RSIC Newsletter

RADIATION SHIELDING INFORMATION CENTER

OAK RIDGE NATIONAL LABORATORY

OPERATED BY UNION CARBIDE CORPORATION • FOR THE U.S. ATOMIC ENERGY COMMISSION

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ANYONE RECODING OLD PROGRAMS?

Each new advance in computer hardware is welcomed from the standpoint of speed, memory capacity, and efficiency but any change is apt to render old programs obsolete. Many old programs will get a new lease on life when someone undertakes to recode them in a modern language. There is some concern about duplication of effort in this area and so RSIC is requesting those planning to attend the ANS Denver meeting to come prepared to discuss this matter. The informal Shielding Division session should be a good place to report current accomplishments, efforts, plans, and desires in regard to recoding old programs.

STAFF MEMBERS IN EUROPE

Staff members S. K. Penny and Betty F. Maskewitz participated in a seminar-workshop at the ENEA Computer Programme Library facility at Ispra, Italy, late in April. They presented several American computer codes and learned data preparation for several European ones. They are visiting other installations in Europe before returning home as time permits.

APRIL ACCESSION LIST OF LITERATURE

The following accession list consists of literature which the RSIC obtained through its usual scanning procedures. This literature will be examined for assignment to various files or for possible rejection. The accession list is divided into three fields of (1) reactor and weapons shielding, (2) space and accelerator shielding, and (3) shielding computer codes.

RSIC is not a documentation center. Hard copies of the literature cited below must generally be obtained elsewhere. In most cases, however, we will be able to supply microfiche copies upon request. There may be a delay if a microfiche original is not available and we must produce one. This will be the case with ordered and newly obtained literature only. Naturally, we cannot supply copies of literature which is copyrighted or whose distribution is restricted.

Reactor and Weapons Shielding

NP-15692 (SWP/P28)

The Attenuation of Thermal Neutrons in Cylindrical Ducts through a Water Shield
C. C. Horton, D. B. Halliday - January 1956
(This is a corrected entry which appeared in the February issue of the Newsletter with a 1965 date.)

AE-208

Measurement of the Neutron Slowing Down Time Distribution at 1.46 eV and Its Space Dependence in Water
E. Moeller - December 1965

ORNL-3918

Shipping Cost Comparisons for Lead-, Steel-, and Uranium-Shielded Casks
L. B. Shappert and Royes Salmon - March 1966

AFRRI-TN65-2

The Low-Energy Component of the Total Dose for Deep Gamma Penetrations in Air and Water
C. W. Garrett - November 1965

CEX-63.10 (EGG-1183-2054)

Design of a Shielded Source for the Irradiation of Natural Animal Populations
A. C. Lucas, Z. G. Burson, and R. E. Lagerquist - February 1966

SLAC-Trans-23

Sphere Techniques for Measuring Flux Densities and Dose Rates of Thermal, Intermediate, and Fast Neutrons
D. Nachtigall and F. Rohloff - November 1964

Nuclear Energy, Pts. A and B, 19(10), 810-818 (October 1965)

Angular and Energy Distribution of Neutrons at the Boundary of Two Media
V. A. Dulin, V. G. Dvukhsherstnov, Yu. A. Kazanskii and I. V. Shugar

Indian J. Pure and Appl. Phys., 3(10), 366-69 (October 1965)

Coherent Scattering Cross-sections of Cobalt-60 and Cesium-137 Gamma Rays
V. A. Narasimba Murty, J. Rama Rao, V. Lakshminarayana and Swami Jnanananda

UJV-1454/65 (Translation requested)

Neutron Flux Attenuation Measurements on a Mockup of the Upper Biological Shield of a Reactor
B. Stoces and V. Kadlets - 1965

Nukleonik, 8(1), 38-40 (January 1966)

> Particular Solutions of the Energy-Dependent Boltzmann Equation
> K. H. Muller

DISSERTATION

> Calculation of the Deep Penetration of Radiation by the Method of
> Invariant Imbedding
> Donald R. Mathews - February 1966

Indian J. Pure and Appl. Phys., 4(2), 56 (February 1966)

> Influence of Electron Binding on the Incoherent Scattering of Low Energy
> Gamma Rays
> P. V. Ramana Rao, J. Rama Rao, and V. Lakshminarayana

J. Atomic Energy Soc. Japan, 7(7), 378-79 (1965)

> The Effective Atomic Numbers of Shielding Concretes and Copper Slag for
> Gamma-Rays
> A. Tsuruo

J. Atomic Energy Soc. Japan, 6(2), 91-97 (1964)

> The Spectrum Matrix Method in γ-Ray Transmission Problems for Multiple
> Layers
> A. Tsuruo

J. Atomic Energy Soc. Japan, 6(9), 523-27 (1964)

> The Status and the Future of the Monte Carlo Methods
> A. Tsuruo

TID-22627

> Reaction Cross Sections. Final Report
> R. C. Pilger - January 1966

N66-11757 (NASA-CR-67953)

> Computational Results for Diffuse Transmission and Reflection for
> Homogeneous Finite Slabs with Isotropic Scattering
> R. Kalaba, et al. -- October 1965

CF-66-3-21

> Recommended Fission Product Chains for Use in Reactor Evaluation Studies
> L. L. Bennett - March 8, 1966

AD-627890

> Monte Carlo Calculations of Gamma-Ray Streaming through Coplanar and
> Noncoplanar Ducts
> L. B. Gardner and A. J. Mettler - January 1966

TID-22772 (CEA-73)

>A Revision of Shielding Calculations
>Richard Wilson

AECL-2545 (R-65CAP17)

>Secondary Shield Design for Whiteshell Reactor No. 1
>A. J. Szilvasi - November 1965

AECL-2544 (R-64CAP59)

>Main Shield for White-Shell Reactor No. 1
>A. J. Szilvasi - November 1964

JAERI 4029, p. 28 (1964)

>Status Report of Shielding Investigation in Japan Shielding Laboratory

JAERI 6012, p. 23 (1963)

>Graphs of Exponential Integral Function $E_1(x)$ and $E_2(x)$
>A. Tsuruo, and T. Toyota

USNCEL-R-442 (NP-15926)

>Dose-Attenuation Variation with Incident Gamma-Ray Energy in Two-Legged
>Concrete and Steel Ducts
>J. M. Chapman - April 1966

NAA-SR-11530

>The Calculation of Slowing-Down Transfer Matrices in the Spherical
>Harmonics Representation
>B. D. O'Reilly and R. C. Lewis - March 25, 1966

AERE-R-5084

>The Advanced Course in the Principles of Radiation Protection - Part I
>W. J. Whitehouse and E. D. Dyson - November 1965

NBS-Mon-76

>An Engineering Method for Calculating Protection Afforded by Structures
>Against Fallout Radiation
>Charles Eisenhauer - July 2, 1964

N66-14916 (NASA-CR-54860)

>The Energy Dependence of the Neutron Capture Cross Section of the
>Tungsten Isotopes from .01 to 20 eV.
>1965

NASA-TN-D-3237

Thermal Neutron Flux Perturbation by Dysprosium-Aluminum Foils in
Water and Uranyl Fluoride - Water Solutions
Donald F. Shook, Donald Bogart, et al. - March 1966

Conf-660204-4

Variational Methods in the Calculation of Spatially Dependent Spectra
N. C. Francis - 1965

NP-15466

Computing the Effectiveness of a Recoil Proton Radiator in a Field of
Isotropic Neutron Radiation
1965

Miscellaneous

Special Report - Radiation Shielding Bibliography
Battelle Memorial Institute, Radiation Effects Information Center
April 17, 1964

Directory of Department of Defense Information Analysis Centers
Government Printing Office - 1966

Space and Accelerator Shielding

NBS Handbook 97

Shielding for High-Energy Electron Accelerator Installation
National Committee on Radiological Protection - July 1, 1964

NBS Report 8900

Transmission of 1-MeV Electrons through Aluminum
M. J. Berger and S. M. Seltzer - June 18, 1965

NSAM-914

Radiation Exposure in Solar Particle Beams Behind Very Low Shielding
Hermann J. Schaefer - February 1965

ORNL-tr-547 (Translated from DESY-64/11)

The Shielding of 4.8 Gev Bremsstrahlung with Heavy Concrete
G. Bathow, E. Freytag, and K. Tesch - August 1964

AEC-tr-6468

The Passage of Charged Particles through Matter
S. V. Starodubtsev and A. M. Romanov - 1962

AIAA J., 2(12), 2198-2201 (December 1964)

Mass and Magnetic Dipole Shielding Against Electrons of the Artifical
Radiation Belt
A. Bhattacharjie and I. Michael

NBS Report 8678

Calculation of Energy Dissipation by Electrons in Water
M. J. Berger - April 22, 1965

NASA TN D-2746

Model Solar Proton Environments for Manned Spacecraft Design
J. L. Modisette, T. M. Vinson, and A. C. Hardy - April 1965

BOOK

SPACE PHYSICS
D. P. LeGalley and A. Rosen
John Wiley and Sons, Inc. - 1964

J. Spacecraft Rockets, 1:310-16 (May-June 1964)

Radiation Shielding Considerations in Manned Spacecraft Design
Sidney L. Russak

ORNL-CPX-2

Nuclear Cross Sections for Charged-Particle Induced Reactions -
Ni, Cu
F. K. McGowan, W. T. Milner, and H. J. Kim

ORNL-CPX-1

Nuclear Cross Sections for Charged-Particle Induced Reactions -
Mn, Fe, Co.
F. K. McGowan, W. T. Milner, and H. J. Kim

Cosmic Research, 2(1), 129-32 (January-February 1964)

Measurements of Soft Radiation in the Pre-Equatorial Latitude by Kosmos-4
I. A. Savenko, P. I. Shavrin, N. F. Pisarenko, V. E. Nesterov, M. V.
Tel'tsov and V. N. Erofeeva

Cosmic Research, 2(1), 127-28 (January- February 1964)

Measurements of the Total Radiation Dose in Vostok-5 and Vostok-6
I. A. Savenko, N. F. Pisarenko, P. I. Shavrin, and V. E. Nesterov

Miscellaneous

First International Conference on Shielding Around High Energy Accelera-
tors held at Orsay and Saclay, January 18, 19, and 20, 1962
Presses Universitaires de France, Paris

Shielding Computer Codes

AE-FFA-673-RFN-213   October 1965   NRN

    A Preliminary User's Manual for the NRN Shield Design Method in Fortran
IV Language
by Kj. Nyman, K. Lindblom, Kj. Olsson, K. Malen, E. Aalto and G. Olsson
Fortran IV for IBM 7044 and 7090

AGN TM-392   June 1961   2DXY

    Two Dimensional, Cartesian Coordinate S_n Transport Calculation
by J. Bengston, S. T. Perkins, T. W. Sheheen, and D. W. Thompson
Floco II for IBM 7090, 709, and 704

NAA-SR-11231   December 1965   CHAD

    Code to Handle Angular Data
by R. F. Berland
Fortran IV for IBM 7090 and 7094

NAA-SR-MEMO-9721   April 1964   ISRCH

    A Binary Search Fortran Function Subprogram
by R. A. Blaine
Fortran for IBM 7090
(Used in TYCHE III)

NAA-SR-MEMO-9802   May 1964   TYCHE III

    Improvements to the TYCHE Moments Code and Operating Instructions for
TYCHE III
by R. A. Blaine
Fortran for IBM 7090

NAA-SR-MEMO-10544   November 1964   MAG

    A Program to Prepare Fast Group Cross Sections in the DTF Format
by R. S. Hubner
Fortran II for IBM 7090

NAA-SR-MEMO-11516   July 1965   OPEX

    The Opex Shield Optimization Code
by R. L. Bernick
Fortran for IBM 7090

NASA TN D-2659   March 1965   SCOTT

    Electron-Bremsstrahlung Differential Cross Sections for Thin and Thick
Targets
by W. Wayne Scott
Fortran for IBM 7094

ORNL-TM-1241   November 1965   LEGENDRE

    A Program to Calculate Legendre Coefficients from Angular Distributions
by D. C. Irving, W. E. Kinney, and Pat Rea
Fortran for IBM 7090

ORNL-TM-1325   January 1966   REACT
                                                                   CONVRG

    Fortran Subroutines for Determining Source Convergence for the 05R
    Monte Carlo Neutron Transport Code
    by G. W. Morrison, J. T. Mihalczo, and D. C. Irving
    Fortran for CDC 1604

TIM-806   February 1964   LUX
                                                                   GAD
                                                                   STEM
                                                                   NEAT

    Monte Carlo Data Preparation Codes
    by E. E. Kinney
    Fortran 63 for CDC 1604

TIM 941   July 1965   FMC

    Monte Carlo Codes, FMC-N and FMC-G
    by E. E. Kinney
    Fortran 63 for CDC 1604

UCRL-14165   May 1965   FOTRAC

    A Monte Carlo Photon Tracing Computer Program
    by Nan Davies and John Terrall
    Fortran for IBM 7090

WAPD-TM-217   July 1960   TRIP-1

    A Two-Dimensional P-3 Program in X-Y Geometry for the IBM-704
    by E. Gelbard, J. Davis, J. Dorsey, H. Mitchell, and J. Mandel
    IBM 704

WAPD-TM-352   October 1962   M0322
                                                                   M0332

    Fortran Programs for Calculating Neutron Absorption in Spheres Distri-
    buted Randomly
    by R. M. Cantwell
    IBM-7090