsov, T I Petrunina, Y D Prokoshkin, V I Solyanik, V A Viktorov, A M Zaitsev

Accelerator SERPUKHOV Detector LEPTON-F

Reactions

$\pi^- p \rightarrow f_1(1285) n$	33 GeV/c
$\pi^- p \rightarrow f_2'(1525) n$	"
$K^- p \rightarrow f_1(1285) \Lambda$	"
$K^- p \rightarrow f_1(1285) \Sigma^0$	"
$K^- p \rightarrow f_2'(1525) \Lambda$	"
$K^- p \rightarrow f_2'(1525) \Sigma^0$	"
$f_1(1285) \rightarrow \gamma \phi$	—
$f_2'(1525) \rightarrow \gamma \phi$	—

Particles studied $f_1(1285)$, $f_2'(1525)$

Papers YF 38 (1983) 1205 = SJNP 38 (1983) 727, PL 144B (1984) 133, ZETFP 39 (1984) 96 = JETPL 39 (1984) 115, YF 39 (1984) 1165 = SJNP 39 (1984) 735, ZETFP 42 (1985) 310 = JETPL 42 (1985) 384, ZETFP 45 (1987) 368 = JETPL 45 (1987) 466, PL 188B (1987) 383, and PL B203 (1988) 327.

SERPUKHOV-144 (1979) Approved Apr 1978; Started Jan 1979; Completed 1982.

MEASUREMENTS OF THE SLOW ANTIPROTON YIELD IN 70 GeV PROTON INTERACTIONS

SERPUKHOV - A A Derevshikov, V I Kotov, V G Lapshin, Y A Matulenko, A I Misnik, S B Nursheshev, V I Ronzhin, V I Rykalin (✓ Spokesperson), R A Rzaev, V P Sakharov, V K Semenov, V V Siskin, V I Solyanik, A N Vasiliev, N K Vishnevsky

NOVOSIBIRSK, IYF - L M Barkov, P K Lebedev, V S Okhapkin, V P Smakhtin, M S Zolotarev

Accelerator SERPUKHOV Detector Single-arm spectrometer

Reactions

$p \text{ nucleus} \rightarrow \bar{p} X$	70 GeV (E_{lab})
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Papers YF 35 (1982) 1186 = SJNP 35 (1982) 894. No other papers expected.

SERPUKHOV-145 (1980) Approved 1984; Started 1987.

STUDY OF THE PRODUCTION AND DECAY PROPERTIES OF THE CHARMED BARYONS IN NEUTRINO INTERACTIONS WITH THE BUBBLE CHAMBER SKAT

SERPUKHOV - V V Ammosov (✓ Spokesperson), E N Ardashev, Y V Bardin, A P Bugorsky, N A Chabrov, A G Denisov, V I Ermolaev, V S Fillipov, V A Gapienko, V I Golov, V I Khleborad, V I Kochetkov, V A Krupnov, G Y Mirofancov, A I Mukhin, N A Netyaga, L N Nikolaenko, Y G Ryabov, G I Selivanov, V I Snyatkov, V G Zaets

Accelerator SERPUKHOV Detector HLBC-SKAT

Reactions

$\nu_\mu p \rightarrow \Sigma_c(2455)^{++} \mu^-$	5-20 GeV/c
$\nu_\mu n \rightarrow \Lambda_c^+ \mu^-$	"

Particles studied $\Sigma_c(2455)^{++}$, Λ_c^+

Comments The chamber fill is a light freon-propane mix.

SERPUKHOV-146 (Dec 1980) Approved Feb 1981; Started 1981; Completed 1986.

SEARCH FOR NARROW BARYON RESONANCES IN HIGH ENERGY NEUTRON DIFFRACTIVE SCATTERING

DUBNA - A N Aleev, V A Arefiev, V P Balandin, V K Birulev,

E A Chudakov, A S Chvyrov, T S Grigalashvili, B N Guskov,

I M Ivanchenko, N N Karpenko, A A Kirillov, I G Kosarev,

V C L'vivkizhizin, V V Kukhtin, B A Kulakov, M F Likhachev

(✓ Spokesperson), A L Lubimov, A N Maksimov, A N Morozov,

K Novak, V D Novak, A E Seiner, L V Silvestrov, V E Simonov,

L A Slepets, G G Takhtamyshev, P T Todorov, R K Trayanov

SUMMARIES OF SERPUKHOV EXPERIMENTS

BERLIN-ZEUTHEN ADW - K Hiller, S Nowak, A V Pose,
H E Ryseck
LEBEDEV INST - A S Belousov, E D Molodtsov, S V Rusakov,
P N Shareiko
SOFIYA, INST CHEM TECH - Y Gladki, S Nemechek, M Novak,
A Prokesh, V I Zayachki
SOFIYA, INST NUCL RES - D T Burielkev, V I Genchev,
I M Geshkov, P K Markov, G G Sultanov
TBILISI STATE U - V P Dzhordzhadze, V D Kekelidze,
G I Nikobadze

Accelerator SERPUKHOV Detector BIS-2

Reactions

n nucleus $\rightarrow \Lambda K^0 X$	40-60 GeV/c
n nucleus $\rightarrow \Lambda K^+ \pi^- X$	"
n nucleus $\rightarrow \Lambda \pi^+ \pi^0 \pi^- X$	"
n nucleus $\rightarrow \Lambda K^+ K^0 K^- X$	"
n nucleus $\rightarrow p \bar{p} \Lambda K^0 X$	"
n nucleus $\rightarrow n \Lambda \bar{\Lambda} X$	"
n nucleus $\rightarrow p \pi^+ \pi^- X$	"
n nucleus $\rightarrow p K^+ K^- X$	"
n nucleus $\rightarrow 2p \bar{p} X$	"
n nucleus $\rightarrow p K^0 K^- X$	"

Papers YF 36 (1982) 1420 = SJNP 36 (1982) 825, ZPHY C23 (1984) 333, ZPHY C25 (1984) 205, YF 43 (1986) 619 = SJNP 43 (1986) 395, C2JP B36 (1986) 1303, and ZPHY C36 (1987) 27.

SERPUKHOV-147 (1982) Approved Mar 1982; Started 1984.

STUDY OF REACTIONS WITH STRANGE PARTICLE PRODUCTION IN THE π^- AND K^- MESON BEAM OF THE IHEP ACCELERATOR

MOSCOW, ITEP - B V Bolonkin, I A Erofeev, O N Erofeeva, V K Grigoryev, A P Grishin, Y V Katinov, I Y Korolkov, V N Luzin, V V Miller, V N Nozdachev, Y P Shkurenko, V V Sokolovsky ($\checkmark$ Spokesperson), A I Stortmin, G D Tikhomirov, V V Vladimirov

Accelerator SERPUKHOV Detector MIS

Reactions

$\pi^- p \rightarrow n \Lambda \bar{\Lambda}$	40 GeV/c
$\pi^- p \rightarrow n \Lambda \bar{\Lambda} \pi^0$	"
$\pi^- p \rightarrow p \Lambda \bar{\Lambda} \pi^-$	"
$\pi^- p \rightarrow n 2K_S$	"
$\pi^- p \rightarrow n K_S K_L$	"
$\pi^- p \rightarrow n 2K_S \pi^0$	"
$\pi^- p \rightarrow n K_S K_L \pi^0$	"
$\pi^- p \rightarrow p 2K_S \pi^-$	"
$\pi^- p \rightarrow p K_S K_L \pi^-$	"
$\pi^- p \rightarrow p \bar{p} \Lambda K_S$	"
$\pi^- p \rightarrow p \bar{p} \Sigma^0 K_S$	"
$\pi^- p \rightarrow n \Sigma^0 \Sigma^0$	"
$K^- p \rightarrow \Lambda \bar{\Lambda} Y^*(\text{unspec})$	"
$K^- p \rightarrow K_S K_L Y^*(\text{unspec})$	"

Particles studied $f_0(975)$, $a_0(980)^0$, $f_2(1720)$, glueball, $Y^*(\text{unspec})$

SERPUKHOV-148 (Feb 1982) Approved Mar 1982; Started 1984.

STUDY OF EXCLUSIVE RESONANCE PRODUCTION IN RARE PROCESSES IN SIGMA-M

SERPUKHOV - Y M Antipov ($\checkmark$ Spokesperson), V A Datarin, V A Bezzubov, N P Budanov, S P Denisov, Y P Gorin, I V Kotov, A A Lebedev, Y M Melnik, A I Petrukhin, S A Polovnikov, D A Stoyanova

TBILISI STATE U - R B Pirtskhalava, V N Roineishvili

DUBNA - I A Golutvin, V S Habarov, D M Hazins,

V Y Karzhavin, Y T Kiryushin, P A Kuiniich, G V Mit-

selmakher, A A Nozdin, A G Olshevsky, V A Sviridov,

V I Travkin, A V Vishnevsky

Accelerator SERPUKHOV Detector SIGMA

Reactions

$\pi^- p \rightarrow \pi^- p$	40-50 GeV/c
$K^- p \rightarrow K^- p$	"
$\bar{p} p \rightarrow \bar{p} p$	"
π^- nucleus $\rightarrow \pi^- \mu^- \mu^+ X$	"
π^- nucleus $\rightarrow p p X$	"
K^- nucleus $\rightarrow p p X$	"
$\bar{p}$ nucleus $\rightarrow p p X$	"
$\rho^0 \rightarrow \mu^+ \mu^-$	—
$a_1(1260)^- \rightarrow \pi^- \mu^- \mu^+$	—
$\pi_2(1680)^- \rightarrow \pi^- \mu^- \mu^+$	—
meson $\rightarrow \pi^- \mu^- \mu^+$	—

Particles studied ρ^0 , $f_0(1300)$, $f_2(1270)$, $a_1(1260)^-$, $\pi_2(1680)^-$, meson

Comments The nuclear targets are Be, C, Al, Cu, and Pb.

Papers YF 37 (1983) 113 = SJNP 37 (1983) 63, ZETFP 48 (1988) 519 = JETPL 48 (1988) 561, YF 48 (1988) 138 = SJNP 48 (1988) 85, and YF 48 (1988) 471 = SJNP 48 (1988) 297.

SERPUKHOV-149 (1982) Approved 1984; Started 1986.

STUDY OF ASYMMETRIES IN INCLUSIVE REACTIONS $\pi^- p \rightarrow \pi^\pm X$ AND $\pi^- p \rightarrow K_L^\pm X$ AT 40 GeV/c

SERPUKHOV - V D Apokin, Y I Arestov, O V Astafiev, N I Belikov, B N Chuyko, A A Derevchikov, G V Dzholobov, O A Grachev, V Y Khodyrev, Y A Matulenko, A F Meshchanin, N G Minaev, A I Misic, V V Mochalov, A A Morozov, V G Myalitsin, S B Nurushiev ($\checkmark$ Spokesperson), D I Patalakha, A F Prudkogiyad, V I Rykalin, V L Rykov, L F Soloviev, V L Solovyov, V G Vasilchenko, A N Vasiliev

DUBNA - N S Borisov, E I Bunyatova, Y M Kazarinov ($\checkmark$ Spokesperson), B A Khachaturov, R K Kutuev, M Y Liburg, V N Matafonov, A B Neganov, I K Potashnikova, Y A Usav, R Y Zulkarneev

TBILISI STATE U - N S Amaglobeli, Y S Bagaturiya, B G Chiladze, L N Glonti, G G Macharashvili, A Ochashashvili, R M Sakandelidze, T M Sakhashashvili

TBILISI STATE U - R M Burov, O Z Eloev, O Y Kvakhadze, V M Mchedlishvili

Accelerator SERPUKHOV Detector PROZA-M

Reactions

$\pi^- p \rightarrow \pi^- X$	40 GeV/c
$\pi^- p \rightarrow \pi^0 X$	"
$\pi^- p \rightarrow \eta X$	"
$\pi^- p \rightarrow \pi^+ X$	"
$\pi^- p \rightarrow K_L X$	"
$\pi^- \text{deut} \rightarrow \pi^0 X$	"
$\pi^- \text{deut} \rightarrow \eta X$	"
$K^- p \rightarrow \pi^0 X$	"
$K^- \text{deut} \rightarrow \pi^0 X$	"

Papers YF 45 (1987) 1355 = SJNP 45 (1987) 840, YF 46 (1987) 1108 = SJNP 46 (1987) 644, and YF 46 (1987) 1482 = SJNP 46 (1987) 877.

SERPUKHOV-150 (Feb 1982) Approved Mar 1982; Started 1983; Completed 1984.

AN ADDITION TO EXPERIMENT E-138 WITH A PROGRAM OF pp AND pd INVESTIGATIONS AT 82 GeV/c

SERPUKHOV - V V Babintsev, T M Bryuhanova, V A Bumazhnov, S V Chekulayev, A M Moiseev

($\checkmark$ Spokesperson), M N Ukanov, O S Zaitseva

MOSCOW STATE U - P F Ermolov, N A Kruglov, V S Murzin,

A S Proskuryakov, L I Sarycheva, L N Smirnova

ALMA ATTA, PHYS INST - E G Boos, G K Zaytsev, B O Zhau-tykov

Accelerator SERPUKHOV Detector HBC-MIRA

SUMMARIES OF SERPUKHOV EXPERIMENTS

Reactions

$p p$	32 GeV/c
p deut	"
$p n$	"
$\bar{p} p$	"
$\bar{p}$ deut	"
$\bar{p} n$	"

Comments Statistics are $pp \rightarrow 400000$ pictures, $\bar{p}p \rightarrow 600000$, $\bar{p}d \rightarrow 300000$. Uses a track-sensitive deuterium target in Mirabelle.

SERPUKHOV-151 (1982) Approved 1982; Started 1982; Completed Dec 1984.

STUDY OF EXCLUSIVE PROCESSES OF ψ AND DIRECT MUON PAIR PRODUCTION IN $\pi^- C$ COLLISIONS AT 40 GEV/c

BUDAPEST, CRIP - J Jani, Z Mihalui, G Nytrai, G Pinter
DUBNA - G Adam, A V Bannikov, J Bohm ($\checkmark$ Spokesperson),
I Farago, Y V Griahkevich, Choe Song Hek, B A Khomenko,
N N Khovansky, Z V Krumsteyn, Y P Merekov, A A Nikolina,
K Piska, K Safarik, J Sedlak, G A Shelkov, L G Tkachev,
V V Tokmenin, L S Vertogradov, S Vyskocil
PRAGUE, INST PHYS & CHARLES U - T Soukup, S Valkar,
A Valkarova, P Zavada
TBILISI INST PHYS - A K D'avarishvili, A I Kharchilava,
T A Lomtadze, E G Tskhadadze

Accelerator SERPUKHOV **Detector** RISK

Reactions

$\pi^- C \rightarrow \mu^- \mu^+ X$	40 GeV/c
$\pi^- C \rightarrow \mu^- \mu^+ \text{chgd-hadron}(s) X$	"
$\pi^- C \rightarrow \mu^- \mu^+ \gamma(s) X$	"
$\pi^- C \rightarrow K_S(s) \mu^- \mu^+ X$	"
$\pi^- C \rightarrow \Lambda(s) \mu^- \mu^+ X$	"

Particles studied $\rho^0, \omega, \eta, \eta', \eta(1430), J/\psi(1S), \psi(2S), \chi_c(\text{unspec})$

SERPUKHOV-152 (1983) Approved Aug 1982.

NEUTRINO EXPERIMENT USING A TAGGED NEUTRINO BEAM

SERPUKHOV - V V Ammosov, S V Belikov, R A Belkov,
A P Bugorsky, S A Cherny, A Chesnokov, V I Chizhov,
V A Chudakov, A G Denisov, S P Denisov ($\checkmark$ Spokesperson),
N N Fedyakina, N A Galyaev, S S Gershtein, S N Gurzhiev,
A P Karpov, V I Kochetkov, I V Kotov, V I Kotov,
R N Krasnokutsky, V P Kryuchkov, A A Lebedev, V N Lebedev,
A Y Maslov, S A Medved, O I Mikhailov, V S Mikhailov,
Y V Mikhailov, N V Mokhov, S A Mukhin, N I Naumov,
Y M Pishchalnikov, V G Platonov, E A Razuraev, R A Rzaev,
R S Shuvalov, V I Sirotenko, E A Slobodyuk, A P Soldatov,
A A Spiridonov, D A Stoyanova, A V Uzuryan, V P Zhigurov
INFN, PISA - C Cerri, G Gennaro, F Sergiampietri, G Spandre
BERLIN ZEUTHEN ADW - J Baehr, H Berwollf, G Bohm,
R Nahnhauser, S Nowak, A Schwind
DUBNA - J Cvach, V K Dodokhov, N G Fadeev, V Genchev,
I A Golutvin, I Hladky, V G Kadykov, V Y Karzhavin,
V S Khabarov, Y T Kiryushin, V G Kriovokhizhin,
V V Kukhtin, V N Lysyakov, P K Markov, S Nemecek,
A A Popov, D Pose, Prokes, P Reimer, S Riman, I A Savin,
G I Smirnov, D A Smolin, J Strachota, G Sultanov, L V Svetov,
V A Svizidov, P Todorov, M Vinde, J Zacek, N I Zamyatin

Accelerator SERPUKHOV **Detector** Combination

Reactions

$\nu_e e^- \rightarrow e^- \nu_e$	70 GeV (E_{lab})
$\nu_\mu e^- \rightarrow e^- \nu_\mu$	"
$\nu_e \text{ nucleon} \rightarrow e^- X$	"
$\nu_e \text{ nucleon} \rightarrow \nu_e X$	"
$\nu_e \text{ nucleon} \rightarrow \tau^- X$	"
$\nu_e \text{ nucleon} \rightarrow e^- \mu^+ X$	"
$\nu_\mu \text{ nucleon} \rightarrow \mu^- X$	"
$\nu_\mu \text{ nucleon} \rightarrow \nu_\mu X$	"
$\nu_\mu \text{ nucleon} \rightarrow \mu^+ \mu^- X$	"

Particles studied τ^- , charmed-meson

Comments Studies ν_e - ν_μ universality, $\nu_e \rightarrow \nu_\mu$ oscillations, the ratio of charged to neutral currents, etc.

SERPUKHOV-153 (1983) Approved Dec 1983; Started 1983; Completed 1986.

STUDY OF CUMULATIVE HADRON PRODUCTION IN PROTON-NUCLEUS INTERACTIONS AT ENERGIES FROM 15 TO 65 GeV

DUBNA - L S Zolin ($\checkmark$ Spokesperson), et al.

Accelerator SERPUKHOV **Detector** Spectrometer

Reactions

$p \text{ nucleus} \rightarrow \text{hadrons } X$	15-65 GeV (E_{lab})
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SERPUKHOV-155 (1983) Approved 1985; Started 1987.

SINGLE AND PAIR HADRON PRODUCTION WITH LARGE MOMENTUM TRANSFER IN PROTON AND π^- MESON BEAMS

SERPUKHOV - A A Abramov, A V Alekseev, B Y Baldin,
A F Buzulukov, A S Dyshkant, A O Efimov, V N Evdokimov,
N A Galyaev, V Y Glebov, Y P Korneev, V I Kotov,
N A Krinitsyn, V I Kryshkin, N Y Kulman, Y M Melnik,
M I Mutafyan, V K Myalitsin, V M Podstavkov, A I Ronjin,
V I Rykalin, R M Sulyaev ($\checkmark$ Spokesperson), L K Turchanovich,
V N Zapolsky, V V Zmushko

Accelerator SERPUKHOV **Detector** FODS

Reactions

$p p \rightarrow \text{hadron}(s) X$	70 GeV/c
$p \text{ nucleus} \rightarrow \text{hadron}(s) X$	"
$\pi^- p \rightarrow \text{hadron}(s) X$	40 GeV/c
$\pi^- \text{ nucleus} \rightarrow \text{hadron}(s) X$	"

SERPUKHOV-157 (1983) Approved Mar 1983; Started 1986.

NEW RESONANCES SEARCH IN DIFFRACTIVE PROCESSES ON NUCLEI WITH THE MIS-2 DETECTOR

DUBNA - V V Antipov, L P Chernenko, N D Dikumar,
A A Efendiev, A G Galperin, I I Ivanshin, V I Komarov,
L K Lytkin, E I Maltsev, V A Moiseenko, V I Moroz,
V I Nikanorov, V A Petrov, I L Pisarev, S Y Sychkov,
A A Tyapkin ($\checkmark$ Spokesperson), I M Vasilievsky,
V V Vishnyakov, O A Zaymudoroga, V P Zrellov
MOSCOW STATE U - K P Vishnevskaya
CRACOW - M Shepititska, R Sosnovsky
BRATISLAVA, INST PHYS - S Usachev, R Yanik
MILAN U - P L Frabetti, P F Manfredi, F Palombo

Accelerator SERPUKHOV **Detector** MIS

Reactions

$\pi^- \text{ Si} \rightarrow 3\text{pion } X$	40 GeV/c
$K^- \text{ Si} \rightarrow \text{kaon } 2\text{pion } X$	"

Particles studied meson

Comments Modified spectrometer MIS, with additional spark chamber. Looking for new radial excitations of π, A_1, A_2, A_3, K mesons. Requested 4720 hours.

Papers YF 43 (1986) 917 = SJNP 43 (1986) 585.

SERPUKHOV-159 (1983) Approved May 1986.

STUDY OF HADRON PRODUCTION AND PROPERTIES OF CHARMED PARTICLES AND NARROW BARYON RESONANCES WITH THE IHEP ACCELERATOR (CHARM PROJECT)

DUBNA - N N Govorun, T S Grigalashvili, B N Guskov,
I M Ivanchenko, I N Kakurin, D A Kirillov, M F Likhachev
($\checkmark$ Spokesperson), A L Lyubimov ($\checkmark$ Spokesperson),
A N Maksimov, E I Maltsev, G G Takhtamyshv
LEBEDEV INST - A S Belousov, P A Cherenkov, A A Komar,
V V Pavlovskaya, S V Rusakov, L N Shtarkov

SUMMARIES OF SERPUKHOV EXPERIMENTS

TBILISI STATE U - N S Amaglobeli, V D Kekelidze,
G I Nikobadze

ALMA ATA, PHYS INST - I Y Chasnikov, A A Loktionov

SERPUKHOV - S S Gershteyn, A K Likhoded

MOSCOW, ITEP - A B Kaydalov

MOSCOW STATE U - E A Chudakov

SOFIYA, INST NUCL RES - P K Markov

BERLIN-ZEUTHEN ADW - H Nowak, Z Nowak

KOSICE U - A Prokesh

BUDAPEST, CRIP - L Sabo, I Veresh

Accelerator SERPUKHOV Detector BIS-2M

Reactions

n nucleus $\rightarrow \Lambda_c^+ X$ < 70 GeV (E_{lab})

n nucleus $\rightarrow \Lambda_c^+ \bar{D}^0 X$ "

n nucleus $\rightarrow$ baryon X "

n nucleus $\rightarrow$ nucleon ϕX "

Comments Among other things, looks for further evidence for a narrow $N(1960)$ previously seen in $\Sigma^- K^+$.

Papers YF 46 (1987) 1127 = SJNP 46 (1987) 657, and ZPHY C37 (1988) 243.

SERPUKHOV-161 (1983) Approved 1985.

STUDY OF CHARMED PARTICLE PRODUCTION AT IHEP ACCELERATOR ENERGIES

SERPUKHOV - M Y Bogolyubsky, S V Chekulaev,

N A Galyaev, A E Kiryunin, A I Kotova, L L Kurchaninov,

M S Levitsky, A A Minaenko, G Y Mitrofanov, A M Moiseev

($\checkmark$ Spokesperson), E A Parshin, A V Plekach, G I Selivanov,

S R Slabospitsky, E H Starchenko, M N Ukanov, A A Volkov,

V N Zapolsky

MOSCOW STATE U - S G Basiladze, O Z Eloev, P F Ermolov

($\checkmark$ Spokesperson), V I Gilev, A N Larichev, A K Leflat,

V E Ogluzdin, V P Rukovichkin, S M Ruzin, Y D Shehyukin,

V V Suvorov, V Y Volkov

DUBNA - B V Batyunya, I V Boguslavsky, I M Gramenitsky,

A I Grigoryev, Y V Khrenov, E I Maltsev, M D Shafranov

($\checkmark$ Spokesperson), V T Tolmachev, Y D Zernin

Accelerator SERPUKHOV Detector Combination

Reactions

$\pi^+ p \rightarrow D^+ D^- X$ 60-70 GeV/c

$\pi^+ p \rightarrow$ charmed-baryon $D^- X$ "

$\pi^- p \rightarrow D^+ D^- X$ "

$\pi^- p \rightarrow$ charmed-baryon $D^- X$ "

$p p \rightarrow D^+ D^- X$ "

$p p \rightarrow$ charmed-baryon $D^- X$ "

Particles studied D^+ , D^- , Λ_c^+ , $D^*(2010)$, $\Sigma_c(2455)$

SERPUKHOV-163 (1985) Approved 1985; Started 1985.

STUDY OF EXCLUSIVE GLUEBALL PRODUCTION IN THE CENTRAL REGION OF HADRON COLLISIONS

SERPUKHOV - V S Datsko, S V Donskov, A V Inyakin,

V A Kachanov, G V Khaustov, Y A Kulik, V G Lapshin,

A A Lednev, V F Obraztsov, Yu D Prokoshkin

($\checkmark$ Spokesperson), Y V Rodnov, V I Rykalin, S A Sadovskij,

V D Samojlenko, P M Shagin, A V Shtannikov, A V Singovskij,

V P Sugonyaev

LOS ALAMOS - D Aldi, E A Knapp, T Lopez

BRUSSELS U, IISN & CERN - F Binon, C Bricman,

J P Lagnaux, D Michotte, J P Stroot

ANNECY & CERN - J Dufournaud, M Gouanere, J P Peigneux,

M Spighel

Accelerator SERPUKHOV Detector GAMS-2000, Calorimeter

Reactions

π^- nucleon $\rightarrow$ nucleon $\eta \eta \pi^-$ 40 GeV/c

π^- nucleon $\rightarrow$ nucleon $\eta \eta' \pi^-$ "

π^- nucleon $\rightarrow$ nucleon $2\eta' \pi^-$ "

π^- nucleon $\rightarrow J/\psi(1S) X$ "

π^- nucleon $\rightarrow \psi(2S) X$ "

π^- nucleon $\rightarrow \eta_c(1S) X$ "

π^- nucleon $\rightarrow \chi_c(\text{unspec}) X$ "

K^- nucleon $\rightarrow$ nucleon $\eta \eta K^-$ "

K^- nucleon $\rightarrow$ nucleon $\eta \eta' K^-$ "

Particles studied glueball

Comments Looks for glueballs in particular in final states with $\eta\eta$, $\eta\eta'$, and $\eta'\eta'$.

SERPUKHOV-164 (1980) Approved May 1986.

INVESTIGATIONS OF THE $\pi^- p \rightarrow n \pi^+ \pi^- \pi^+ \pi^- (\gamma's)$ REACTION AT 40 GeV/c USING THE VERTEX SPECTROMETER

SERPUKHOV - S I Bityukov, G V Borisov, R I Dzhelezadine,

Y P Guz, Y M Ivanyushenkov, I A Kachaev, A N Karyukhin,

Y A Khokhlov, G A Klyuchnikov, V F Konstantinov,

M E Kostrikov, V V Kostyukhin, A A Krushin, M A Kulagin,

V V Lapin, V A Maisheev, V D Matveev, V F Obraztsov,

A P Ostankov, V K Semenov, N K Vishnevsky, A M Zaitsev

($\checkmark$ Spokesperson)

TBILISI INST PHYS - G Beladidze, T A Lomtadze,

E G Takhadadze

Accelerator SERPUKHOV Detector Photon spectrometer, Counter

Reactions

$\pi^- p \rightarrow n 2\pi^+ 2\pi^- (\gamma's)$ 40 GeV/c

$\pi^- p \rightarrow n$ meson(s) "

Particles studied ρ , η , η' , $X(2220)$, $f_2(1270)$, $f_1(1285)$,

$f_4(2050)$, $\rho_3(1690)^0$, glueball, meson

Comments Uses Cerenkov counters together with a γ spectrometer. The reactions studied are $\pi^- p \rightarrow n +$ one or two of the mesons listed above.

SERPUKHOV-166 (1987) Approved 1987; Started 1987.

STUDY OF ELEMENTARY-PARTICLE RARE DECAYS IN THE DETECTOR ISTRA-M

MOSCOW, INR - V N Bolotov ($\checkmark$ Spokesperson), E N Gushchin,

V V Isakov, O V Karavichev, Y M Klubakov, V A Lebedev,

V N Marin, E A Monich, Y V Musienko, A A Pohlaguev,

V E Postoev, G N Semenuk, S A Volkov

SERPUKHOV - V F Konstantinov

DUBNA - G Kalmar, A Z Kitikyan, E V Komissarov, V S Kurba-

to, V Z Serdyuk, V V Sidorov, A D Volkov, B Z Zalikhonov

Accelerator SERPUKHOV Detector ISTRA-M

Reactions

$K^- \rightarrow \pi^- \nu_e \bar{\nu}_e$ 25 GeV/c

$K^- \rightarrow \pi^- \nu_\mu \bar{\nu}_\mu$ "

$K^- \rightarrow e^- \bar{\nu}_e \gamma$ "

$K^- \rightarrow \pi^- e^- e^+$ "

$K^- \rightarrow \pi^- \mu^- \mu^+$ "

Particles studied π^- , K^-

SERPUKHOV-167 (1975) Approved 1987; Started 1987.

STUDY OF RARE KAON DECAYS

SERPUKHOV - S A Akimenko, A A Belkov, V I Belousov,

A M Blick, V N Kolosov, V M Kutjin ($\checkmark$ Spokesperson),

A I Pavlinov, V I Romanovsky, A S Soloviev

DUBNA - A M Artykov, A G Asmolov, G S Bitsadze,

Y A Budagov ($\checkmark$ Spokesperson), I E Chirikov-Zorin,

Y I Davydov, V P Dzhelepov, A A Feshchenko, V B Flyagin,

V V Glagolev, Y N Kharzhev, Y F Lomakin, L G Lytkin,

S N Malukov, V N Pervushin, N A Rusakovich,

N L Rusakovich, A A Semenov, S V Sergeev, V B Vinogradov,

A G Volodko

TBILISI STATE U - I Minashvili

SOFIYA U - A B Jordanov, L Litov, G V Velez

KOSICE, IEF - E Kladiava, L Shandor, I Shpalek

BRATISLAVA, INST PHYS - B Sitar, P Strmen, S Tokar

MINSK, INST PHYS - Y A Kulchitsky, A S Kurilin

Accelerator SERPUKHOV Detector HYPERON-II

SUMMARIES OF SERPUKHOV EXPERIMENTS

Reactions

$K^+ \rightarrow \pi^+ 2\pi^0$	10 GeV/c
$K^+ \rightarrow \pi^+ \pi^0 \gamma$	"
$K^+ \rightarrow \pi^+ 2\gamma$	"
$K^+ \rightarrow \pi^+ e^- e^+$	"

Particles studied K^+

SERPUKHOV-168 (1987) Approved Jun 1987.

K^- MASS MEASUREMENT WITH HADRONIC ATOMS USING THE CRYSTAL-DIFFRACTION METHOD

LENINGRAD, INP - A S Denisov, O L Fedin, M P Guriyev, Y M Ivanov, L P Lapina, P M Levchenko, V D Malakhov, A A Petrunin, Y P Platonov, A G Sergeev, V V Skorobogatov, A A Smirnov (✓ Spokesperson), G P Solodov, V M Suvorov, S N Taranets, S A Vavilov, A V Zhelamkov
SERPUKHOV - I S Baishiev, S N Lapitsky, N V Mokhov, R A Rzaev, V P Sakharov, V S Seleznev, S I Striganov, V I Terekhov

Accelerator SERPUKHOV Detector QUARTZ

Reactions

$p C \rightarrow K^- X$	70 GeV/c
$p Mg \rightarrow K^- X$	"
$p Cu \rightarrow K^- X$	"
$p W \rightarrow K^- X$	"

Particles studied K^-

Comments QUARTZ is a crystal diffraction spectrometer for X-rays with semiconductor detectors.

SERPUKHOV-169 (1977) Approved Jul 1977; Started 1985.

INVESTIGATIONS OF HADRONIC SPECTROSCOPY WITH THE DETECTOR SFINKS

SERPUKHOV - S V Golovkin, A S Konstantinov, V P Kubarovskiy, N Y Kulman, A I Kulyavtsev, V F Kurshetsov, L G Landsberg (✓ Spokesperson)

MOSCOW, ITEP - I M Belvaev, M V Gritsuk, V M Guzhavin, G K Klier, V Z Kolganov, A A Lebedev, G S Lomkatsi, A F Nilov, V T Smolyankin (✓ Spokesperson)

Accelerator SERPUKHOV Detector SFINKS

Reactions

$p \text{ nucleon} \rightarrow \text{nucleon baryon}$	70 GeV (E_{lab})
$p \text{ nucleon} \rightarrow \text{nucleon hyperon } K^+$	"
$p \text{ nucleon} \rightarrow \text{nucleon } N\phi(1550)$	"
$p \text{ nucleon} \rightarrow \text{meson } X$	"
$p \text{ nucleon} \rightarrow \text{meson } X$	"
$p \text{ nucleon} \rightarrow \text{meson } X$	"
$p \text{ nucleon} \rightarrow \Lambda_b^+ X$	"
$\pi^- p \rightarrow \text{nucleon meson}$	32 GeV/c

Particles studied baryon, meson, $U(3100)$

Comments Looks for new or not completely established baryons and mesons such as the $C(1480)$ and $U(3100)$ in various hadronic modes.

SERPUKHOV-170 (1977)

THE CASCADE MAGNETIC SPECTROMETER

NOVOSIBIRSK, IYF - V N Bajer

KHARKOV, FTI - V B Ganenko, L Y Kolesnikov, A L Rubashkin

SERPUKHOV - N P Budanov, V I Maisheev, V N Zapolsky

LEBEDEV INST - V A Baskov, P A Cherenkov, B B Govorkov

(✓ Spokesperson), V A Khablo, V V Kim, V I Sergienko,

E I Tamm

MOSCOW PHYS ENG INST - B I Luchkov, M N Strikhanov,

V Y Tugaenko

Accelerator SERPUKHOV Detector KASKAD

Reactions

$\gamma \text{ nucleus} \rightarrow \text{nucleus } \gamma$	17-35 GeV/c
$\gamma \text{ nucleus} \rightarrow \gamma X$	"
$\gamma \text{ nucleus} \rightarrow \text{hvy-lepton } X$	"
$\gamma \text{ nucleus} \rightarrow \text{charmed-meson } X$	"

Particles studied hvy-lepton, D^0 , D^+ , D^- , $J/\psi(1S)$, ρ^0 , ω , ϕ

Comments A study of electromagnetic interactions, including γ elastic and inelastic scattering on nucleons and nuclei, vector meson photo- and electroproduction, ψ and charmed particle photoproduction, heavy lepton pair photoproduction, and hadron electroproduction.

SERPUKHOV-171 (1987) Approved 1987; Started 1987.

DETERMINATION OF ENERGY DEPOSITION IN THICK TARGETS FROM CONSTRUCTION MATERIALS EXPOSED TO 70 GEV PROTONS

MOSCOW, ITEP - V I Belyakov-Bodin (✓ Spokesperson), et al.

Accelerator SERPUKHOV Detector Spectrometer

Reactions

$p \text{ nucleus} \rightarrow \text{shower } X$	70 GeV/c
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SERPUKHOV-172 (1988) Approved May 1988.

STUDY OF MESONS WITH AN ENHANCED GLUON COMPONENT (GLUEBALLS INCLUDED) AND MESONS WITH HIGH SPINS USING THE MULTIPHOTON 4-PI SPECTROMETER

SERPUKHOV - S V Donskov, A V Inyakin, G V Khaustov, A K Konoplyannikov, A V Kulik, G L Landsberg, A A Lednev, V M Leontiev, Y M Melnik, V K Myalitsin, V A Polyakov, Y D Prokoshkin (✓ Spokesperson), Y V Rodnov, V I Rykalin, S A Sadovsky, V D Samoylenko, P M Shagin, A V Shtannikov, A V Singovsky, V P Sugonyayev

MOSCOW PHYS ENG INST - A M Baranov, B A Dolgoshein,

A N Kalinovskiy, Z Khorgushvili, S Y Smirnov

TBILISI STATE U - N S Amaglobeli, M D Tabidze

TBILISI, INST PHYS - A K Djavishvili, T B Gugushvili,

T A Lomtadze, N E Pukhaeva

LOS ALAMOS - D Alde, R G Jeppesen, E A Knapp, T Lopez

BRUSSELS U, IISN - F Binon, C Bricman, J P Stroot

ANNECY - M Gouanere, L Massonet, J P Peigneux, M Poulet,

M Spighele

KEK - S Inaba, M Kobayashi, K Takamatsu, T Tsuru

CERN - M Bouteure

Accelerator SERPUKHOV Detector GAMS-4P1

Reactions

$\pi^- p \rightarrow n 2\pi^0$	32 GeV/c
$\pi^- p \rightarrow n 2\eta$	"
$\pi^- p \rightarrow n \eta' \eta$	"
$\pi^- p \rightarrow n \eta \pi^0$	"
$\pi^- p \rightarrow n \eta 2\pi^0$	"
$\pi^- p \rightarrow n 2\omega$	"
$\pi^- p \rightarrow n K^0 \bar{K}^0$	"
$\pi^- p \rightarrow n 2\text{meson}^0$	"
$\pi^- p \rightarrow \text{meson}^0 X$	"
$\pi^- p \rightarrow \text{glueball } X$	"
$\pi^- p \rightarrow J/\psi(1S) X$	"
$\pi^- p \rightarrow \psi(2S) X$	"
$\pi^- p \rightarrow \eta_c(1S) X$	"
$\pi^- p \rightarrow \chi_c(\text{unspec}) X$	"
$K^- p \rightarrow \text{meson}^0 X$	"

Particles studied glueball, $\eta_c(1S)$

Papers NIM A266 (1988) 112, and NIM A276 (1989) 652.

SUMMARIES OF SLAC EXPERIMENTS

SLAC Experiments

SLAC-BC-072-073 Approved Nov 1979; Completed Mar 1982

MEASUREMENT OF LIFETIME AND OTHER PROPERTIES OF CHARMED PARTICLES

BIRMINGHAM U - D C Colley, M Jobs, S O'Neale, D A Waide, C G Wilkins
 BROWN U - D Brick, V R O'Dell, A M Shapiro, M Widgeoff
 DUKE U - A T Goshaw, P Lucas, A P T Palounek, W J Robertson, W D Walker
 FLORIDA STATE U - R N Diamond
 IMPERIAL COLL - T C Bacon, W Cameron, P Dornan, I M Godfrey, G Hall, M J Harwin, C A Woods
 KEK - P Ochiai, T Sato, R Sugahara, A Suzuki, K Takahashi, Y Yoshimura
 MIT - R I Hulsizer, I A Pless, S Tether, R K Yamamoto
 NARA U - N Fujiwara, S Noguchi, S Yamashita
 OAK RIDGE - H O Cohn
 RUTHERFORD - B Franek, E R Hancock, G Kalmus (✓ Spokesperson), D Kelsey, S J Sewell
 SLAC - R Armenteros, J Ballam, K Braune, J Butler, R Erickson, R C Field, T Glanzman, K C Moffeit (✓ Spokesperson), P Rankin
 TECHNION - S Dado, J Goldberg
 TOHOKU U - K Abe, K Hasegawa, T Kitagaki, H Sagawa, K Tamai, S Tanaka, A Yamaguchi, H Yuta
 TUFTS U - T Kafka, W A Mann, R Merenyi, R H Milburn, A Napier, J Schneps
 UC, BERKELEY - B Bingham, P Dingus, J Kent, J Shank, S Wolbers, G Yost
 TEL AVIV U - A Levy, C Milstene
 TENNESSEE U - J Brau, W M Bugg, G T Condo, T Handler, H J Hargis, E L Hart

Accelerator SLAC Detector HBC-40IN-HYB

Reactions

$\gamma p \rightarrow \text{charm } X$ 20 GeV/c

Particles studied charm

Comments Uses high-resolution optics (about 55 μm) with the bubble diameter resolved and a high bubble density (about 70 bubbles/cm) to detect the paths of charmed particles.

Papers IEEE TNS 27 (1980) 587, NIM 196 (1982) 403, NIM 203 (1982) 159, NIM 203 (1982) 223, PRL 48 (1982) 1526, PRL 51 (1983) 156, NIM 221 (1984) 330, PR D29 (1984) 1877, PRL 53 (1984) 751, PR D30 (1984) 1, PR D32 (1985) 2288, PR D32 (1985) 2869, PR D33 (1986) 1, PR D36 (1987) 1, and PR D37 (1988) 2379.

SLAC-BC-075 (1982) Approved Nov 1982; Completed Dec 1983.

AN IMPROVED CHARM PHOTOPRODUCTION STUDY AT THE SLAC HYBRID FACILITY

BIRMINGHAM U - D C Colley, M Jobs, D A Waide
 BROWN U - D Brick, V R O'Dell, A M Shapiro, M Widgeoff
 IMPERIAL COLL - T C Bacon, W Cameron, I M Godfrey, G Hall, M J Harwin, C A Woods
 OAK RIDGE - H O Cohn
 RUTHERFORD - B Franek, E R Hancock, G Kalmus, D Kelsey, S J Sewell
 SLAC - R Armenteros, J Ballam, K Braune, J Butler, R Erickson, R C Field, R Gearhart, T Glanzman, J Goldberg, K C Moffeit (✓ Spokesperson), J J Murray, P Rankin
 TOHOKU U - K Abe, K Hasegawa, T Kitagaki, H Sagawa, K Tamai, S Tanaka, A Yamaguchi, H Yuta
 TUFTS U - T Kafka, W A Mann, R Merenyi, R H Milburn, A Napier, J Schneps
 UC, BERKELEY - B Bingham, P Dingus, J Shank, S Wolbers, G Yost
 TENNESSEE U - J Brau, W M Bugg, G T Condo, H J Hargis, E L Hart, J Shimony

Accelerator SLAC Detector HBC-40IN-HYB

Reactions

$\gamma p \rightarrow \text{charm } X$ 20 GeV/c

Particles studied charm, D^0 , D^- , D_s^+ , D_s^- , A_c^+

Comments An improvement of SLAC-BC-072/073

Papers See also SLAC-BC-072/073. PR D33 (1986) 1

SLAC-BC-076 (Oct 1983) Approved Nov 1983; Completed Nov 1983.

AN EXPERIMENT TO STUDY A_c^+ DECAY MODES IN 10.5 GeV PHOTOPRODUCTION, WHERE A THRESHOLD ENHANCEMENT IS PREDICTED

BIRMINGHAM U - D C Colley, M Jobs, D A Waide
 BROWN U - D Brick, V R O'Dell, M Widgeoff
 IMPERIAL COLL - T C Bacon, W Cameron, I M Godfrey, G Hall, M J Harwin, P Rankin, C A Woods
 MIT - R I Hulsizer, I A Pless, R K Yamamoto
 OAK RIDGE - H O Cohn
 RUTHERFORD - B Franek, E R Hancock, G Kalmus, D Kelsey, S J Sewell
 SLAC - K Braune, J Butler, R Erickson, R C Field, R Gearhart, T Glanzman, J J Murray
 TOHOKU U - K Abe, K Hasegawa, T Kitagaki, H Sagawa, K Tamai, S Tanaka, A Yamaguchi, H Yuta
 TUFTS U - T Kafka, R Merenyi
 UC, BERKELEY - H Bingham, P Dingus, J Shank, S Wolbers, G Yost
 TECHNION - S Dado
 TEL AVIV U - A Levy
 TENNESSEE U - J Brau (✓ Spokesperson), W M Bugg, H J Hargis, E L Hart, J Shimony
 WEIZMANN INST - E Ronat

Accelerator SLAC Detector HBC-40IN-HYB

Reactions

$\gamma p \rightarrow \bar{D}^0 A_c^+$ 10.5 GeV/c

Particles studied A_c^+

Comments A test run found no evidence for the hoped-for threshold enhancement for charm production, so the experiment was not continued.

Papers PR D30 (1984) 694.

SLAC-E-135 Approved Nov 1979; Completed May 1982.

COMPARISON OF K^-p AND K^+p INTERACTIONS, AND A PROGRAMMATIC STUDY OF STRANGE QUARK SPECTROSCOPY

SLAC - D Aston (✓ Spokesperson), T Bienz, F Bird, W Dunwoodie, W Johnson, P Kunz, D W G S Leith, L Levinson, A Miyamoto, B Ratcliff (✓ Spokesperson), D Schultz, S Shapiro, T Shimomura, P K Sinervo, G Tarnopolsky, A Waite, S Williams
 NAGOYA U - N Awaji, K Fujii, H Hayashii, R Kajikawa, T Matsui, H Ozaki, C Pak, A Sugiyama, S Suzuki, T Tauchi
 TOKYO U - K Ukai
 CINCINNATI U - J D'Amore, R Endorf, B Meadows, M Nussbaum

Accelerator SLAC Detector LASS

Reactions

$K^- p \rightarrow \text{charged } X$ 11 GeV/c

$K^+ p \rightarrow \text{charged } X$ "

Particles studied $K^*(\text{unspec})$, $\phi(1680)$, $\Xi^*(\text{unspec})$, $\Omega^*(\text{unspec})$

Comments Sensitivities are 4 evis/nb for K^- , 1 evt/nb for K^+ .

Papers PL B180 (1986) 308 [erratum PL B183, 434], NP B292 (1987) 693, PL B194 (1987) 579, NP B296 (1988) 493, PL B201 (1988) 169, PL B201 (1988) 573, NP B301 (1988) 525, PL B208 (1988) 324, PL B215 (1988) 199, and PL B215 (1988) 799.

SLAC-E-136 (Jul 1980) Approved May 1981; Completed Apr 1984.

ELASTIC ep CROSS SECTIONS AT LARGE MOMENTUM TRANSFER

SUMMARIES OF SLAC EXPERIMENTS

AMERICAN U - R G Arnold (Spokesperson), P Bosted, S Rock,
 7 M Szalata
 BONN U - B A Mecking
 SLAC - J J Sherden

Accelerator SLAC Detector SSF

Reactions
 $e^- p \rightarrow e^- p$ 14.0, 21.0, 28.5 GeV/c

Comments Measures the scattering cross section for $Q^2 = 12.1$,
 23.6, and 37.3 GeV² using the 8 and 20 GeV spectrometers in
 coincidence.

SLAC-E-137 (Jul 1980) Approved Sep 1980, Dec 1980;
 Completed Dec 1982.

**SEARCH FOR LOW MASS, METASTABLE NEUTRAL
 PARTICLES AT SLAC**

FERMILAB - J D Bjorken
 VIRGINIA TECH - A Abashian, C Church, D Lu, L W Mo
 (Spokesperson), T A Nunamaker, P Rassmann
 SLAC - S Ecklund, W R Nelson

Accelerator SLAC Detector Calorimeter

Reactions
 $e^- \text{ nucleus}$ 20 GeV/c

Particles studied axion

Comments A beam-dump experiment to search for low-mass
 (< 100 MeV) metastable and neutral particles produced by a
 highly collimated mechanism. Tool: 29.9 coulombs of 20 GeV
 electrons.

Papers PR D38 (1988) 3375.

SLAC-E-140 (1984) Approved Dec 1984.

**MEASUREMENT OF THE α , Q^2 , AND NUCLEAR
 DEPENDENCE OF $R = \sigma_L/\sigma_T$ AND F_2**

AMERICAN U - R Arnold, D Benton, P Bosted, G de Chambrier,
 L Clogher, A Lung, S Rock (✓ Spokesperson), Z Szalata
 CAL TECH - B Filippone, J Jourdan, R McKeown, R Milner,
 D Potterveld, R Walker

FERMILAB - A Para
 LIVERMORE - K Van Bibber, F Dietrich
 MASSACHUSETTS U, AMHERST - B Debebe, R Hicks, J Shafer
 ROCHESTER U - P de Barbaro, A Bodek (✓ Spokesperson),
 S Dasu, H Harada, M W Krasny, K Lang, E Riordan

TEL AVIV U - J Alster
 SLAC - R Gearhart
 STANFORD U - L Whitlow

Accelerator SLAC Detector Spectrometer

Reactions
 $e^- p$ 3-21 GeV/c
 $e^- \text{ deut}$ "
 $e^- \text{ Fe}$ "
 $e^- \text{ Au}$ "

Comments Measures the ratio $R = \sigma_L/\sigma_T$ and F_2 in the range
 $0.1 < x < 0.5$ and $1 < Q^2 < 12.5 \text{ (GeV/c)}^2$. Compares R
 with the QCD prediction, and studies the nuclear dependence
 of the ratio of the W_1 and W_2 structure functions for various
 nuclear targets (EMC effect). A first run was completed in 1986.
 A second run is planned for 1989/90. A combined analysis of
 all SLAC electron scattering data is underway to extract R and
 F_2 over a large range of x and Q^2 and overlap with higher Q^2
 muon data.

Papers PRL 60 (1988) 2591, PRL 61 (1988) 1061, and PL B224
 (1989) 353.

SLAC-PEP-002 (Nov 1976) Approved Jan 1978; Completed
 1983.

SEARCH FOR HIGHLY IONIZING PARTICLES AT PEP

SLAC - D Fryberger (Spokesperson)
 UC, BERKELEY - P B Price (Spokesperson)

Accelerator SLAC-PEP Detector Plastic

Reactions
 $e^+ e^-$ 28 GeV (Ecm)

Particles studied monopole

Comments The detector is a C-shaped retractable cylinder of
 lexan and CR-39. Detects highly charged particles as well as
 monopoles.

Papers PRL 48 (1982) 77, and PR D29 (1984) 1524. No other
 papers expected.

SLAC-PEP-004-009 (Dec 1976) Approved Jan 1977.

**THE TIME PROJECTION CHAMBER AND 2-GAMMA
 DETECTOR AT PEP**

LBL - M Alston-Garnjost, R E Avery, A Bay, A R Clark,
 G D Cowan, O Dahl, K A Derby, J J Eastman, P Eberhard,
 T K Edberg, R W Kenney, D Lambert, S C Loken, G Lynch,
 R Madaras, L G Mathis, N A Nicol, D R Nygren, P Oddone,
 A P T Palounek, M Pripstein, M Ronan (✓ Spokesperson),
 R Ross, F R Rouse, G Shapiro, M Stevenson, R van Tyen,
 E M Wang, W Wenzel, Z R Wolf
 UC, BERKELEY - H Bingham, J Lys, G P Yost
 UC, DAVIS - D Pellett, J R Smith, W Wagner, C Zeitlin
 UC INTERCAMPUS INST - A M Eisner, B D Magnuson,
 M K Sullivan, Y X Wang
 UC, SAN DIEGO - G Masek, E Miller, H Paar, W Vernon
 UC, SANTA BARBARA - A R Barker, D A Bauer, D Caldwell,
 A Lu, K A Schwitkis, R Stephens, S Yellin
 UCLA - C D Buchanan, S-B Chun, S Khacheryan, Y-T Oyang,
 J S Steinman, D H Stork, M G Strauss, H Yamamoto
 UC, RIVERSIDE - G J Van Dalen, M Daoudi, C Ho,
 W G J Langeveld, J Layter, W T Lin, H Oh, B Shen
 AMES LAB - H-Y Chao, J M Hauptman, S K Park
 HEIDELBERG, MAX PLANCK INST - W Hofmann
 JOHNS HOPKINS U - B A Barnett, D A Crane, J Hylen, X-
 Q Lu, J A J Matthews, W-M Zhang
 MASSACHUSETTS U, AMHERST - R Belcinski, R R Kofler,
 S J Maxfield, S Toutouchi
 NEW YORK U - P Nemethy
 NIKHEP, AMSTERDAM - F Erne, F L Linde, J C Sens
 SLAC - E Bloom (✓ Spokesperson), K Fairfield, A Fridman,
 G Godfrey, H Marsitski, G Zapalac
 TOKYO U - H Aihara, T Kamae, T Takahashi

Accelerator SLAC-PEP Detector TPC, 2-GAMMA

Reactions
 $e^+ e^-$ 29 GeV (Ecm)

Papers IEEE TNS 30 (1983) 63, IEEE TNS 30 (1983) 67, IEEE
 TNS 30 (1983) 76, IEEE TNS 30 (1983) 117, IEEE TNS 30
 (1983) 153, IEEE TNS 30 (1983) 162, NIM 217 (1983) 259, PRL
 52 (1984) 168, PRL 52 (1984) 577, PRL 52 (1984) 2201, PRL 52
 (1984) 2332, PRL 53 (1984) 130, PRL 53 (1984) 2199, PRL 53
 (1984) 2378, PRL 53 (1984) 2465, PR D30 (1984) 2436, ZPHY
 C27 (1985) 39, ZPHY C27 (1985) 187, ZPHY C27 (1985) 495,
 PRL 54 (1985) 270, PRL 54 (1985) 274, PRL 54 (1985) 763, PR
 D31 (1985) 996, PRL 54 (1985) 2564, PR D31 (1985) 2719, PRL
 55 (1985) 1047, ZPHY C28 (1985) 31, PR D33 (1986) 844, PRL
 57 (1986) 51, PRL 57 (1986) 404, PRL 57 (1986) 945, PRL 57
 (1986) 1836, PRL 57 (1986) 2500, PRL 57 (1986) 3140, PRL 57
 (1986) 3245, PR D34 (1986) 1945, PL B184 (1987) 114, PL B184
 (1987) 299, PRL 58 (1987) 97, PR D35 (1987) 1553, PR D35
 (1987) 2650, ZPHY C34 (1987) 1, PRL 59 (1987) 751, PR D36
 (1987) 3506, PRL 60 (1988) 2355, PR D37 (1988) 28, PR D38
 (1988) 1, PL B209 (1988) 107, and PRL 61 (1988) 1263.

SLAC-PEP-005 (Dec 1976) Approved Jan 1977.

THE MARK-II DETECTOR AT PEP

SLAC - A Boyarski, M Breidenbach, P R Burchat, D Burke,
 D Cordis, J Dorfan, G Feldman, L Gladney, G Hanson, K Hayes,
 D Hitlin, R Hollebeek, W Innes, J Jaros, D Karlen, A Lankford,
 R R Larsen, B LeClaire, N Lockyer, V Luth, C Matteuzzi,
 R Ong, M Perl, B Richter, K Riles, M Ross, R H Schindler,
 J Yelton, C Zaiser
 LBL - G S Abrams, D Amidei, A Baden, J Boyer, F Butler,
 W Carithers, G Gidal (✓ Spokesperson), M Gold, G Goldhaber,

SUMMARIES OF SLAC EXPERIMENTS

L. Golding, J. Haggerty, D. Herrup, I. Juricic, J. A. Kadyk, M. Nelson, P. Rowson, H. Schellman, W. B. Schmidke, P. Sheldon, G. H. Trilling, C. de la Vaisiere, D. R. Wood
 HARVARD U - M. Levi, R. Schwitters, T. Schaad

Accelerator SLAC-PEP Detector MARK-II

Reactions

$e^+ e^-$ 29 GeV (Ecm)

Particles studied charm, bottom, τ

Papers PRL 48 (1982) 66, PRL 49 (1982) 430, PRL 49 (1982) 517, PRL 49 (1982) 521, PRL 49 (1982) 1232, PRL 49 (1982) 1369, PL 122B (1983) 90, PL 129B (1983) 141, PRL 50 (1983) 1542, PRL 51 (1983) 955, PRL 51 (1983) 1316, PRL 51 (1983) 2253, PRL 52 (1984) 1869, PRL 52 (1984) 2019, PR D30 (1984) 851, PL 160B (1985) 188, PR D31 (1985) 3013, PR D32 (1985) 800, PR D32 (1985) 2859, PRL 54 (1985) 2071, PRL 54 (1985) 2289, PRL 54 (1985) 2489, PRL 54 (1985) 2580, PRL 55 (1985) 1954, PRL 56 (1986) 207, PRL 56 (1986) 812, PRL 57 (1986) 527, PRL 57 (1986) 1398, PR D34 (1986) 2601, PR D34 (1986) 3321, PL B197 (1987) 561, PR D35 (1987) 27, PRL 58 (1987) 644, PRL 58 (1987) 1810, PR D36 (1987) 2850, PRL 59 (1987) 411, PRL 59 (1987) 2012, PRL 59 (1987) 2016, PRL 59 (1987) 2412, PR D37 (1988) 1, PR D37 (1988) 1750, PR D37 (1988) 3091, PRL 60 (1988) 2587, PRL 61 (1988) 1057, PR D38 (1988) 1001, PR D39 (1989) 1, PR D39 (1989) 1811, PR D39 (1989) 1861, PRL 62 (1989) 1236, PRL 62 (1989) 2444, PR D40 (1989) 721, and ZPHY C43 (1989) 325.

SLAC-PEP-006 (Dec 1976) Approved Jan 1977; Completed Mar 1986.

THE MAC DETECTOR AT PEP

COLORADO U - E. Fernandez, W. Ford, N. Qi, A. L. Read, Jr., J. Smith
 FRASCATI - T. Camporesi, R. DeSandro, A. Marini, I. Peruzzi, M. Piccolo, F. Ronga
 HOUSTON U - H. T. Blumre, R. B. Hurst, K. Lau, J. P. Venuti, H. B. Wald, R. Weinstein
 WISCONSIN U - M. C. Delfino, B. K. Heltsley, J. R. Johnson, T. L. Lavine, T. Maruyama, R. Prepost
 NORTHEASTERN U - H. R. Band, M. W. Gettner, G. P. Goderre, E. Von Goeler, O. A. Meyer, J. Moromisato, R. Polvado, D. Shambroom, J. C. Sleeman
 SLAC - W. Ash, E. D. Bloom, G. Chadwick, S. H. Clearwater, R. W. Coombes, G. Godfrey, H. S. Kaye, R. E. Leedy, H. L. Lynch, R. L. Messner, L. T. Moss, F. Muller, D. Ritson, D. E. Wiser, R. W. Zdarko
 UTAH U - D. Groom (✓ Spokesperson), H. Lee, E. C. Loh, P. Verdin
 STANFORD U - H. Nelson, L. Rosenberg

Accelerator SLAC-PEP Detector MAC

Reactions

$e^+ e^- \rightarrow \mu^+ \mu^-$ 29 GeV (Ecm)
 $e^+ e^- \rightarrow \tau^+ \tau^-$ "
 $e^+ e^- \rightarrow e^+ e^-$ "
 $e^+ e^- \rightarrow$ quark quark "
 $e^+ e^- \rightarrow \mu^+ \mu^- \gamma(s)$ "
 $e^+ e^- \rightarrow e^+ e^- \mu^+ \mu^-$ "
 $e^+ e^- \rightarrow \gamma \gamma$ "
 $e^+ e^- \rightarrow e^+ e^-$ hadrons "
 $e^+ e^- \rightarrow \gamma X$ "

Particles studied τ , B(5270)

Comments For a detailed description of the MAC detector, see NIM A281 (1989) 291.

Papers PRL 49 (1982) 106, PRL 50 (1983) 1238, PRL 50 (1983) 2054, PRL 51 (1983) 257, PRL 51 (1983) 1022, PR D28 (1983) 2721, PRL 52 (1984) 22, PR D31 (1985) 1537, PR D31 (1985) 2724, PRL 54 (1985) 95, PRL 54 (1985) 1118, PRL 54 (1985) 1620, PRL 54 (1985) 1624, PRL 54 (1985) 2477, PRL 55 (1985) 1831, PRL 55 (1985) 2118, PR D33 (1986) 3472, PR D35 (1987) 1, PR D35 (1987) 10, PR D35 (1987) 374, PR D35 (1987) 408, PRL 58 (1987) 640, PRL 58 (1987) 1080, NIM A261 (1987) 399, PR D36 (1987) 1971, PRL 59 (1987) 415, PL B198 (1987) 297,

PL B200 (1988) 221, PL B218 (1989) 369, and NIM A281 (1989) 291.

SLAC-PEP-012 (Oct 1977) Approved Jan 1978; Completed Mar 1986.

THE HIGH RESOLUTION SPECTROMETER AT PEP

ARGONNE - M. Derrick, P. Kooijman, B. Musgrave, L. Price, J. Repond, K. Sugano
 INDIANA U - D. Blockus, B. Brabson, J.-M. Brom, H. Ogren, H. W. Paik, D. Rust
 MICHIGAN U - C. Akerlof, J. Chapman, D. Errede, M. T. Ken, D. Meyer, D. Nitz, R. Thun, R. Tschirhart
 PURDUE U - S. Abachi, P. Baringer, R. De Bonte, B. G. Bylsma, D. Koltic, F. Loeffler, E. H. Low, R. McIlwain, D. H. Miller (✓ Spokesperson), C. R. Ng, E. Shibata
 LBL - B. Cork

Accelerator SLAC-PEP Detector HRS

Reactions

$e^+ e^-$ 29 GeV (Ecm)

Particles studied τ , ν_τ , D^+ , D^0 , $D^*(2010)$, D_s^+

Comments Obtained a final data sample of 300/pb integrated luminosity. Published on all aspects of lepton and hadron production, such as charmed meson studies, rare τ decays and limit on the ν mass, electroweak tests, searches for new leptons, and detailed quark fragmentation studies.

Papers NIM 169 (1980) 413, NIM 186 (1981) 513, NIM 203 (1982) 119, PR D30 (1984) 515, PRL 53 (1984) 1971, PL 146B (1984) 261, PL 149B (1984) 519, PR D31 (1985) 1, PL 153B (1985) 116, PR D31 (1985) 2352, PRL 54 (1985) 1775, PRL 54 (1985) 2568, PRL 55 (1985) 570, PL 156B (1985) 271, PL 158B (1985) 519, PL 161B (1985) 412, PL 164B (1985) 199, PL 165B (1985) 449, PL 166B (1986) 463, PL 166B (1986) 468, PL 168B (1986) 299, NIM A249 (1986) 185, PRL 56 (1986) 1039, PR D34 (1986) 1346, PRL 56 (1986) 1775, PR D34 (1986) 3286, PR D34 (1986) 3304, PRL 57 (1986) 1990, PL B181 (1986) 403, PL B182 (1986) 101, PL B183 (1987) 232, PR D35 (1987) 2269, PL B189 (1987) 260, PR D35 (1987) 2639, PR D35 (1987) 2880, ZPHY C35 (1987) 323, PRL 58 (1987) 2627, PL B195 (1987) 301, PL B197 (1987) 291, PL B199 (1987) 151, PL B199 (1987) 585, PRL 59 (1987) 2519, PR D37 (1988) 577, PL B205 (1988) 111, PL B205 (1988) 407, PL B205 (1988) 411, PL B206 (1988) 551, PL B212 (1988) 533, PR D39 (1989) 123, NIM A276 (1989) 496, PR D40 (1989) 706, PR D40 (1989) 902, and PL B226 (1989) 405.

SLAC-PEP-020 (Jun 1978) Approved Sep 1978.

DELCO AT PEP

CAL TECH - B. Barish, S.-C. Gao, Y.-Z. Huang, D. Koop, J. Ludwig, G. Mills, T. Pal, L. Rivkin, W. Ruckstuhl, M. Sakuda, S. Sherman, E. Siskind, R. Stroynowski, H. Yamamoto
 SLAC - W. Atwood, P. Baillon, A. Courau, H. DeStaebler, R. Dubois, E. Eisen, R. Johnson, H. Kichimi, D. Klem, A. Ogawa, D. Perret-Gallix, R. Pitthan, C. Prescott, L. Rochester, R. Taylor, S.-Q. Wang, C. Young
 STANFORD U - G. Bonneaud, G. Donaldson, M. Duro, G. Irwin, J. Kirkby (Spokesperson), D. Pollard, S. Wojcicki, W.-G. Yan

Accelerator SLAC-PEP Detector DELCO

Reactions

$e^+ e^- \rightarrow e^+ X$ 29 GeV (Ecm)
 $e^+ e^- \rightarrow e^- X$ "
 $e^+ e^- \rightarrow e^+(s) e^-(s) X$ "
 $e^+ e^- \rightarrow$ hadrons "
 $e^+ e^- \rightarrow \tau^+ \tau^-$ "

Particles studied charm, bottom, τ

Comments Studies emphasize inclusive single and multiple electron production, jets using heavy flavor tagging, flavor production in quark and gluon jets, heavy particle lifetimes, and 2- γ interactions.

Papers PRL 52 (1984) 970, PRL 52 (1984) 1944, PRL 53 (1984) 1873, PL 147B (1984) 227, PRL 54 (1985) 522, PRL 54 (1985)

SUMMARIES OF SLAC EXPERIMENTS

624, PR D32 (1985) 2901, PL 152B (1985) 399, PRL 56 (1986) 2132, PL B177 (1986) 109, PR D33 (1986) 2708, and PR D37 (1988) 41.

SLAC-PEP-021 (Mar 1983) Approved May 1983; Completed Jan 1986.

A SEARCH FOR $e^+e^- \rightarrow$ UNSEEN STATES USING PHOTON TAGGING

CERN - C Matteuzzi
BOSTON U - A Johnson, S Whitaker
SLAC - G Bartha, D Burke (✓ Spokesperson), C Hawkins, M Jonker, L Keller, N Roe, T Steele, R Wilson
WASHINGTON U, SEATTLE - C Hearty, J Rothberg, K Young
FERMILAB - P Garbincius
PENN U - R Hollebeck (✓ Spokesperson)
GENEVA U - P Extermann

Accelerator SLAC-PEP Detector Calorimeter

Reactions

$e^+e^- \rightarrow \gamma X$ 29 GeV (Ecm)
 $e^+e^- \rightarrow e^+e^-\gamma\gamma$ "

Particles studied photino, s-electron, nuino, ν , η , η'

Comments A search in particular for light particles predicted by supersymmetric theories. The photon is detected in a calorimeter of lead-glass blocks. No anomalous signal is seen. Limit of $N_\nu < 7.5$ (90% CL) placed on number of neutrino generations with masses less than a few GeV.

Papers PRL 56 (1986) 685, PRL 58 (1987) 1711, PR D39 (1989) 3207, and PRL (submitted).

SLAC-SLC-SLD (1983) Approved May 1984.

THE SLD DETECTOR FOR THE SLC

BRITISH COLUMBIA U - D Axen
INFN, BOLOGNA - A Benvenuti
BOSTON U - A Johnson, J S Whitaker, R Wilson
CAL TECH - F DeJongh, G Eigen, D Hitlin, C Matthews, A Mincer, W Wisniewski
UC, SANTA BARBARA - D Bauer, D O Caldwell, A Lu, R Morrison, R Stephens, M Withersell, S Yellin
UC, SANTA CRUZ - M Cavalli-Sforza, P Coyle, D Coyne, T Chalk, N Spencer
CINCINNATI U - R Endorf, R Johnson, B Meadows, M Nussbaum
COLORADO U - G Baranko, C Bogart, J Carr, L Cremaldi, M Gyure, U Nauenberg
COLUMBIA U - C Baltay (Spokesperson), L Camilleri, E Hyatt, S Manly, S Rabinowitz, P Rowson, M Shaevitz, S Smith, R Steiner
FERRARA U & INFN, BOLOGNA - G Callegari, L Piemontese
FRASCATI U - A Calcaterra, R DeSandro, I Peruzzi, M Piccolo
ILLINOIS U, URBANA - J S Brown, G Gladding, L Pregrinig, J J Thaler
MIT - W Busza, R Cowan, J Friedman, S Fuess, A Johnson, H Kendall, L S Osborne, A P T Palounek, L Rosenzweig, F Taylor, R Verdier, R K Yamamoto
MASSACHUSETTS U - S Hertzbach, R Kofler
PADUA U & INFN, PADUA - D Bisello, M Loreti
PERUGIA U & INFN, PERUGIA - B Alpat, R Battiston, G Bilei, P Cenci, G Mantovani, M Pauluzzi, L Servoli
INFN, PISA - R Castaldi, C Vannini, P Verdini
RUTHERFORD - C Damerell, A Gillman, F Wickens
SAN FRANCISCO STATE U - C Hodges
SLAC - I Abt, W W Ash, V Ashford, D Aston, W Atwood, T Bienz, F Bird, M Breidenbach (Spokesperson), G Chadwick, W M Dunwoodie, S Ecklund, D Fryberger, R Gearhart, G Halliwell, T Hansl-Kozanecki, P F Kunz, D W G S Leith, H L Lynch, R L Messner, B Nielsen, C Y Prescott, B N Ratcliff, P Reutens, L Rochester, A Rothenberg, J Russell, R Schindler, D Schultz, S L Shapiro, D Sherden, R Stiening, N Toge, J Va'ra, D E Wiser, C Young
TENNESSEE U - J Brau, W Bugg, A Weidemann
TRIUMF - G Ludgate, A Olin, C Oram
VANDERBILT U - A V Barnes, S E Csorna, R S Panvini, D Prindle, T Reeves

VICTORIA U - A Astbury, G A Beer, R Dubois, A Honma, R Keeler, G R Mason, L P Robertson, A Waite, E Young
WASHINGTON U, SEATTLE - V Cook, R J Davison, P M Mockett, J Rothberg, J Rutherford, E Vella, R W Williams, K Young
WISCONSIN U - H Band, J R Johnson, T Haruyama, R Prepost

Accelerator SLAC-SLC Detector SLD

Reactions

$e^+e^- < 100$ GeV (Ecm)

Particles studied Z^0 , higgs, top

Comments Follows the first-run work of the MARK-II at the SLC with a detector of greater capabilities. Studies include (1) measurement of Z^0 mass and width and determination of the number of light neutrinos, (2) tests of standard-model electroweak predictions in dilepton final states, including τ polarization, (3) investigation of particles with t quarks, (4) search for Higgs particles, (5) tests of QCD in multi-jets, and (6) search for new phenomena.

Papers NIM A238 (1985) 489, IEEE TNS 33 (1986) 46, IEEE TNS 33 (1986) 51, IEEE TNS 33 (1986) 65, IEEE TNS 33 (1986) 81, IEEE TNS 33 (1986) 113, IEEE TNS 33 (1986) 167, IEEE TNS 33 (1986) 176, IEEE TNS 33 (1986) 194, IEEE TNS 33 (1986) 197, IEEE TNS 33 (1986) 201, and IEEE TNS 33 (1986) 261.

SLAC-SLC-6 (Apr 1983) Approved May 1983; Started 1989.
MARK II AT THE SLC

CAL TECH - B Barish, M Kuhn, J McKenna, B Milliken, C Peck, F Porter, F Soderstrom, R Stroyanowski, A Weinstein, A Weir, E Wicklund, D Wu
COLORADO U - W Ford, D Hinshaw, P Rankin, J Smith, S Wagner, P Weber
HAWAII U - A Breakstone, R Cence, F Harris, S Parker
INDIANA U - D Averill, D Blockus, B Brabson, W Murray, H Ogren, D Rust, A Snyder, M Yurko
JOHNS HOPKINS U - B Barnett, P Dauncey, D Drewes, B Harral, J Hylen, J Matthews, D Stoker
LBL - G Abrams, S Bethke, G Gidal, G Goldhaber (✓ Spokesperson), R Harr, C Hearty, J Kadyk, F Kral, M Levi, F Rouse, M Schaad, A Schumm, G Trilling
MICHIGAN U - G Bonvicini, J Chapman, M Chmeissani, R Frey, E Gero, S Hong, W Koska, M Petradza, R Thun
UC, SANTA CRUZ - C Adolphsen, P Burchat, D Dorfan, G Gatto, J Gomez-Cadenas, G Gratta, C Heusch, J Kent, M King, L Labarga, A Litke, H Sadrozinski, A Seiden, S Watson, C Zaccardelli, C Von Zanthier
SLAC - J Ballam, T Barklow, J Bartelt, A Boyarski, F Bulos, D Burke, D Cords, D Coupal, H DeStaebler, J Dorfan (✓ Spokesperson), R Elia, G Feldman (✓ Spokesperson), R Field, C Fordham, D Fujino, K K Gan, T Glanzman, G Grindhammer, G Hanson, K Hayes, T Himel, D Hutchinson, W Innes, R Jacobsen, J Jaros, C-K Jung, D Koetke, S Komamiya, R Van Kooten, A L Kowalski, W Kozanecki, A Lankford, R R Larsen, F LeDiberder, V Luth, T Mattison, K Moffeit, C Munger, J Nash, K O'Shaughnessy, M Perl, R Pitthan, K Riles, M Swartz, R Taylor, M Woods

Accelerator SLAC-SLC Detector MARK-II

Reactions

$e^+e^- < 100$ GeV (Ecm)

Particles studied Z^0 , higgs, top, τ

Comments Studies include (1) measurement of Z^0 mass and width and determination of the number of light neutrinos, (2) tests of standard-model electroweak predictions in dilepton final states, (3) search for new heavy quarks and leptons, (4) search for Higgs particles, (5) tests of QCD in multi-jets, and (6) search for new phenomena. Scheduled to start February 89 and end summer 90.

Papers PRL 63 (1989) 724.

SLAC-SP-031 (1980) Approved Sep 1980; Completed Mar 1982.

CHECKOUT OF MARK III DETECTOR AT SPEAR

SUMMARIES OF SLAC EXPERIMENTS

CAL TECH - R Baltrusaitis, J Hauser, D Hitlin (Spokesperson),
J Richman
SLAC - K Bunnell, D Coward, K Einsweiler, D Hutchinson,
R Mozley, A Odian, J Roehrig, W Toki, Y Unno, F Villa
UC, SANTA CRUZ - H Bledsoe, D Dorfan, R Fabrizio,
F Grancagnolo, C Heusch, T Schalk, A Seiden, D Smith
ILLINOIS U, URBANA - J Becker, R Cassell, H Cui,
B Eisenstein, G Gladding, J Kohlmeier, S Plaetzer, A Spadafora,
J Thaler, A Wattenberg, W Wisniewski
WASHINGTON U, SEATTLE - T Burnett, V Cook, H Lubatti,
H Moriyasu, C del Papa, J Rothberg, J Sleeman, H Willutski,
D Wisinski

Accelerator SLAC-SPEAR Detector MARK-III

Reactions

$e^+ e^-$ —

Comments The actual experiment is SP-032.

SLAC-SP-032 (May 1981) Approved May 1981; Started Apr 1982.

MARK-III AT SPEAR

CAL TECH - G Dubois, G Eigen, D G Hitlin, C Matthews,
A Mincer, W Wisniewski, Y Zhu
SLAC - T Bolton, J C Brient, K Bunnell, R E Cassell, D Coward,
C Grab, U Mallik, R Mozley, A Odian, J Parker, D Pitman,
R Schindler (Spokesperson), W Stockhausen, W Toki
(Spokesperson), F Villa, S Wasserbaech, D E Wisinski
UC, SANTA CRUZ - M Burchell, G Corrado, D Dorfan,
C Heusch, W Lockman, H Sadrozinski, M Scarlatella, T Schalk,
A Seiden, A Weinstein, R C Xu
ILLINOIS U, URBANA - B Eisenstein, T Freese, G Gladding,
J Izen, C Simopoulos, E Stockdale, B Tripsas, A Wattenberg
WASHINGTON U, SEATTLE - T Burnett, V Cook, A D Li,
R Mir, P Mockett, B Nemati, L Parrish

Accelerator SLAC-SPEAR Detector MARK-III

Reactions

$e^+ e^-$ 3.097, 3.686, 3.770, 4-5 GeV (E_{cm})

Particles studied D^0 , D^+ , D^- , D_s^+ , $\psi(3770)$, $J/\psi(1S)$, $\psi(2S)$,
 $\eta_c(1S)$, $X(2220)$

Papers PRL 52 (1984) 2126, PRL 54 (1985) 1976, PR D31
(1985) 2192, PR D32 (1985) 566, PR D32 (1985) 2883, PRL 55
(1985) 150, PRL 55 (1985) 1723, PRL 55 (1985) 1842, PR D33
(1986) 629, PR D33 (1986) 1222, PRL 56 (1986) 107, PRL 56
(1986) 2136, PRL 56 (1986) 2140, PR D35 (1987) 2077, PRL 58
(1987) 2171, PL B193 (1987) 147, PR D36 (1987) 2185, PL B196
(1987) 107, PRL 59 (1987) 186, PRL 59 (1987) 1527, PR D37
(1988) 2023, PRL 60 (1988) 89, PRL 60 (1988) 1375, PR D38
(1988) 2695, PL B208 (1988) 152, PRL 62 (1989) 1821, and PR
D40 (1989) 906.

TRIUMF Experiments

TRIUMF-009 (Sep 1972) Approved Sep 1972; Completed 1982.

PION RADIATIVE CAPTURE AND CHARGE EXCHANGE IN FLIGHT

TRIUMF - J-M Poutissou, M Salomon
BRITISH COLUMBIA U - K Aniol, A Bagheri, F Entezarni,
M Hasinoff, D F Measday (✓ Spokesperson), B Robertson,
C Virtue

Accelerator TRIUMF Detector Photon spectrometer

Reactions

$\pi^- p \rightarrow n \gamma$ 77-220 MeV/c
 $\pi^- p \rightarrow \pi^0 n$ "

Papers NP A414 (1984) 493, CZJP B32 (1982) 138, PR C38 (1988) 875, and PR C38 (1988) 885. No other papers expected.

TRIUMF-104 (Nov 1978) Approved Nov 1978; Completed 1986.

SEARCH FOR MUON-ELECTRON CONVERSION AT TRIUMF

TRIUMF & VICTORIA U - D A Bryman (✓ Spokesperson),
M Leitch, I Navon, T Numao
LOS ALAMOS - H L Anderson
MONTREAL U - G Azuelos, P Depommier, J P Martin,
R Poutissou
VIRGINIA TECH - M Blecher, K Gotow
NATIONAL RESEARCH COUNCIL, OTTAWA - C K Hargrove,
H Mes
BRITISH COLUMBIA U - R A Burnham, M Hasinoff,
J M Poutissou
TRIUMF - J A Macdonald, J Spuller
CHICAGO U - C S Wright

Accelerator TRIUMF Detector TPC

Reactions

$\mu^- \text{ nucleus} \rightarrow e^- \text{ nucleus}$ 0 GeV/c

Papers NIM 219 (1984) 461, PRL 52 (1984) 105, NIM 234 (1985) 42, PRL 55 (1985) 445, PRL 59 (1987) 970, and PR D38 (1988) 2102. No other papers expected.

TRIUMF-121 (Jun 1979) Completed.

TEST OF CHARGE SYMMETRY IN np SCATTERING

MANITOBA U - D Bandyopadhyay, J Birchall, C A Davis,
N E Davison, H P Gubler, W P Lee, W T H van Oers
(✓ Spokesperson), P R Poffenberger, W D Ramsey, J P Svenne,
Y P Zhang

BASEL U - G R Plattner

TRIUMF - R Abegg, P P J Delheit, P W Green, D C Healey,
C Lapointe, C A Miller, G D Wait

ALBERTA U - E B Cairns, G H Coombes, L G Greeniaus,
W J McDonald, G A Moss, G Roy, J Soukup, R Tkachuk

Accelerator TRIUMF Detector Ionization chamber, Counter

Reactions Polarized beam and target
 $n p \rightarrow n p$ 477 MeV (T_{lab})

Comments Studies the isospin-mixing, charge-symmetry-breaking component of the np interaction by measuring the difference between the neutron and proton analyzing powers. Polarized (unpolarized) neutrons are scattered from an unpolarized (unpolarized) proton target.

Papers NIM A234 (1985) 11, NIM A234 (1985) 20, PRL 56 (1986) 2571, and PR D39 (1989) 2464.

TRIUMF-132-192 (Jun 1981) Approved Jun 1981; Completed 1983.

MEASUREMENT OF THE PION PRODUCTION ASYMMETRIES AND CROSS SECTIONS FROM REACTION $pp \rightarrow dx^+$ WITH A POLARIZED PROTON BEAM AT ENERGIES 850-500 MeV

TRIUMF - D Ottewill, P Walden (✓ Spokesperson)

MANITOBA U - W Falk

BRITISH COLUMBIA U - E G Auld, G Giles, G Jones, G Lolos,
B McParland, W Ziegler

Accelerator TRIUMF Detector Counter, Ionization chamber

Reactions

$p p \rightarrow \text{deut } \pi^+$ 350-500 MeV (T_{lab})
 $p p \rightarrow p p$ "

Papers PR C28 (1983) 2551, and NP A412 (1984) 189.

TRIUMF-134 (1980) Approved Jun 1980.

MEASUREMENT OF THE PARAMETER η IN MUON DECAY

LBL - J A Bistirlich, R R Bossingham, A D Chacon,
C W Clawson, K M Crowe (Spokesperson), T J Humanic,
C J Martoff, C A Meyer, J Miller
PSI, VILLIGEN - J A Jansen
BRITISH COLUMBIA U - J H Brewer, R Keitel, M Salomon
ZURICH U - U Straumann

Accelerator TRIUMF Detector Spectrometer

Reactions

$\mu^+ \rightarrow e^+ \nu \bar{\nu}$ 0 GeV/c

Particles studied μ^+

TRIUMF-137 (Nov 1978) Approved Nov 1978.

LIFETIME OF THE POSITIVE MUON

WILLIAM AND MARY COLL - W Dey, M Eckhaue
(✓ Spokesperson), K Giovanetti, R D Hart, R Hartmann,
D Hertzog, J R Kane, W Orance, W Phillips, R Siegel, W Vulcan,
R E Welsh, R G Winter

Accelerator TRIUMF Detector Counter

Reactions

$\mu^+ \rightarrow e^+ \nu \bar{\nu}$ 0 GeV/c

Particles studied μ^+

Papers PR D29 (1984) 343.

TRIUMF-168 (1980) Approved Nov 1980.

2S MUONIUM PRODUCTION FROM THIN FOILS

BRITISH COLUMBIA U - J H Brewer, A Fry, R Kieff, G Marshall, C Oran (Spokesperson), J B Warren

Accelerator TRIUMF Detector ?

Reactions

$\mu^+ e^- \rightarrow \mu^+ e^- \gamma$ —

Comments Measurement of Lamb shift in 2S muonium.

Papers JPHY B14 (1981) L789, and PRL 52 (1984) 910.

TRIUMF-171 (Nov 1980) Approved Nov 1980; Completed 1982.

TEST OF T-INVARIANCE IN pp SCATTERING

TRIUMF - D P Gurd, D A Hutcheon (✓ Spokesperson),

C A Miller

MANITOBA U - R Abegg

ALBERTA U - J M Cameron, G Greeniaus, R Liljestrand,
G A Moss, G Roy, H Wilson

Accelerator TRIUMF Detector Counter

Reactions

$p p \rightarrow p p$ 200 MeV (T_{lab})

Comments Measures P-A.

Papers PR C33 (1986) 1196.

TRIUMF-174 (Nov 1980) Approved Nov 1980.

SPIN DEPENDENCE OF THE $pp \rightarrow pn\pi^+$ REACTION

SUMMARIES OF TRIUMF EXPERIMENTS

BRITISH COLUMBIA U - D A Axen (Spokesperson), M Comyn,
R Dubois, C Waltham
QUEEN MARY COLL - D V Bugg, J A Edgington
SURREY U - A S Clough
TRIUMF - G Ludgate
UCLA - J R Richardson
VICTORIA U - L P Robertson
BEDFORD COLL - N M Stewart

Accelerator TRIUMF Detector Ionization chamber

Reactions Polarized beam and target

$p p \rightarrow p n \pi^+$ 380, 425, 470, 515 MeV (T_{lab})

Comments Measures cross sections in spin states C_{NN} , C_{SS} , C_{LL} , and C_{LS} .

TRIUMF-182 Completed.

MEASUREMENT OF THE np SPIN CORRELATION
PARAMETER A_{nn}

TRIUMF - R Abegg, L G Greeniaus, C A Miller
MANITOBA U - J Birchall, N E Davison, H P Gubler
($\checkmark$ Spokesperson), W P Lee, W T H van Oers ($\checkmark$ Spokesperson),
P R Poffenberger
ALBERTA U - P W Green, G A Moss, G Roy, G M Stinson,
J Wesick

Accelerator TRIUMF Detector Ionization chamber, Counter

Reactions Polarized beam and target

$n p \rightarrow n p$ 220, 325, 425 MeV (T_{lab})

Papers PR C (submitted).

TRIUMF-185 (Jun 1980) Started 1981; Completed 1983.

PRECISE MEASUREMENT OF THE POLARIZATION
PARAMETER ξ : A SEARCH FOR THE EFFECTS OF A
RIGHT-HANDED GAUGE BOSON IN μ^+ DECAY

UC, BERKELEY & LBL - B Balke, J Carr, G Gidal,
A Jodidio, K Shinsky, H M Steiner, D P Stoker, M Strovink
($\checkmark$ Spokesperson), R D Tripp
TRIUMF - C Oram
NORTHWESTERN U - B Gobbi

Accelerator TRIUMF Detector Counter

Reactions

$\mu^+ \rightarrow e^+ \nu \bar{\nu}$ 30 MeV/c

Particles studied μ^+

Papers PRL 51 (1983) 627, PRL 54 (1985) 1887, and PR D34
(1986) 1967.

TRIUMF-190 (Jun 1981) Approved Jun 1981.

RADIATIVE POLARIZED NEUTRON CAPTURE ON
PROTONS

ALBERTA U - J M Cameron ($\checkmark$ Spokesperson), I J Van Heerden,
P Kitching, W J McDonald, J Soukup, H Wilson
MANITOBA U - R Abegg
TRIUMF - D A Hutcheon, C A Miller
OREGON STATE U - A W Stetz

Accelerator TRIUMF Detector Counter

Reactions Polarized beam

$n p \rightarrow \text{deut } \gamma$ 180-500 MeV (T_{lab})

Comments Measures cross section and analyzing power.

Papers PL 137B (1984) 315, NP A458 (1986) 673, and NP A472
(1987) 701. No other papers expected.

TRIUMF-192

MEASUREMENT OF THE PION PRODUCTION
ASYMMETRIES AND CROSS SECTIONS FROM
REACTION $pp \rightarrow d\pi^+$ WITH A POLARIZED PROTON
BEAM AT ENERGIES 350-500 MeV

Accelerator TRIUMF Detector ?

Comments See TRIUMF-132/192.

TRIUMF-205 (Nov 1981) Approved Jul 1982. Completed.
TENSOR ANALYZING POWER IN πd SCATTERING

SASKATCHEWAN U - L Dalling, K Itoh, Y M Shin
(Spokesperson)

BRITISH COLUMBIA U - K Aniol, K L Erdman, W Gyles,
R R Johnson, G Lolos, R Tacik

TRIUMF - E W Blackmore, D Gill, J S Vincent

TORONTO U - T E Drake

MCGILL U - S K Mark

KERNFORSCHUNGSANLAGE, JULICH - S Martin

Accelerator TRIUMF Detector Counter

Reactions

π^+ deut $\rightarrow \pi^+$ deut 80-250 MeV (T_{lab})

Comments Measures the polarization of the final-state deuteron.

Papers PRL 55 (1985) 2672.

TRIUMF-208 (Jul 1982) Approved Dec 1982.

PROTON-PROTON BREMSSTRAHLUNG

ALBERTA U - R Abegg, E B Cairns, J M Cameron,
H C Coombes, C A Davis, G Gaillard, P W Green,
L G Greeniaus, M Hugli, D A Hutcheon, P Kitching

($\checkmark$ Spokesperson), K Michaelian, C A Miller, G C Neilson,
W C Olsen, D M Sheppard, J Soukup, J Uegaki, J Wesick

TRIUMF - H W Fearing

BRITISH COLUMBIA U - R Workman

Accelerator TRIUMF Detector Counter

Reactions Polarized beam

$p p \rightarrow p p \gamma$ 775 MeV/c

Comments Measures differential cross section and analyzing
power. Data taking at 775 MeV/c completed July 85. Runs at
higher momenta are planned for 1989/90.

Papers PRL 57 (1986) 2363, and NP A463 (1987) 87c.

TRIUMF-217 (Jul 1982) Approved Jul 1982; Completed Jul
1985.

LOW ENERGY, ELECTROMAGNETIC PION FORM
FACTORS

TRIUMF - J M Poutissou ($\checkmark$ Spokesperson)

OREGON STATE U - F Farzanpay, P Gumplinger, A W Stetz

BRITISH COLUMBIA U - M D Hasinoff, C Virtue, C Waltham

QUEENS U, KINGSTON - B C Robertson

LBL - T Mulera, V Perez-Mendez, A F Shor

OXFORD U - S H Chew

BIRMINGHAM U - J Lowe

Accelerator TRIUMF Detector Counter

Reactions

$\pi^+ p \rightarrow \pi^0 n$ 0 GeV/c

$\pi^0 \rightarrow e^+ e^- \gamma$ —

Particles studied π^0

Comments A measurement of the slope parameter of the
electromagnetic form factor of the π^0 at very low momentum
transfers based on the shape and rate of the invariant mass
distribution of e^+e^- pairs.

TRIUMF-247 (Jul 1983) Approved Jul 1983; Started Jan
1984; Completed Feb 1984.

PRECISE MEASUREMENT OF MUON DECAY ASYM-
METRY PARAMETER δ

LBL - J Carr ($\checkmark$ Spokesperson), G Gidal

UC, BERKELEY & LBL - B Balke, A Jodidio, K A Shinsky,

H M Steiner, D Stoker, M Strovink, R D Tripp

NORTHWESTERN U - B Gobbi

TRIUMF - C J Oram

Accelerator TRIUMF Detector Counter

SUMMARIES OF TRIUMF EXPERIMENTS

Reactions

$$\mu^+ \rightarrow e^+ \nu_e \bar{\nu}_\mu \quad 30 \text{ MeV}/c$$

Particles studied

μ^+

Papers PR D37 (1988) 587.

TRIUMF-248 (Jul 1983) Approved Jul 1983; Started Oct 1983.

A STUDY OF THE $\pi^+ \rightarrow e^+ \nu_e$ DECAY

VICTORIA U - D Britton, D A Bryman, E T H Clifford, A Olin
NATIONAL RESEARCH COUNCIL, OTTAWA - M S Dixit
TRIUMF - S Ahmad, Y Kuno, J A MacDonald, T Numao

(✓ Spokesperson)

BRITISH COLUMBIA U - J M Poutissou

ALBERTA U - P Kitching

Accelerator TRIUMF Detector Photon spectrometer

Reactions

$$\pi^+ \rightarrow e^+ \nu_e \quad 70 \text{ MeV}/c$$

$$\pi^+ \rightarrow \mu^+ \nu_\mu \quad "$$

$$\mu^+ \rightarrow e^+ \bar{\nu}_\nu \quad 52 \text{ MeV}/c$$

Particles studied

π^+

Comments A measurement of branching ratios to test universality in weak interactions, and a search for secondary peaks.

Papers PRL 56 (1986) 2241, and PR D37 (1988) 1131.

TRIUMF-249 (Jul 1983)

RADIATIVE MUON CAPTURE ON HYDROGEN

TRIUMF - S Ahmad, G Azuelos (Spokesperson), J A MacDonald,
J M Poutissou

VIRGINIA TECH - M Blecher, D Wright

BRITISH COLUMBIA U - D Armstrong, A Burnham,

T Gorrings, M K Hasinoff, A Larabee, C Waltham

MONTREAL U - P Depommier, R Poutissou

QUEENS U, KINGSTON - B Robertson

VICTORIA U - E T C Clifford

BEIJING, IHEP - W S Zhang

Accelerator TRIUMF Detector Ionization chamber

Reactions

$$\mu^- p \rightarrow n \nu_\mu \gamma \quad -$$

TRIUMF-277 (Jul 1984) Approved Jul 1984.

THE BRANCHING RATIO OF THE RARE DECAY $\pi^0 \rightarrow e^+ e^-$

MONTREAL U - G Azuelos, P Depommier, H Jeremie,
R Poutissou

VIRGINIA TECH - M Blecher

TRIUMF & VICTORIA U - D A Bryman, E Clifford, T Numao

NATIONAL RESEARCH COUNCIL, OTTAWA - C K Hargrove,

H Mes

TRIUMF & BRITISH COLUMBIA U - M D Hasinoff, J-

M Poutissou, C E Waltham (Spokesperson)

LBL - T A Mulera, V Perez-Mendez

QUEENS U, KINGSTON - B Robertson

OREGON STATE U - A W Stetz

Accelerator TRIUMF Detector TPC

Reactions

$$\pi^0 \rightarrow e^+ e^- \quad -$$

Particles studied

π^0

Comments A test of the feasibility of measuring the rare decay mode.

TRIUMF-287 (Oct 1984) Approved Dec 1984.

MEASUREMENT OF PARITY VIOLATION IN $\bar{p}p$ SCATTERING

Accelerator TRIUMF Detector ?

Comments See TRIUMF-497, 287.

TRIUMF-297 Completed Jan 1987.

ENERGETIC NEUTRON SPECTRA FROM μ^- CAPTURE IN DEUTERON

JOHNS HOPKINS U - T J Hallman, Y K Lee (✓ Spokesperson),

L Madansky, E K McIntyre, Jr

VICTORIA U - G R Mason

Accelerator TRIUMF Detector Counter

Reactions

$$\mu^- \text{ deut} \rightarrow n n \quad 0 \text{ MeV}/c$$

Papers PL B188 (1987) 33.

TRIUMF-298 (Dec 1984) Approved Dec 1984.

RESONANT STRUCTURE IN $\text{Cu}(p, \pi^+)X$: A POSSIBLE DIBARYON SIGNAL

TRIUMF - D Gill, D Ottewell, S Yen (✓ Spokesperson)

TRIUMF & SIMON FRASER U - K Hicks, K P Jackson

TRIUMF & ALBERTA U - R Abegg, G Gaillard, C A Miller

TRIUMF & BRITISH COLUMBIA U - P Walden

TORONTO U - R Schubank

MELBOURNE U - R Henderson

BRITISH COLUMBIA U - E Auld, P Trelle

REGINA U - G Huber

Accelerator TRIUMF Detector Spectrometer

Reactions

$$p \text{ Cu} \rightarrow \pi^+ X \quad 325\text{-}385 \text{ MeV } (T_{\text{lab}})$$

Particles studied dibaryon

Comments Last data taken in August 85. More to be taken in June 89.

TRIUMF-300 (Oct 1984) Completed.

SPIN TRANSFER K_{SS} IN THE REACTION $pp \rightarrow d\pi^+$

ALBERTA U & TRIUMF - R Abegg, L G Greeniaus,

D A Hutcheon (✓ Spokesperson)

ALBERTA U - L Antonuk, J M Cameron, J Collet, G Gaillard,

G A Moss, W C Olsen, G Roy, R Sawata, D M Sheppard

BRITISH COLUMBIA U - G R Smith

INDIANA U - B Blankleider

Accelerator TRIUMF Detector Spectrometer

Reactions Polarized beam

$$p p \rightarrow \text{deut } \pi^+ \quad 510 \text{ MeV } (T_{\text{lab}})$$

Papers NP A (submitted).

TRIUMF-301 (Oct 1984) Completed Sep 1985.

THE REACTION $pp \rightarrow ppp\pi^0$ NEAR THRESHOLD

BRITISH COLUMBIA U - D F Measday (✓ Spokesperson),

A J Noble, S Stanislaus

BUDAPEST, CRIP - D Horvath

TRIUMF - M Salomon

Accelerator TRIUMF Detector Photon spectrometer

Reactions

$$p p \rightarrow p p \pi^0 \quad 280\text{-}500 \text{ MeV } (T_{\text{lab}})$$

Comments Measures the π^0 asymmetry and differential and total cross sections.

TRIUMF-304 (Oct 1984) Approved Dec 1984; Started Jul 1985; Completed Aug 1988.

MUONIUM-ANTI-MUONIUM CONVERSION

VICTORIA U - G A Beer, G M Marshall, G R Mason, A Olin

(✓ Spokesperson)

BRITISH COLUMBIA U - J B Warren

ARIZONA U - T Bowen, P Halverson, A E Pifer

WYOMING U - T Huber, A R Kunselman

TRIUMF - K Kendall

SUMMARIES OF TRIUMF EXPERIMENTS

Accelerator TRIUMF Detector Ionization chamber, Counter

Reactions

$\mu^+ e^- \rightarrow \mu^- e^+$ 20-29 MeV/c

Papers PRL 57 (1986) 611, and PRL 61 (1988) 2189.

TRIUMF-326 (Dec 1984) Approved Dec 1984.

DETERMINATION OF THE ν_μ MASS

CALGARY U - C Kim (Spokesperson)

TRIUMF - D Garner, R Keitel

SASKATCHEWAN U - Y M Shin

Accelerator TRIUMF Detector Emulsion

Reactions

$\mu^- {}^6\text{Li} \rightarrow \text{trit trit } \nu_\mu$ 0 MeV/c

Particles studied ν_μ

TRIUMF-332 (Oct 1984) Completed.

D_t/R_t

MANITOBA U - D Bandgopadhyay, J Birchall, N E Davison,

W T H van Oers, S A Page, P R Poffenberger, D Ramsey

MANITOBA U & TRIUMF - C A Davis (✓ Spokesperson)

ALBERTA U - I W Green, C Lapointe, G Moss, R Tkachuk

ALBERTA U & TRIUMF - R Abegg, G Greeniaus, C A Miller

Accelerator TRIUMF Detector ?

Reactions

$p \text{ deut} \rightarrow n p p$ 220, 325, 425, 495 MeV (T_{lab})

Comments Measures the ratio of the Wolfenstein parameters D_t and R_t for the np system.

Papers PR C38 (1988) 2173.

TRIUMF-337 (Dec 1984) Approved Dec 1984; Completed Dec 1986.

MEASUREMENT OF TENSOR OBSERVABLES IN THE π^+d ELASTIC SCATTERING REACTION

TRIUMF - P Delheij, D Gill, D Healey, D Ottewell, G R Smith

(Spokesperson), G Wait, P Walden

REGINA U - G Lolos, E L Mathie

BRITISH COLUMBIA U - A Altman, R R Johnson, G Jones,

F Teruvidia, P Trelle

Accelerator TRIUMF Detector Counter

Reactions

$\pi^+ \text{ deut} \rightarrow \pi^+ \text{ deut}$ 100-294 MeV (T_{lab})

Papers PRL 57 (1986) 803.

TRIUMF-360 (Nov 1985) Approved Dec 1985.

POLARIZATION TRANSFER IN π^+d ELASTIC SCATTERING

TRIUMF - P Jehij, D Gill, D Healey, D Ottewell, G Wait

BRITISH COLUMBIA U - A Altman

SASKATCHEWAN U - I Chun, K Itoh, Y M Shin (Spokesperson),

N Stevenson

TORONTO U - T Drake, R Schubank

Accelerator TRIUMF Detector ?

Reactions

$\pi^+ \text{ deut} \rightarrow \pi^+ \text{ deut}$ 160 MeV (T_{lab})

TRIUMF-368 Approved Dec 1985.

CHARGE SYMMETRY BREAKING IN $p(n, d)\pi^0$ AT 477 MeV

TRIUMF - R Abegg, P W Green, L G Greeniaus

(✓ Spokesperson), D A Hutcheon, C A Miller, G M Stinson

ALBERTA U - J M Cameron, C Lapointe, G A Moss,

G C Neilson, W C Olsen, D M Sheppard

MANITOBA U & TRIUMF - C A Davis

MANITOBA U - W T H van Oers

Accelerator TRIUMF Detector Spectrometer

Reactions

$n p \rightarrow \text{deut } \pi^0$ 477 MeV (T_{lab})

$p p \rightarrow \text{deut } \pi^+$ "

Comments Measures the forward-backward asymmetry in $p(n, d)\pi^0$. Systematic errors are corrected by comparison with the charge symmetric reaction $p(p, d)\pi^+$. The result is sensitive to π - η mixing and the η -nucleon coupling constant. In preparation (July 89).

TRIUMF-369 (Dec 1985) Approved Dec 1985.

CHARGE SYMMETRY BREAKING IN np ELASTIC SCATTERING AT 860 MeV

TRIUMF - R Abegg, P W Green, L G Greeniaus

(✓ Spokesperson), C A Miller, G Stinson

MANITOBA U - J Birchall, C Davis, N Davison, W T H van Oers

(✓ Spokesperson), S A Page, W D Ramsay

ALBERTA U - C Choi, E Korkmaz, J Li, N Rodning, J Soukup

Accelerator TRIUMF Detector Counter, Ionization chamber

Reactions

Polarized beam and target

$n p \rightarrow n p$ 350 MeV (T_{lab})

Comments Measures analyzing power differences. In preparation (July 89).

TRIUMF-372 Approved Dec 1985.

SINGLE PION PRODUCTION IN np SCATTERING

MANITOBA U - J Birchall, C A Davis, N E Davison

(✓ Spokesperson), W R Falk, W T H van Oers, S A Page,

W D Ramsay

TRIUMF - P W Green, D A Hutcheon, C A Miller

TEXAS U - P J Riley

HOUSTON U - B W Mayes, L Pinsky

RICE U - D L Adams, G W Mutchler

CAL STATE, L A - M Epstein, D J Margaziotis

Accelerator TRIUMF Detector Ionization chamber, Counter

Reactions

Polarized beam

$n p \rightarrow p p \pi^-$ 450 MeV (T_{lab})

Comments Scheduled to run November 89.

TRIUMF-375 Completed.

FEW BODY PHYSICS VIA THE PION-DEUTERON BREAKUP REACTION

REGINA U - G Huber, G J Lolos, E L Mathie (✓ Spokesperson),

S I H Naqui, V Palitis, Z Papandreou

BRITISH COLUMBIA U - G Jones, M Sevier, P Trelle

TRIUMF - P Delheij, D R Gill, D Healey, D Ottewell, G R Smith,

G Wait

Accelerator TRIUMF Detector Counter

Reactions

Polarized target

$\text{plon deut} \rightarrow \text{pion } p n$ —

Papers PR C (submitted).

TRIUMF-377 Approved Dec 1985; Completed Aug 1986.

TEST OF CHARGE SYMMETRY IN πd ELASTIC SCATTERING

TRIUMF - D Gill, D F Ottewell, G R Smith (Spokesperson),

P L Walden

BRITISH COLUMBIA U - A Altman, R R Johnson, G Jones,

F Teruvidia, P Trelle

COLORADO U - J J Kraushar, R J Peterson, R A Ristinen,

J L Ullmann

Accelerator TRIUMF Detector Counter

Reactions

$\pi^+ \text{ deut} \rightarrow \pi^+ \text{ deut}$ 143-256 MeV (T_{lab})

$\pi^- \text{ deut} \rightarrow \pi^- \text{ deut}$ "

SUMMARIES OF TRIUMF EXPERIMENTS

Comments Measures differential cross sections and A_{π} .

TRIUMF-387 (Nov 1985) Approved Dec 1985.

MEASURE OF BIRKS FACTOR IN TMP

VICTORIA U - A Astbury (Spokesperson), M Fincke-Keeler,

R Keeler, G Mason, L Robertson

CERN - D Schinzel

ANNIECY - A Gonidec

TRIUMF - C J Oram

Accelerator TRIUMF Detector ?

Reactions

π^+	50-400 MeV/c
μ^+	"
e^+	"
p	"
deut	"
trit	"
^3He	"

TRIUMF-394 (Jul 1986) Approved Jul 1986; Completed 1986.

$\pi^{\pm}p$ DIFFERENTIAL CROSS SECTIONS FROM 20 TO 65 MeV KINETIC ENERGY

COLORADO U - J T Brack, J J Kraushaar, R A Loveman,

R J Peterson, R A Ristinen (Spokesperson), J L Ullmann

TRIUMF - D R Gill (Spokesperson)

BRITISH COLUMBIA U - R R Johnson, R Olszewski, M Sevier,

G R Smith, R P Trelle

REGINA U - E L Mathie

Accelerator TRIUMF Detector Counter

Reactions

$\pi^+ p \rightarrow \pi^+ p$	20-65 MeV (T_{lab})
$\pi^- p \rightarrow \pi^- p$	"

TRIUMF-399 (May 1987)

MEASUREMENT OF $\pi^{\pm}d$ ELASTIC SCATTERING DIFFERENTIAL CROSS SECTIONS AT $T_{\pi} = 30, 50, \text{ AND } 65 \text{ MeV}$

COLORADO U - J T Brack, J J Kraushaar, R A Loveman,

R J Peterson, R A Ristinen (Spokesperson)

TRIUMF - D R Gill

REGINA U - E L Mathie

BRITISH COLUMBIA U - R R Johnson, R Olszewski, M Sevier,

G R Smith (Spokesperson), R P Trelle

Accelerator TRIUMF Detector Counter

Reactions

$\pi^+ \text{ deut} \rightarrow \pi^+ \text{ deut}$	30, 50, 65 MeV (T_{lab})
$\pi^- \text{ deut} \rightarrow \pi^- \text{ deut}$	"

TRIUMF-414 (May 1987) Completed.

MEASUREMENT OF THE $H(\pi^-, \pi^+ \pi^-)n$ CROSS SECTION VERY NEAR THRESHOLD

BRITISH COLUMBIA U - M Hanna, R R Johnson, J Mcalister,

R Olszewski, C Ponting, M Rozon, M E Sevier (Spokesperson),

V Sossi, P Trelle

BONN U - J Ernst

TRIUMF - D R Gill, D F Ottewill, G R Smith

INFN, TRIESTE - N Gron

BRITISH COLUMBIA U & TRIESTE U - R Rui

BRITISH COLUMBIA U & BEIJING, IHEP - Z Wu

Accelerator TRIUMF Detector Counter

Reactions

$\pi^- p \rightarrow n \pi^- \pi^+$	176-184 MeV (T_{lab})
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Comments Measured threshold total and differential cross sections. Calculated the chiral symmetry breaking parameter.

TRIUMF-441 (Nov 1986) Completed 1987.

AMPLITUDE DETERMINATION OF THE PION-NUCLEON ELASTIC SCATTERING REACTION. PART 1: ANALYZING POWER

TRIUMF - D R Gill, D Healey, D Ottewill, G R Smith

(Spokesperson), G D Wait

COLORADO U - J T Brack, J J Kraushaar (Spokesperson),

R J Peterson, R A Ristinen

BRITISH COLUMBIA U - R R Johnson, G Jones, R Olszewski,

M E Sevier, R P Trelle

REGINA U - E L Mathie

Accelerator TRIUMF Detector Counter

Reactions

Polarized target	
$\pi^+ p \rightarrow \pi^+ p$	90, 120, 150, 180, 210, 240, 270 MeV (T_{lab})
$\pi^- p \rightarrow \pi^- p$	"

TRIUMF-443 (Nov 1986) Completed 1987.

STUDY OF THE $\pi^+ d \rightarrow \pi^- \pi^+ pp$ REACTION AT $T = 250 \text{ AND } 280 \text{ MeV}$

TRIUMF - D R Gill

INFN, TRIESTE - N Gron

TRIESTE U - R Rui ($\checkmark$ Spokesperson)

BRITISH COLUMBIA U - M Hanna, R R Johnson, R Olszewski,

F M Rozon, M Sevier, G Smith, V Sossi, P Trelle

TRIESTE U & INFN, TRIESTE - G Margalotti

BRITISH COLUMBIA U & BEIJING, IHEP - Z Wu

Accelerator TRIUMF Detector Counter, Spectrometer

Reactions

$\pi^+ \text{ deut} \rightarrow p p \pi^- \pi^+$	250, 280 MeV (T_{lab})
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TRIUMF-446 (May 1987) Completed Apr 1989.

PION-PROTON BREMSSTRAHLUNG

OREGON STATE U - F Farzanpay, P Fuchs, A Stetz

($\checkmark$ Spokesperson), L W Swenson, N Wen

ALBERTA U & TRIUMF - P Kitching ($\checkmark$ Spokesperson)

TRIUMF - G Smith

ALBERTA U - W C Olsen

SASKATCHEWAN U - N Stevenson

Accelerator TRIUMF Detector Counter

Reactions

Polarized target	
$\pi^+ p \rightarrow \pi^+ p \gamma$	265 MeV (T_{lab})

TRIUMF-452 (Nov 1987.)

RADIATIVE MUON CAPTURE ON HYDROGEN

TRIUMF - S Ahmad, G Azuelos ($\checkmark$ Spokesperson), J Macdonald,

J-M Poutissou

BRITISH COLUMBIA U - M Hasinoff ($\checkmark$ Spokesperson),

A Larabee, D Wright

PSI, VILLIGEN - W Bertl

VIRGINIA TECH - D Armstrong, M Blecher, A Serna-Angel

MONTREAL U - P Depommier, R Poutissou

QUEENS U, KIN. STON - B Robertson

BEIJING, IHEP - C Q Chen, N-S Zhang

MELBOURNE U - R Henderson, S McDonald, G Taylor

Accelerator TRIUMF Detector Drift chamber

Reactions

$\mu^- p \rightarrow n \nu \mu \gamma$	0 MeV (T_{lab})
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Comments Extracts the weak induced pseudoscalar coupling constant. In preparation. (July 89).

TRIUMF-460 (1989)

A MEASUREMENT OF THE CROSS SECTION AND ANALYZING POWER OF THE $p n \rightarrow pp(^1S_0)\pi^-$ REACTION AT TRIUMF ENERGIES

TEL AVIV U - D Ashery, H Hahn, M A Moinester

SUMMARIES OF TRIUMF EXPERIMENTS

BRITISH COLUMBIA U - E G Auld, F Duncan, G Jones, M Sevier

TRIUMF - D Hutcheon, P L W'ldden (✓ Spokesperson)

BRITISH COLUMBIA U & TRIUMF - R R Johnson

ALBERTA U - E Korkmaz

Accelerator TRIUMF Detector Spectrometer, Counter

Reactions Polarized beam

$p n \rightarrow p p \pi^-$ 345-495 MeV (T_{lab})

Comments The target is liquid deuterium. Uses a QGD spectrometer and a counter hodoscope. A first run was completed in September 87. A second run is scheduled to start August 89.

TRIUMF-466 (May 1987) Completed 19:8.

MEASUREMENT OF $np \rightarrow dn^0$ CROSS SECTIONS
NEAR THRESHOLD

TRIUMF - R Abegg, L G Greeniaus, D A Hutcheon

(✓ Spokesperson), C A Miller

MANITOBA U - N E Davison

ALBERTA U - G W R Edwards, G A Moss, W C Olsen, Y Yanlin

WESTERN CAPE U - J J van Heerden

Accelerator TRIUMF Detector Spectrometer

Reactions

$n p \rightarrow deut \pi^0$ 276, 277, 279, 283, 291 MeV (T_{lab})

Comments Measured total and differential cross sections.

TRIUMF-478 (Oct 1987)

PROTON INDUCED πNN RESONANCES

TRIUMF - R Abegg, D Frekers (Spokesperson), K Hicks, J Iqbal,

B Jennings, A Miller, P Trelle, P Walden, S Yen

SASKATCHEWAN U - R Schubank

TORONTO U - R Azuma, C Chan

Accelerator TRIUMF Detector Spectrometer

Reactions

$^{12}C p \rightarrow p p \pi^- + X$ 500 MeV (T_{lab})

$^{12}C p \rightarrow p n \pi^+ + X$ "

$^{13}C p \rightarrow p p \pi^- + X$ "

$^{13}C p \rightarrow p n \pi^- + X$ "

TRIUMF-482 (Oct 1987)

MEASUREMENTS OF SPIN TRANSFER COEFFICIENTS IN pd ELASTIC SCATTERING

TRIUMF - R Abegg (✓ Spokesperson), D A Hutcheon, J Iqbal

TRIUMF & ALBERTA U - P W Green

ALBERTA U - G A Moss, W C Olsen, N Rodning

SASKATCHEWAN U - R Schubank, Y M Shin, N Stevenson

TRIUMF & TORONTO U - D Frekers

UGLA - M Bleszynski, T Jaroszewicz

Accelerator TRIUMF Detector Spectrometer

Reactions Polarized beam

$p deut \rightarrow p deut$ 200, 300, 400, 500 MeV (T_{lab})

Comments Measures the spin transfer coefficients D_{NN} , D_{SS} , D_{LS} , and D_{LL} . Scheduled to run August 89.

TRIUMF-496 (Oct 1987) Completed.

MEASUREMENTS OF THE ANGULAR DISTRIBUTION OF THE SPIN TRANSFER PARAMETER D_{LS} IN $pp \rightarrow dn^+$

TRIUMF - R Abegg (✓ Spokesperson), L G Greeniaus,

D A Hutcheon

ALBERTA U - D Mack, G A Moss, Yanlin Ye

TRIUMF & ALBERTA U - P W Green

Accelerator TRIUMF Detector Spectrometer, Counter

Reactions

$p p \rightarrow deut \pi^+$ 510 MeV (T_{lab})

Comments Measures the spin transfer coefficient D_{LS} .

TRIUMF-497-287 (Oct 1987) Approved Dec 1987.

MEASUREMENT OF THE FLAVOR-CONSERVING
HADRONIC WEAK INTERACTION

MANITOBA U - J Birchall (✓ Spokesperson), C A Davis,

N E Davison, W T H van Oers (✓ Spokesperson), S A Page

(✓ Spokesperson), W D Ramsay

LOS ALAMOS - J D Bowman

TRIUMF - D A Dohan, P W Schmor

ALBERTA U - P W Green, N L Rodning, G Roy, J Soukup,

G M Stinson

UC, IRVINE - W P Lee

Accelerator TRIUMF Detector Ionization

Reactions Polarized beam

$p p \rightarrow p p$ 222 MeV (T_{lab})

Comments Measures the parity-violating longitudinal analyzing power A_L . A measurement of the weak meson-nucleon coupling constant h_p .

Papers PR D37 (1988) 1769.

TRIUMF-498 (Oct 1987)

ANALYZING POWER ZERO CROSSING ANGLES IN np
ELASTIC SCATTERING BELOW 300 MeV

MANITOBA U - J Birchall, J Campbell, N E Davison,

W T H van Oers, S A Page, W D Ramsay

TRIUMF - C A Davis (✓ Spokesperson), L G Greeniaus

ALBERTA U - C Choi, P W Green

Accelerator TRIUMF Detector Counter

Reactions Polarized beam

$n p \rightarrow n p$ 180, 230 290 MeV (T_{lab})

Comments Scheduled to run in 1989.

TRIUMF-502 (Nov 1988)

MEASUREMENT OF ANALYZING POWERS IN LOW
ENERGY nd ELASTIC SCATTERING

KARLSRUHE U - E T Boschitz

TRIUMF - P Delheij, D R Gill, D Healey, B K Jennings,

D F Ottewill, G Sheffer, G R Smith, G D Wait

TRIESTE U - N Grion, R Rui

BRITISH COLUMBIA U - M Hanna, R R Johnson, V Sossi,

P Weber

REGINA U - E L Mathie, M Yeomans

COLORADO U - R A Ristinen

SASKATCHEWAN U - R B Schubank, Y M Shin, N Stevenson

(Spokesperson)

Accelerator TRIUMF Detector Spectrometer

Reactions Polarized target

$\pi^+ deut \rightarrow \pi^+ deut$ 50 MeV (T_{lab})

$\pi^- deut \rightarrow \pi^- deut$ "

Comments Scheduled to run in 1989.

TRIUMF-503 (Oct 1987)

SEARCH FOR A πNN BOUND STATE

BRITISH COLUMBIA U - R R Johnson, R Olszewski,

M F Rozon, M E Sevier, P Weber

REGINA U - E L Mathie

TRIUMF - D Frekers, D R Gill, D Ottewill, G R Smith

COLORADO U - R A Ristinen, R P Trelle (Spokesperson)

SASKATCHEWAN U - R Schubank, N R Stevenson

Accelerator TRIUMF Detector Spectrometer

Reactions

$\pi^+ deut \rightarrow p p \pi^+ + \pi^-$ 256 MeV (T_{lab})

$\pi^- deut \rightarrow n n \pi^- + \pi^+$ "

TRIUMF-506 (Oct 1987)

LOW ENERGY $\pi d \rightarrow pp$ ANALYZING POWERS

SUMMARIES OF TRIUMF EXPERIMENTS

REGINA U - G J Lolos, E L Mathie (✓ Spokesperson),
S I H Naqvi, D M Yeomans
WESTERN KENTUCKY U - D Humphrey
TRIUMF - D Healey, D Ottewell, G R Smith
BRITISH COLUMBIA U - G Jones
SASKATCHEWAN U - N R Stevenson

Accelerator TRIUMF Detector Counter

Reactions Polarized target

π^+ deut $\rightarrow$ p p 25, 45, 65 MeV (T_{lab})

Comments Measures the vector analyzing power (T_{11}) and the tensor analyzing power. Scheduled to run January 90.

TRIUMF-508 (Oct 1987)

STUDY OF THE $\pi^+d \rightarrow \pi^- \pi^+ pp$ REACTION AT $T = 240$ MEV

TRIESTE U - P Camerini, R Rui (✓ Spokesperson)
INFN, TRIESTE - N Grión
BRITISH COLUMBIA U - M Hanna, R R Johnson, R Olszewski,
F M Rozon, M Seviar, G Smith, V Sossi, P Trelle
VALENCIA U - E Oset, M J Vicente-Vacas

Accelerator TRIUMF Detector Counter, Spectrometer

Reactions

π^+ deut $\rightarrow$ p p $\pi^+ \pi^-$ 240 MeV (T_{lab})

Comments Scheduled to run November 89.

TRIUMF-530 (May 1988) Completed Dec 1988.

π^+p TOTAL CROSS SECTIONS AT LOW ENERGIES

HEBREW U - E Friedman (✓ Spokesperson), A Goldring
TUBINGEN U - G Wagner
SOREQ NUCLEAR RES CTR - A Altman
BRITISH COLUMBIA U - R R Johnson, O Meirav
TRIUMF - B K Jennings

Accelerator TRIUMF Detector Counter

Reactions

$\pi^+ p \rightarrow X$ 51.5, 62.6, 66.8, 70.9, 81.5, 121.9, 125.9 MeV (T_{lab})

TRIUMF-537 (May 1988)

RADIATIVE DECAY OF THE Δ RESONANCE

BRITISH COLUMBIA U - D F Measday (✓ Spokesperson),
S Stanislaus, P Weber
TRIUMF - M Salomon
BOSTON U - E C Booth, J P Miller

Accelerator TRIUMF Detector Photon spectrometer

Reactions Polarized target

$\pi^- p \rightarrow n \gamma$ 100-250 MeV (T_{lab})
 $\pi^- p \rightarrow \pi^0 n$ "

Comments Measures Δ^0 radiative decay multipoles and differential cross sections. The polarized target is planned for phase II. Scheduled to run in 1989.

TRIUMF-541 (May 1988)

SPIN-MOMENTUM CORRELATIONS OF NUCLEONS IN POLARIZED ^3He

SIMON FRASER U & TRIUMF - O Haeusser (✓ Spokesperson),
R Woloshyn
TRIUMF - P Delheij, K P Jackson, C A Miller (✓ Spokesperson),
P Schmor

HARVARD U - T Chupp
SIMON FRASER U - J Mildnerberger, A Trudel, M Vetterli
MELBOURNE U & TRIUMF - R Henderson

Accelerator TRIUMF Detector Counter, Spectrometer

Reactions Polarized beam and target

$p^3\text{He} \rightarrow p p X$ 290 MeV (T_{lab})
 $p^3\text{He} \rightarrow p n X$ "

Comments Scheduled to run in 1989.

TRIUMF-544 (May 1988)

A SEARCH FOR AN EXCITED PION BOUND STATE OF THE NUCLEON VIA $p(p, n)X^{++}$

TRIUMF - R Abegg, D Frekers (Spokesperson), R Henderson,
C A Miller, S Yen
TEL AVIV U - J Alster, D Ashery, E Piasetzky, A J Yavin
(Spokesperson)

Accelerator TRIUMF Detector Spectrometer, Counter

Reactions

$p p \rightarrow n X$ 450 MeV (T_{lab})

TRIUMF-552 (Nov 1988)

$pp \rightarrow d\pi^+$ ANALYZING POWERS NEAR THRESHOLD

TRIUMF - R Abegg, L G Greeniaus, D A Hutcheon
(✓ Spokesperson), C A Miller
ALBERTA U - E Korkmaz, D Mack, W C Olsen, N L Rodning

Accelerator TRIUMF Detector Spectrometer

Reactions Polarized beam

$p p \rightarrow \text{deut } \pi^+$ 291, 295 MeV (T_{lab})

Comments Scheduled to run August 1989.

TRIUMF-556 (Nov 1988)

THE REACTION $\pi^+ ^4\text{He} \rightarrow pppn + \pi^+ \pi^-$

INFN, TRIESTE - P Camerini, N Grión, R Rui
BRITISH COLUMBIA U - R Johnson, O Meirav
(✓ Spokesperson), M Seviar, V Sossi, D Vetterli, P Weber
TRIUMF - D Gill, G Smith

Accelerator TRIUMF Detector Spectrometer

Reactions

$\pi^+ \text{He} \rightarrow p p p n + \pi^+ \pi^-$ 280 MeV (T_{lab})

Comments Scheduled to run October 89.

TRIUMF-557 (Nov 1988)

ELASTIC SCATTERING OF 100 MeV π^+ FROM A POLARIZED ^3He TARGET

WESTERN ONTARIO U - A Celler
TRIUMF - P Delheij, D R Gill, R Helmer, P Levy, C A Miller,
D F Ottewell, P Schmor, S Yen
TRIUMF & SIMON FRASER U - O Haeusser (✓ Spokesperson)
TRIUMF & MELBOURNE U - R Henderson
OREGON STATE U - R H Landau
SIMON FRASER U - M Law (✓ Spokesperson), A Trudel,
M Vetterli

SASKATCHEWAN U - R B Schubank, N R Stevenson
BRITISH COLUMBIA U - V Sossi

Accelerator TRIUMF Detector Spectrometer

Reactions Polarized target

$\pi^+ ^3\text{He} \rightarrow \pi^+ ^3\text{He}$ 100 MeV (T_{lab})

Comments Measures the asymmetry parameter and differential cross section. Scheduled to run in late 1989 or early 1990.

TRIUMF-560 (Nov 1988)

DETERMINATION OF THE Σ TERM FROM A MEASUREMENT OF THE POLARIZATION IN $\pi^- p$ SCATTERING AT $T_\pi = 51$ MEV

TRIUMF - D R Gill, D Ottewell, G R Smith (Spokesperson),
G D Wait
SASKATOON U - R Schubank, N Stevenson

BRITISH COLUMBIA U - R R Johnson, G Jones, O Meirav,
M E Seviar, V Sossi, D Vetterli, P Wei er

REGINA U - E L Mathie

COLORADO U - R J Peterson, R A Ristinen

Accelerator TRIUMF Detector Spectrometer

SUMMARIES OF TRIUMF EXPERIMENTS

Reactions Polarized target
 $\pi^- p \rightarrow \pi^- p$ 51 MeV (T_{lab})
Comments Scheduled to run in 1989.

TRIUMF-561 (Nov 1988)

THRESHOLD MEASUREMENTS OF $H(\pi^-, \pi^+ \pi^-)n$ AND $H(\pi^+, \pi^+ \pi^+)n$

BRITISH COLUMBIA U - R R Johnson, O Meirav, M E Sevier
($\checkmark$ Spokesperson), V Sossi, D Vetterli, P Weber
BONN U - J Ernst
TRIUMF - D R Gill, D F Ottewell, G R Smith, G Wait

Accelerator TRIUMF Detector Counter

Reactions
 $\pi^- p \rightarrow n \pi^+ \pi^-$ 172, 184, 190, 203 MeV (T_{lab})
 $\pi^+ p \rightarrow n \pi^+ \pi^+$ "

Comments Measures the chiral symmetry breaking parameter ξ .
Scheduled to run in 1989.

UNDERGROUND Experiments

UNDERGROUND-FREJUS NUCLEON DECAY EXPERIMENT WITH A MODULAR FLASH CHAMBER DETECTOR

FREJUS COLLABORATION

AACHEN, TECH HOCHSCH. I PHYS INST - Ch Berger,
A Hofmann, F Raupach, P Schleper, G Schmitz, J Tutas,
B Voigtlaender
ORSAY, LPNHE - C Arpesella, Y Benadjal, G Deuzet,
B Dudelzak, P Eschtruth, S Julian, D LaLanne, F LaPlanche,
C Longuemare, C Paulot, Ph Roy, G Szklarz
ECOLE POLYTECHNIQUE - L Behr, R W Bland, B DeGrange,
U Nguyen-Khac, P Serri, S Tisserant, R Tripp
SACLAY - P Bareyre, R Barloutaud (Spokesperson), G Chardin,
L Di Ciccio, D L Edmunds, J Ernwein, G Gerbier, M A Jabiol,
W Kolton, L Mosca, L Morcoso, B Pietrzyk
WUPPERTAL U - K H Becker, H J Daum, S Demski, R Hinners,
W Kohrs, B Kuznik, R Mayer, H Meyer, D Ortmann, J Peters,
M Schubnell, J Thierjung, Y Wei, P Wintgen

Accelerator NONE Detector Calorimeter

Particles studied p, n

Comments A 900-metric-ton array of 3-mm steel plates separated by layers of 5x5-mm polypropylene flash chambers. There are 115 planes of Geiger tubes for triggering. The detector is 4800 meters of water equivalent underground.

Papers PL B174 (1986) 118, and NIM A262 (1987) 463.

UNDERGROUND-HOMESTAKE

THE HOMESTAKE GOLD MINE EXPERIMENT

PENN U - M L Cherry, M Deakyn, K Lande (Spokesperson),
C K Lee, R I Steinberg
BROOKHAVEN - B Cleveland

Accelerator NONE Detector Counter

Particles studied p, n

Papers PRL 47 (1981) 1507.

UNDERGROUND-HPW

THE HARVARD-PURDUE-WISCONSIN EXPERIMENT

HARVARD U - E Aprile, K L Giboni, C Rubbia (Spokesperson),
D R Winn
PURDUE U - J A Gaidos, R McHenry, J Negret, T R Palfrey,
T Phillips, G Sembrski, C L Wilson
WISCONSIN U - D Cline (Spokesperson), G Kalkanis, R J Loveless,
R March, J Matthews, A More, R Morse

Accelerator NONE Detector Counter

Particles studied p, n

Comments A 680-metric-ton water Cherenkov detector 1500 meters of water equivalent underground.

Papers PR D37 (1988) 1758, and PL B224 (1989) 348.

UNDERGROUND-IMB

THE IRVINE-MICHIGAN-BROOKHAVEN EXPERIMENT

UC, IRVINE - W Gajewski, K Ganezer, T J Haines, W R Kropp,
L Price, F Reines (✓ Spokesperson), J Schultz, H W Sobel,
C Wuest
MICHIGAN U - D Casper, P Chrysicopolou, R Claus, H-S Park,
S Seidel, D Sinclair, J L Stone, L R Sulak, J C van der Velde
(✓ Spokesperson)
MICHIGAN U & UNIVERSITY COLL, LONDON - T W Jones
BROOKHAVEN - M Goldhaber
CAL TECH - G Blewitt, J M Losocco
CLEVELAND STATE U - C B Bratton
HAWAII U - J G Learned, R Svoboda
UC, IRVINE & WARSAW U. IEP - D Kielczewska
FERMILAB - G W Foster
ILLINOIS U, URBANA - S Errede

Accelerator NONE Detector Counter

Particles studied p, n

Comments An 8000-metric-ton water Cherenkov detector 1570 meters of water equivalent underground.

Papers PRL 51 (1983) 27, PRL 51 (1983) 245, PRL 52 (1984) 720, PRL 52 (1984) 1092, NIM A239 (1985) 467, NP B252 (1985) 261, PRL 54 (1985) 22, PRL 54 (1985) 2289, PRL 55 (1985) 2114, PRL 57 (1986) 1986, PRL 57 (1986) 2872, PRL 58 (1987) 1494, NIM A261 (1987) 540, PL B184 (1987) 305, PL B188 (1987) 388, PR D35 (1987) 2073, PR D36 (1987) 30, ASTJ 315 (1987) 420, PR D37 (1988) 3361, PRL 61 (1988) 2522, NIM A264 (1988) 28, PR D38 (1988) 768, PRPL 163 (1988) 137, PR D39 (1989) 1492, and PRL 62 (1989) 2069.

UNDERGROUND-KAMIOKA (Jul 1983) Completed 1985.

THE KAMIOKA EXPERIMENT

KEK - K Takahashi
NIIGATA U - K Miyano
TOKYO U - K Arieaka, K Hirata, T Kajita, T Kikune,
M Koshihira (✓ Spokesperson), M Nakahata, Y Oyama, A Sato,
N Sato, T Suda, A Suzuki, M Takita, Y Totsuka

Accelerator NONE Detector Counter

Particles studied p, n, monopole

Comments A 3000-metric-ton water Cherenkov detector 2700 m water equivalent underground. Also investigates solar and high-energy neutrinos, high-energy muons, etc.

Papers NIM 205 (1983) 443, JPSJ 54 (1985) 3213, JPSJ 54 (1985) 4065, JPSJ 55 (1986) 711, JPSJ 55 (1986) 3786, PRL 56 (1986) 991, PR D34 (1986) 902, and PR D36 (1987) 3537.

UNDERGROUND-KAMIOKA-II Started 1985.

THE KAMIOKA-II EXPERIMENT

KEK - M Mori, Y Oyama, A Suzuki, K Takahashi, T Tanimori
KOBE U - T Suda, T Tazima
NIIGATA U - K Miyano, H Miyata, H Taki, M Yamada
OSAKA U - Y Fukuda, K Kaneyuki, Y Nagashima, M Takita
TOKAI U, HIRATSUKA - M Koshihira
TOKYO U - K S Hirata, T Kajita, T Kifune, K Kibara,
M Nakahata, K Nakamura, S Ohara, N Sato, Y Suzuki,
Y Totsuka (✓ Spokesperson), Y Yaginuma
PENN U - E W Beier, R Van Berg, L Feldscher, E D Frank,
W Frati, S B Kim, A K Mann, F M Newcomer, W P Zhang

Accelerator NONE Detector Counter

Particles studied p, n, monopole, muon, ν

Comments A 3000-metric-ton water Cherenkov detector 2700 m water equivalent underground. The Kamioka detector upgraded with a 4 π anticounter and TDC added. Also investigates solar, supernova, and high-energy neutrinos, high-energy muons, etc. Taking data.

Papers PRL 58 (1987) 1490, PRL 59 (1987) 2604, PL B205 (1988) 416, PR D38 (1988) 448, PRL 61 (1988) 385, PRL 61 (1988) 2653, PR D39 (1989) 1481, PL B220 (1989) 308, and PRL 63 (1989) 16.

UNDERGROUND-KGF

THE KOLAR GOLD FIELD EXPERIMENT

TATA INST - M R Krishnaswamy, M G K Menon, N K Mondal,
V S Narasimham (Spokesperson), B V Sreekantan
OSAKA CITY U - Y Hayashi, N Ito, S Kawakami
TOKYO U, COSMIC RAY LAB - S Miyake

Accelerator NONE Detector Calorimeter

Particles studied p, n

Comments Several candidates for nucleon decay are observed with low background, but no definite conclusion can be reached yet. A 140-ton iron calorimeter with gas proportional tubes 7600 m of water equivalent underground.

Papers PL 106B (1981) 335, and PL 115B (1982) 349.

SUMMARIES OF UNDERGROUND EXPERIMENTS

UNDERGROUND-NUSEX Completed Dec 1986.

THE MONT BLANC EXPERIMENT

MILAN U - E Fiorini (Spokesperson)
FRASCATI & MILAN U & TURIN U & CERN - G Battistoni,
E Bellotti, G Bologna, P Campana, C Castagnoli, V Chiarella,
D Cundy, B D'Ettore, E Iarocci, G Mannocchi, G P Murtas,
P Negri, G Nicoletti, L Periale, P Picchi, A Price, A Pullia,
S Ragazzi, M Rollier, O Saavedra, L Trasatti, L Zanotti

Accelerator NONE Detector Calorimeter

Particles studied p, n

Comments One event seen consistent with p decay. A $3.5 \times 3.5 \times 3.5$ -m cube of 136 layers of 1-cm-thick iron plates separated by layers of 1×1 -cm plastic streamer tubes. The mass is 150 tons and is 5000 meters of water equivalent underground.

Papers NIM 202 (1982) 459, PL 118B (1982) 461, PL 133B (1983) 454, NIM 219 (1984) 300, NC 8C (1985) 76, PL 155B (1985) 465, and NIM A245 (1986) 277.

UNDERGROUND-SOUDAN-II

THE SOUDAN-II EXPERIMENT

MINNESOTA U - H Courant, K Heller, S Heppelman, T Joyce,
M Marshak (Spokesperson), E Peterson, K Ruddick, M Shupe
ARGONNE - D Ayres, K Coover, J Dawson, T Fields, N Hill,
D Jankowski, E May, L Price
OXFORD U - W Allison, C Brooks, J Cobb, D Perkins, B Saitta,
P Shield
RUTHERFORD - D Cockerill, P Litchfield, R Nicksen, S Yartar
TUFTS U - T Kafka, A Mann, R Milburn, A Napier, W Oliver

Accelerator NONE Detector Calorimeter

Particles studied p, n

Comments A 1000-ton detector using drift projection tubes arranged in an hexagonal array. The tubes are 16 mm in diameter separated by 1.6 mm of steel.

Papers Results from Soudan-I: PRL 50 (1983) 651, PRL 54 (1985) 2079, PRL 55 (1985) 1965, and PR D36 (1987) 1990.

UNDERGROUND-SUDBURY (1985)

THE SUDBURY NEUTRINO OBSERVATORY

QUEENS U, KINGSTON - H C Evans, G T Ewan (Spokesperson), H W Lee, J R Leslie, J D MacArthur, H-B Mak, W McLatchie, B C Robertson, P Skensved
UC, IRVINE - R C Allen, G Buehler, H H Chen, P J Doe
OXFORD U - D Sinclair, N W Tanner
NATIONAL RESEARCH COUNCIL, OTTAWA - J D Anglin,
M Bercovitch, W F Davidson, C K Hargrove, H Mes, R S Storey
CHALK RIVER, AECL - E D Earle, G M Milton
GUELPH U - P Jagam, J J Simpson
PENN U - E W Boer (Spokesperson), R Van Berg, W Frati,
F M Newcomer
PRINCETON U - R T Kouzes, M M Lowry, A B McDonald
LAURENTIAN U - E D Hallman, R U Haq
CARLETON U - A L Carter, D Kessler

Accelerator NONE Detector Counter

Reactions

$\nu_e \text{ deut} \rightarrow p p e^-$	--
$\nu e^- \rightarrow \nu e^-$	--
$\nu \text{ deut} \rightarrow p n \nu$	--

Comments A 1000-tonnes of pure heavy water in a transparent tank viewed by phototubes covering 40% of the surface area. Relativistic particles are viewed by the Cerenkov light they produce. The detector is 5900 m water equivalent underground. Aims to measure the solar $^8\text{B } \nu_e$ flux, spectrum, and direction, and the total ^8B neutrino flux, direction, and integral spectrum. Under construction.

Papers NC C9 (1986) 308, and PL B194 (1987) 321.

BROOKHAVEN AGS BEAMS (Source: G. Bunce, BNL)

Up to 10^{13} protons per pulse are accelerated typically to 28.5 GeV kinetic energy (31 GeV has been obtained). At 28.5 GeV, the period is 2.4 sec for slow extraction (with a 1-sec flattop), or 1.4 sec for fast extraction (used for neutrino beams). Counting rates may be estimated using the nominal beam spill time of 1 sec. The beam lines with 0° production angles can be used for polarized protons and/or for heavy ion beams.

	Beam	Momentum range (GeV/c)	$\Delta p/p$ FWHM (%)	Production angle ($^\circ$)	Solid angle (msr)	Beam length (m)	Particles	Flux per 10^{12} protons on target	$\rightarrow$ at (GeV/c)	Comments
Separated	B2, B4	1.5-6 1.5-9	5	3	0.3	81	K^+/K^- $\bar{p}$ π^+/π^-	$2.7 \times 10^5/1.2 \times 10^5$ 10^5 $4 \times 10^7/3 \times 10^7$	4	Usually 2×10^{12} <i>ppp</i> on target; $\pi/K \sim 3$ in <i>K</i> beam; $\pi/\bar{p} \sim 3/4$
	C2, C4	≤ 1.1	4	10.5	2.6	15	K^+/K^- $\bar{p}$ π^+/π^-	$9 \times 10^4/3 \times 10^4$ 2×10^3 8×10^7	0.75	Usually 2×10^{12} <i>ppp</i> ; $\pi/K \sim 10$ in <i>K</i> beam
	C6, C8	≤ 0.8	6	5	10	15	K^+/K^- $\bar{p}$ π^+/π^-	$3 \times 10^5/10^5$ 1.4×10^4 6×10^8	0.7	Usually 2×10^{12} <i>ppp</i> ; $\pi/K \sim 5$
Unseparated	D6, D8	1-2	6	5	1.6	31	K^+/K^- $\bar{p}$ π^+/π^-	$1.1 \times 10^6/5 \times 10^5$ 5×10^5 $6 \times 10^7/5 \times 10^7$	1.8	Under construction in FY90
	A1	5-24	3	0	0.2	130	π^-	10^6	22	To multiparticle spectrometer; 25 cm Be target
	B1	5-28	3	0	0.05	75	p π^+/π^-	3×10^7 $6 \times 10^8/2 \times 10^8$	14	Primarily a heavy-ion line
Neutral	C1	1-24	5	0	0.8	61	K^+/K^- $p/\bar{p}$ π^+/π^-	$6 \times 10^6/7 \times 10^5$ $2 \times 10^8/1.4 \times 10^5$ $7 \times 10^7/5 \times 10^7$	13	Usually 2×10^{12} <i>ppp</i>
	C5	1-28	2	0	0.15		p	10^7	13	Primarily a heavy-ion line
	D2, D4	0.1-0.3(π) 0.025-0.15(μ)	9(π) 30(μ)	55(π) 24(μ)	24(π)	9	μ^-	2×10^5 10^3 (surface)	0.20	Muon channel; flux in 100 cm^2 ; $e^-/\mu^- \approx 8$
	A3	2-15		2	0.045	8	K_L n	2×10^7 3×10^8	2-15	Alternates with A1
	B5	2-15		1-4.5	0.1	10	n K_L	3×10^8 5×10^7	2-15	
	U	$^1E_{\nu_1} = 1.4$ (wide band) $^1E_{\nu_2} = 1.3$ (narrow band)					$\nu/\bar{\nu}$ ν	$2 \times 10^9/1.4 \times 10^9$ per m^2 10^5 per m^2		Typically 1.4×10^{13} <i>ppp</i> ; flux averaged over 1.5 m radius

CERN PS BEAMS [Source: *Experiments at CERN in 1988*]

East area — The primary beam.

Beam	Momentum (GeV/c)	Particles	Flux/cycle	Comments
e ₁₇	8-24	p	2×10^{11} (for test beams)	Slow ejection; splits into two branches

East area — These are counter beams fed by branches of the e₁₇ beam above. The fluxes are for $\Delta p/p = \pm 1\%$ and 10^{11} 24-GeV/c protons on the external target; they assume 30% target efficiency (fluxes also depend on the external target used).

Beam	Momentum (GeV/c)	Particles	Flux/cycle	Production angle (°)	Beam height (m)	Comments
t ₇	≤ 10	p, π ⁺ , e ⁺ or π ⁻ , e ⁻		0	1.28	e ⁺ is 7% of + beam at 5 GeV/c, 50% at 2 GeV/c
t ₉	≤ 10	π ⁻ e ⁻ positives	$> 10^5$ at 10 GeV/c ≈ 1-3% ≈ 4×10^5	0	2.28	The e ⁻ percentage in the neg- ative beam depends on the ex- ternal target used
t ₁₀	≤ 5	π ⁻ e ⁻ positives	≈ 3×10^5 at 5 GeV/c ≈ 10% ≈ 6×10^5	3.53	2.5	The e ⁻ percentage in the neg- ative beam depends on the ex- ternal target used
t ₁₁	≤ 3.5	π ⁻ e ⁻ positives	≈ 2×10^5 at 3.5 GeV/c < 10% ≈ 4×10^5	8.55	2.5	The e ⁻ percentage in the neg- ative beam depends on the ex- ternal target used

South area (LEAR) — Design values. The $\bar{p}$ beam splits into three branches (six experimental areas).

Beam	Momentum range (GeV/c)	Flux (per sec)	Spill length
External $\bar{p}$ beam, with ultra-slow ejection (≈ 1 hr)	0.1-1.9	$< 3 \times 10^6$ for 1-hr spill	15 min to 4 hrs

North area beams (NA experiments)

Beam	Maximum momentum (GeV/c)	Intensity for 10^{12} protons at 450 GeV/c	Beam type
H2	450	$9 \times 10^7 \pi^+$ at 200 GeV/c $3 \times 10^7 \pi^-$ at 200 GeV/c $4 \times 10^6 e^\pm$ at 150 GeV/c	High energy hadrons or electrons (also used as a test beam)
		$\approx 10^5 {}^{32}\text{S}$ at 200 GeV/A	Heavy ion beam
K4	450	$\approx 10^6 K_L^0/10^{11}$ incident p	Alternate K_L^0/K_S^0 beams
	360	$\approx 2 \times 10^2 K_S^0/2 \times 10^7$ "	
H6	250	$1 \times 10^8 \pi^+$ at 150 GeV/c $4 \times 10^7 \pi^-$ at 150 GeV/c	Medium energy hadrons (also used to produce a tertiary test beam)
H8	450	$\approx 10^6 p$ at 450 GeV/c $2 \times 10^8 \pi^+$ at 200 GeV/c $7 \times 10^7 \pi^-$ at 200 GeV/c	Attenuated primary protons or high energy hadron (or e) beam
		$\approx 10^6 {}^{32}\text{S}$ at 200 GeV/A	Heavy ion beam
M2	280	$2.5 \times 10^7 \mu^+$ at 200 GeV/c $8 \times 10^6 \mu^-$ at 200 GeV/c	High intensity muons
P0	450	$\leq 10^{13} p$ at 450 GeV/c $\geq 10^7 {}^{32}\text{S}$ at 200 GeV/A	High intensity primary protons, used to transport hadrons or heavy ions to H10 or E12
H10	450	$\approx 10^8 p$ at 450 GeV/c $\approx 1 \times 10^7 \pi^+$ at 200 GeV/c $\approx 3 \times 10^6 \pi^-$ at 200 GeV/c	Attenuated primary protons or high energy hadrons (via P0)
		$\geq 10^7 {}^{32}\text{S}$ at 200 GeV/A	Heavy ion beam
E12	450	hadron fluxes similar to H10	Available for tests

West area beams (WA experiments)

Beam	Maximum momentum (GeV/c)	Intensity for 10^{12} protons at 450 GeV/c	Beam type
H1	400	$\approx 10^8 \pi^-$ at 350 GeV/c $\approx 10^8 \pi^+$ at 200 GeV/c $10^6 e$ at 200 GeV/c	High-energy hadrons or electrons
		$\approx 10^6 {}^{32}\text{S}$ at 200 GeV/A	Heavy ion beam
H3	200*	$\approx 10^7 \pi^-$ at 200 GeV/c $\approx 10^8 \pi^+$ at 200 GeV/c $10^6 e$ at 200 GeV/c	Hadrons or electrons; produces the X1, X3, X5, and X7 test beams below
		$\approx 10^6 {}^{32}\text{S}$ at 200 GeV/A	Heavy ion beam
X1	70	10^2 – 10^4 tertiaries/ 10^7 incident particles from H3	Test beam; tertiary electrons and hadrons
X3	50	10^2 – 10^4 tertiaries/ 10^7 incident particles from H3	Test beam; tertiary electrons and hadrons
X5	100	10^2 – 10^4 tertiaries/ 10^7 incident particles from H3	Test beam; tertiary electrons and hadrons
X7	100	10^2 – 10^4 tertiaries/ 10^7 incident particles from H3	Test beam; tertiary electrons and hadrons

*Up to 400 GeV/c if the X1, X3, X5, and X7 test beams are not used.

West area neutrino beams (WA experiments)

Beam	Parent momentum (GeV/c)	Particle	Intensity or event rate for 10^{13} incident protons*	$\langle E_\nu \rangle$ (GeV)	Beam type
N1	450 protons	ν	$1.3 \times 10^{10}/\text{m}^2$ (~ 0.13 ev/ton)	~ 24	Wide-band spectrum up to 450 GeV
		$\bar{\nu}$	$0.7 \times 10^{10}/\text{m}^2$ (~ 0.03 ev/ton)	~ 20	

*Inside a 1.75 m radius at 870 m from the target.

FERMILAB BEAMS (Source: H.B. White, Jr., FNAL, revised by A. Malensek, FNAL)

Currently, protons are accelerated to an operational momentum of 800 GeV/c. The maximum intensity is 2×10^{13} protons per pulse, the current acceleration time is 60 sec, and the beam spill time is 20 sec. The maximum design momentum is 1000 GeV/c.

Beam	Momentum range (GeV/c)	$\pm \Delta p/p$ (%)	Production angle (mr)	Solid angle (μsr)	Particles	*Flux per sec per 10^{13} protons on target	$\rightarrow$ at (GeV/c)	Comments
PW	925 (peak)	5	1.5		π^+/π^- p	$10^8/3 \times 10^7$ 2×10^8	300 800	High intensity pion beam Primary protons
PB	600 (peak)	15		4	e^+/e^- γ n	5×10^6 8×10^6 6×10^8	350 > 200 ~ 750	Wide band charged and neutral beam Also capable of K_L^0 , p , and π^-
PE	500 (peak) 250 (peak)	2.3	0.0	1.0	π^- π^+	2×10^6 7×10^7	500 250	
PC	1000		0-3.5		p	2.5×10^9 - 5×10^{10}	1000	Primary protons
ME	1000 (peak)	1.0			p	$\sim 2 \times 10^{11}$	1000	Primary protons
MP	200	5.0	0 ± 1.0		p $\bar{p}$	10^8 10^4	200 200	Polarized protons Polarized antiprotons
MC	50-150		1-6		K_L^0 n	2×10^5 7×10^5	variable variable	Neutral beam with 1000 GeV primary
MB	20-200	5.0	2.5		π, K $e^\pm$	5×10^4 20	75-100 100	Low intensity wide-angle test beam
MT	80-245				hadrons $e^\pm$	$\sim 10^5$ ~ 25	245 100	Test beam (intensity limited) Muons also available
MW	1000 (peak)	10	0 ± 0.7		p π^+ K^+ π^- K^- $\bar{p}$	2.5×10^7 4×10^6 8×10^6 5×10^6 1.5×10^5 1.5×10^4	530 " " " " "	Beam transport to new multiparticle spectrometer
NW	10-150	2	0-1	4-16	μ^- π^- e^-	3×10^4 150	~ 100 ~ 100	Currently a test beam, intensity limited
NC-D	750 (peak)	10	0	0.6	$\nu/\bar{\nu}$	$4.5 \times 10^6 \nu/\text{m}^{2**}$	500	Narrow band, sign-selected neutrino beam
NC-T	1000 (peak)	100	0	6.0	$\nu/\bar{\nu}$	$1.4 \times 10^8 \nu/\text{m}^{2**}$	0-800	Broad band, quadrupole focus
NE	900 25-700	3.3	0	0.3	p π^-	5×10^7 2.5×10^4	900 600	To hybrid spectrometer system and Lab G and D
NT	300		3		hadrons	$\sim 10^5$	450	Test beam to Lab E neutrino detector and Lab F
NK	25-225		3		muons	200	225	PING beam to Lab F Muons and electrons also available at lower intensities
NM	100-800	20			$\mu^\pm$	5×10^6	500	Tevatron muon beam
NM (test modes)	5-200	30	0		hadrons electrons	$\sim 10^3$ ~ 50		Test beams to muon spectrometer

*For 800 GeV protons incident unless otherwise noted.

**Flux per 10^{12} protons on target, beam spill times variable (~ 1 ms to 20 s).

KEK PS BEAMS (Source: KEK-PS Users Guide Book '88)

Protons are accelerated to a maximum momentum of 13 GeV/c. The maximum intensity is 4×10^{12} protons per spill. The repetition period is 2.7 s with a spill time of 0.5 s.

Beam	Momentum range (GeV/c)	$\pm \Delta p/p$ (%)	Production angle ($^\circ$)	Solid angle (msr)	Beam length (m)	Particles	Particles per pulse for 10^{12} ppp	$\rightarrow$ at (GeV/c)	Comments
π^2	1-4	1	10	0.594	31.3	π^+/π^-	$2 \times 10^6/10^6$	3	
T1	0.5-1.0	5	23	0.16	18.8	π^+/π^-	$5 \times 10^4/4 \times 10^4$	1	
T3	1-6	5				π^+/π^-	$10^6/4 \times 10^4$	5	
K2	1-2	3	0	1.02	27.9	K^+/K^-	$5 \times 10^6/10^6$	2	
	0.5-2					$p/\bar{p}$	$1.7 \times 10^7/1.5 \times 10^4$		
						π^+/π^-	$2.2 \times 10^7/1.5 \times 10^7$		
K3	0.5-1.0	2.5	0			K^+/K^-	$4.2 \times 10^4/10^4$	0.55	
	0.3-1.0	"	"			$p/\bar{p}$	$7 \times 10^7/3.5 \times 10^2$		
						π^+/π^-	5×10^7		
K4	0.4-0.8	3	0	7.3	28.5	$\bar{p}$	700	0.6	Branch of K3
$\pi-\mu$	0.1-0.45	6	87	20		π^-	1.2×10^6	0.25	
K0	2-8		0	0.31	10	K_L^0	3×10^7	2-8	Neutral beam line
P1	3.5	0.5			57	$\bar{p}$	10^9		Polarization = 40%
	3-13					p			

The primary 800 MeV H^+ beam normally runs with an average current up to 1 mA, but 1.2 mA has been achieved. The macro duty factor is up to 10.5%, with a macrostructure of 120 pps. Each macropulse consists of a 0.25 ns burst every 5 ns. This beam is used to generate the meson and neutrino beams described below, as well as additional beams for other purposes. Simultaneously with the H^+ beam a low current (5 μ A unpolarized; up to 25 nA polarized) H^- beam is accelerated to a desired energy between 212 and 800 MeV.

Beam	Momentum (MeV/c)	$\pm \Delta p/p$ (%)	Solid angle (msr)	Particle	Flux in particles/sec or current	$\rightarrow$ at (MeV/c)	Comments
A	1460	0.1		p	1 mA	1460	Main beam; 1.2 mA has been achieved
LEP	77-415	0.05-2.8	0-17	π^+	9×10^8	195	Low energy pion beam; achromatic; flux at $\Delta p/p = 2.8\%$
				π^-	$\sim 2 \times 10^8$		
EPICS	156-415	2.0	3.4	π^+	1.9×10^8	300	Energetic pion channel and spectrometer
				π^-	4.2×10^7		
P ³	100-750	5.0	7.0	π^+	2×10^9	470	High energy pions; achromatic
	"	3.0	2.0	π^+	4×10^7	470	0.25% resolution dispersed momenta
	"	5.0	7.0	π^-	3×10^8	470	High energy pions; achromatic
	"	3.0	2.0	π^-	8×10^6	470	0.25% resolution dispersed momenta
	28			μ^+	1.9×10^6	28	
	100			μ^-	1.0×10^6	100	μ^- flux is without degrader
Stopped muon	25-250			μ^+	1.8×10^8	130	
				μ^-	3.6×10^7		
	665-1460			p	6 μ A	1460	Current reduced to 1/3 for < 1460 MeV/c Polarization = 0.6 N, L, S available
	"			$\bar{p}$	25 nA		
	< 1460	0.8		n	10^7		Polarization = 0.5
	"	0.5		$\bar{n}$	10^4		
External proton beam	665-1460	< 0.1	< 6	p	< 100 nA	1460	H^- beam stripped to H^0 or F^-
				H^0	"		
				H^-	"		
				$\bar{p}$	30-100 nA		Polarization = 0.6 N, L, S available Independent of polarization direction of internal beam
				$\bar{H}^0$	"		
				$\bar{H}^-$	"		
HRS	475-1460	0.1	2	p	100 nA		For high resolution proton spectrometer
				$\bar{p}$	30-100 nA		
nTOF	475-1460	0.1		H^-	100 nA		High resolution p, n charge exchange yield & polarization with 600 m flight path
				$\bar{p}$	30-100 nA		
Neutrino facility	0-53		$\sim 4\pi$ sr	ν_e	3×10^{14}	total	Peak momentum = 35 MeV/c for ν_μ
				ν_μ	"		Flux at 20 m is $< 10^7$ $\nu/\text{cm}^2\text{-sec}$
				$\bar{\nu}_\mu$	"		Source subtends $\pm 1.0^\circ$ for target 20 m away
Proton storage ring	1460	0.3		p	40 μ A	1460	270 ns pulses at 20 Hz; aim is 100 μ A and eventually 200 μ A at 24 Hz
Line D bypass	665-1460	0.1		p	200 nA	1460	Chopped 1 μ s micropulses; available spacing 0.1 to 100 μ s
PSR neutron source	thermal & EPI thermal			n	$\sim 10^{16}$		Optimal moderated spallation source

SACLAY SATURNE II BEAMS (Source: F. Lehar, Saclay)

Saturne-II beams — The maximum momentum is 3.77 GeV/c per charge (=2.95 GeV kinetic energy for protons), with $\Delta p/p = 3 \times 10^{-4}$. The length of a burst may be varied up to 0.9 s, and the repetition time depends on the burst length; for a burst length of 0.5 s, the repetition time is 1.5 s at 1 GeV and 4 s at 2.7 GeV.

Particle	Maximum flux
p	1.5×10^{12} particles/burst
d	0.8×10^{12} "
p polarized	1.5×10^{11} "
d polarized	2.2×10^{11} "
$^3\text{He}, \alpha$	$> 10^9$ charges/burst
$^{12}\text{C}, ^{14}\text{N}$	
$^{16}\text{O}, ^{20}\text{Ne}$	
^{40}Ar	
Kr	$\approx 10^6$ nuclei/burst

Beam lines — The accelerated particles are extracted in lines SD2, serving beams L1 through L5, and SD3, serving beams L6 through L11. Both extractions may be used at the same time, and all beam lines can accept any of the charged particles.

Beam	Apparatus	$p_{\text{max}}/\text{charge}$ (GeV/c)	$\Delta p/p$	Particles per burst
L1	SPES 1	2.3	10^{-4} at 1.7 GeV/c	10^{12}
L3	SPES 3	3.8	10^{-3} , 0.6–1.4 GeV/c	10^{12}
L4 east	DIOGENE (4 π detector)	3.8		
L4 center	None at present			
L4 west	Heavy ion chamber	3.8		
L5	PINOT (π^0 spectrometer)	1.7		10^9
L6	Polarized target; p, d , and also n by d breakup; neutron polarized ($P = 0.59 \pm 0.02$) or unpolarized and quasi-monochromatic	3.8 for p, d 1.9 for n		Up to values in the 1 st table 5×10^7
L7	SPES 4 (15-m TOF path)	3.8		Up to values in the 1 st table
L8	Test	1.9		5×10^{10}
L11	Neutrons	1.9		

SERPUKHOV BEAMS (Source: N.A. Galiaev and R.A. Rzaev, Serpukhov)

Protons are accelerated to a maximum momentum of 70 GeV/c. The intensity is about 10^{13} protons per pulse. The repetition rate is 0.115/sec, and the beam spill time is about 2 sec.

Beam	Momentum range (GeV/c)	$\pm\Delta p/p$ (%)	Production angle (mr)	Solid angle (μsr)	Beam length (m)	Particles	Typical flux in particles per $10^{12} p$	$\rightarrow$ at (GeV/c)	Comments
2/14	30-70	1	6-35	10	120	hadrons+	10^6	60	Internal target lines 2A, 2B, 14; the e^- 's may be used for polarized γ 's
	35-65	1	0-5	30		hadrons-	1.5×10^6	60	
	5-45	3	0-7	30		e^-	4×10^5	30	
4	20-50	1	0-5	40	130	hadrons-	6×10^6	40	Internal target lines 4A, 4B, 4V, 4L, 4E
8	< 40 (mean = 6)		0	5000	500	$\nu, \bar{\nu}$	3×10^9	total	Wide-band neutrino beam
	70		0			p	5×10^{12}	70	Slow ejection
18	3-17	2	0-200	120	50	hadrons+	10^8	5	Internal target, injection in ring
	2-14	2	240-400	80		hadrons-	10^4	8	
21	70		0		180	p	10^{11}	70	Slow ejection
	7-70	5	0	40	110	hadrons+	3×10^8	35	External target
						hadrons-	2×10^7	35	
	70					p	10^6-10^8	70	By bent single crystal
	70		0.5-5			p	10^6-10^{10}	70	Internal and external targets
22	7-70	10	0	100	100	hadrons+	2×10^6	40	External target
						hadrons-	6×10^7	40	
	70					p	10^6-10^{10}	70	Internal target
						$e^\pm$	5×10^5	40	
23	3.5-35	10	0	140	60	hadrons+	2.5×10^9	35	External target
						hadrons-	1.5×10^8	35	

SLAC BEAMS (Source: T. Fieguth, SLAC)

Accelerator mode	Particles	Momenta (GeV/c)	Particles per pulse	Pulse length (μ s)	Repetition rate (Hz)	Comments
SLC	e^-	≤ 50	$\leq 2.5 \times 10^{10}$	2 at 5×10^{-8}	≤ 60	120 Hz and increased e^+ yield expected after Fall 89 upgrade
	e^+	≤ 50	$\leq 1.5 \times 10^{10}$	5×10^{-8}	"	
Long pulse	e^-	≤ 28	10^{11}	≤ 1.6	"	Sector 25 off-axis injector, used for SSRL, nuclear physics experiments, and test beams
NPI -long pulse	e^-	5	6×10^{11}	2.0	"	
-short pulse	e^-	9	4×10^{11}	0.2	"	

Colliding beams	Particles	C.m. energy (GeV)	Peak luminosity ($\text{cm}^{-2} \text{sec}^{-1}$)	Average luminosity ($\text{cm}^{-2} \text{sec}^{-1}$)	Comments
SPEAR	e^+e^-	2-7.4	2×10^{31} at 6.4 GeV	10^{30} at 3.7 GeV	PEP has 6 interaction regions. At PEP, the luminosity scales as E^{-2} (E^{-3}) for c.m. energies below (above) that at the peak. Single interaction region
PEP	e^+e^-	8-36	3.2×10^{31} at 29 GeV	1.2×10^{31}	
SLC	e^+e^-	≈ 100	$> 10^{29}$		

Beam	Momentum range (GeV/c)	$\pm \Delta p/p$ (%)	Production angle ($^\circ$)	Solid angle (msr)	Particles	Maximum particles per pulse	$\rightarrow$ at (GeV/c)	Repetition rate (Hz)	Facility	Comments
21	1-16	≤ 4.0	1	0.03	K^+ / K^-	17/8	10	< 120	Test beams	Separated: $\pi/K \sim 1/30$ $\pi/\bar{p} \sim 1/14$
					$p/\bar{p}$	40/6				
					π^+ / π^-	10^3				
					e^-	10^4				
					e^+	10^4				
3	1-8						All	2.5	ESA 1.6, 8, & 20 GeV spectro- meters	All fluxes at $\Delta p/p = \pm 0.25\%$
	≤ 23.5	0.1-1.0			e^+	5×10^9				
	≤ 23.5	0.1-1.0			e^-	5×10^{11}				
	≤ 21.5	Brems.	0		γ	4×10^9 EQ	20	≤ 120		0° bremsstrahlung
19	1-25	0.25	0		e^+	10	10	≤ 60	Test beam	Very pure; $\sigma_x = 1 \text{ mm}$

TRIUMF BEAMS [Source: Status of TRIUMF Plans for Development, G. Dutto, E.W. Blackmore, and M.K. Craddock, TRI-82-PP-37 (October 1982); tables revised by J. Doornbos, TRIUMF.]

The cyclotron energy range is 180–520 MeV with an energy spread of 0.1% (FWHM). The unpolarized intensity is 170 μA , and the polarized intensity is 600 nA; the polarization is 75–82%. The BL4/BL1A split ratio is $1/10^4$. The phase width is variable from 0.5 to 6.0 ns. The pulse separation is 43 or 217 ns. There are plans to upgrade various performance levels.

Main beam lines

Beam	Particle	Energy (MeV)	Intensity	Momentum spread FWHM (%)	Polarization (%)	Spot size H $\times$ V (cm)
BL1A	p	180–520	170 μA (500 MeV)	0.2	0	0.2×0.5
BL4/1B	$\bar{p}$	180–520	600 nA	0.2	70–80	0.2×0.5
BL4A	$\bar{n}$	160–500	$3 \times 10^6/\text{sec}$	1.0	40	6×6
BL2C	p	65–100	10 μA	0.2	0	1×2

Secondary lines The M8, M9, and M20 fluxes are for full momentum acceptance with 100 μA of protons on a 10-cm beryllium target. The M11, M13, and M15 fluxes are for full momentum acceptance with 100 μA of protons on a 1-cm carbon target. Beams of π^- and μ^- have the same properties as the π^+ and μ^+ beams, except fluxes are about five times lower.

Beam	Particle	Momentum (MeV/c)	Particle flux (per sec)	$\rightarrow$ at (MeV/c)	Momentum spread FWHM (%)	Polarization (%)	Spot size H $\times$ V (cm)
M8	π^-	0–220	1.3×10^8	180	13	–	1×2
M9A	μ^-	30–150	2×10^6	77	14	50	8×8
	π^+	30–250	2×10^8	120	14	–	10×2
M20	μ^+	30–200	2.5×10^6	30	5	> 90	4×3
			2×10^6	85	8	75	8×8
M13	π^+	30–130	5×10^7	130	10	–	3×2
	μ^-	30 (surface)	1.3×10^6	30	10	> 90	3×2
M11	π^+	90–470	3.5×10^7	251	5	–	2×3
	π^-	90–470	4.5×10^6	251	5	–	
M15	μ^+	30 (surface)	1.4×10^6	30	10	> 90	1.2×1.6

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