Proc. 1976 ISABELLE Workshops, May - August 1976, Brookhaven. BNL-22239

SUMMARY OF EXPERIMENTAL INSERTIONS WORKSHOP*

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The last ISABELLE workshop of the summer 1976 series, which was held at Brookhaven August 16-20, focused on the design and utilization of the experimental insertions. The workshop was attended by approximately 30 scientists and engineers drawn from Brookhaven, Fermilab, SLAC, CERN and the University High-Energy Physics Community.

The goals of the workshop, which were somewhat more general than might be suggested by the title, are listed below:

a) Review the ISABELLE proposal from the point of view of experimental use. Especially study aspects related to the experimental program taken in toto rather than as individual isolated experiments.

b) Contribute useful information on the "open questions" in the ISABELLE design principally:

i) Is 8 the correct number of insertions? Should the number perhaps be 6?

ii) What is the optimum configuration of experimental halls?

iii) Are there any new ideas either in physics or technology which would have a significant impact on the ISABELLE design?

c) Develop data for experimental equipment and operating cost estimates.

d) Project a first approximation to ISABELLE operating modes. In essence prepare a reasonable scenario for the first few years of ISABELLE operation.

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*A. Abashian, R. Chasman, C.Y. Chien, D. Edwards, T. Ferbel, H. Foelsche, A. Garren, H. Hahn, J. Herrera, R. Huson, D. Johnson, V. Kistiakowsky, B. Knapp, T. Kycia, W.Y. Lee, P. Limon, D. Lowenstein, T. Ludlam, R. Majka, M. Month, G. Parzen, J. Peoples, L. Pondrom, E.C. Raka, M. Sakitt, J.R. Sanford, M. Schwartz, W. Selove, R.P. Shutt, L.W. Smith, A. Thorndike, T.E. Toohig, W. Walker, H. Wiedemann, D.H. White, W.J. Willis.

DISCLAIMER

Given the limitations of a one week study, the strategy adopted was to make maximum use of results from previous studies - the 1975 Summer Study, the ISABELLE proposal, and the reports of the various laboratory working groups during the past year — and to focus our efforts on an initial review of the existing design and on the new features addressed in the workshop.

The workshop was organized into five groups:

I. Scenarios Group - Chairman, A. Thorndike

This group attempted to project the first five years of ISABELLE operation under several different assumptions about funding, manpower, etc.

II. Experimental Design Group - Chairman, J. Sandweiss

This group carried out a physics review and an engineering design of a selected set of experiments chosen from the 1975 summer study.

III. Machine Studies Group - Chairman, M. Month

This group had two general objectives. First to establish the available range of collision region parameters allowed by the ISABELLE lattice design; and second, to determine the relative merits of 6 and 8 insertions with respect to machine performance.

IV. Radiation Studies Group - Chairman, T. Toohig

This group examined the different aspects associated with radiation problems including backgrounds, dumping and scraping systems, effects of magnetic trapping of muons, and possible radiation damage to experimental electronics.

V. Small Diamond Group - Chairman, W.J. Willis

This group studied the possible designs and ways of using a small ($\sim$ 5 cm) beam crossing region. In particular, high resolution detectors and imaging Cerenkov counter systems which require a small diamond were studied and evaluated.

There was substantial interaction between the groups and the information developed in one was quite often useful for the work of another. A summary of the results of each group was written by the respective chairman and these are included in the following reports. It would be redundant to summarize these results again here. Nevertheless, it may be useful to make a few general remarks about the results.

a) The proposed ISABELLE design appears to be fundamentally sound. All the experiments studied were feasible. There are no inter-experiment interactions of a fatal nature and the design has a remarkable flexibility to adapt to new requirements, as illustrated, for example, by the small diamond modification.

b) This study shows that the choice of the number of insertions (6 or 8) is not a technical one but rather is a fiscal and policy choice. A viable scenario and good machine operation for experiments is possible with 6 or 8 insertions. Of course, with 8, properly funded, the research program will have greater capabilities than with 6.

c) Even a cursory glance at the individual reports reveals that a great many questions remain to be studied in detail. They do not seem to be questions of the sort that would change the conclusions given above, but they must be solved at some point before the machine is fully operational. Many of these would be most usefully addressed at this point by the continuing efforts of the ISABELLE group rather than by workshops or summer studies. Some of them, on the other hand, are still at the stage where periodic attention by a broadly based group - experimenters and accelerator physicists — would be very useful. An example of the latter is the possible standardization of data transfer electronics at ISABELLE.