

PACKAGE ID - 001113MLTPL00 DIFBAS

KWIC TITLE - Baesian Approach to Spectrum Adjustment with
Covariance Filter for Differential

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LIMITATION CODE -UNL **AUDIENCE CODE** - UNL

COMPLETION DATE - 04/01/1993 **PUBLICATION DATE** - 04/01/1993

DESCRIPTION - The main purpose of the DIFBAS code is to unfold pulse height spectra measured by a proton recoil detector (e.g. H filled proportional counters or organic scintillators) to obtain neutron spectra. It can be used generally for the unfolding of arbitrary many channel spectra containing original particle spectra folded by a detector response (e.g. spectra of photon detectors).

SOURCE CODE INCLUDED? - Yes

MEDIA QUANTITY - Media Directory; Software Abstract; Letter from Author - 3 pages; Media Include Sample Problem Input and Output, Source Code, Implementation Notes; PTB-7.2-93-1 and Errata; 1 3.5 Diskette

METHOD OF SOLUTION - The algorithm is based on the Bayesian conditional probability assuming normal distributions of both the pulse height and the a priori spectra. The covariance filter method, which avoids any matrix inversion, is employed to calculate the a-posteriori spectrum and covariance matrix of the neutron spectrum.

COMPUTER - MLT-PLTFM

OPERATING SYSTEMS - MS-DOS (PC), VMS (VAX)

PROGRAMMING LANGUAGES - Fortran 77

SOURCE CODE AVAILABLE (Y/N) - Y

RELATED SOFTWARE - The following codes are added to the package: - RMC, MB as interface to the code NRESP7 for the calculation of the NE213 response matrix; - SPHC for PH spectrum rebinning and the corresponding covariance matrix calculation; - FOC, CUPR for use of unformatted output fluence and covariance files.

OTHER PROG/OPER SYS INFO - The program can be used with minor changes on any computer with a Fortran 77 compiler and a sufficient amount of memory

HARDWARE REQS - IBM-PC with at least 600kb user usable memory. The requirements sharply depend on the response matrix dimensions.

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TIME REQUIREMENTS - Strongly depends on dimensions of the response matrix. The sample case (138 times 136 bins) takes about 7 min on 33 MHz PC (386).

REFERENCES - Milos Tichy, The DIFBAS Program Description and User's Guide, PTB-7.2-93-1 + Errata, April 1993.

ABSTRACT STATUS - released tested 10/02/96

SUBJECT CLASS CODE - 0

KEYWORDS -

COMPUTER PROGRAM DOCUMENTATION
D CODES
LIQUID SCINTILLATORS
SPECTRA UNFOLDING
NEUTRON SPECTRA
LIQUID SCINTILLATION DETECTORS
RECOILS
PROTON REACTIONS

EDB SUBJECT CATEGORIES -

990200 440103 663610

SPONSOR - NEA

PACKAGE TYPE - TESTED