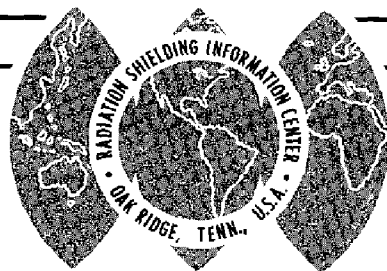


RSIC Newsletter



RADIATION SHIELDING INFORMATION CENTER

OAK RIDGE NATIONAL LABORATORY

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

POST OFFICE BOX X •
OAK RIDGE, TENNESSEE 37831

No. 61

December 1969

*Where there is much desire to learn,
there of necessity will be much arguing,
much writing, many opinions;
for opinion in good men is but knowledge in the making.*

- John Milton (1644)

REACTOR SHIELDING REVIEW PUBLISHED IN *ADVANCES IN NUCLEAR SCIENCE AND TECHNOLOGY*

An article titled "Methods and Data for Reactor Shield Calculations," by Francis H. S. Clark, former RSIC staff member, has just been published. It appears in the book *Advances in Nuclear Science and Technology, Vol. 5* (1969), edited by E. J. Henley and J. Lewins and published by Academic Press.

Clark, now with the Instrumentation and Controls Division of ORNL, has written a 41-page article which has 186 references and covers essentially the whole subject of reactor shielding. All the current transport-theory calculational methods are covered along with discussions of topics such as albedos, ducts, and secondary gamma rays. His 17-page discussion of Monte Carlo is particularly welcome.

NEW ICRU REPORT PUBLISHED

The International Commission on Radiation Units and Measurements (ICRU) has recently issued ICRU Report 14, "Radiation Dosimetry: X Rays and Gamma Rays with Maximum Photon Energies Between 0.6 and 50 MeV." Copies may be purchased for \$2.50 from

ICRU Publications
P.O. Box 4869
Washington, D.C. 20008

Discussions are given on several topics including determination of absorbed dose by ionization, chemical, and calorimetric methods and transfer of an absorbed dose calibration to another laboratory.

PERSONAL ITEMS

Charles Eisenhauer, National Bureau of Standards, now has an appointment as adjunct professor at Catholic University of America.

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G. L. (Lee) Simmons, formerly with Battelle Northwest, is also now at Catholic University in the Nuclear Science and Engineering Department.

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Charles M. Huddleston is now leader of a shielding and dosimetry research group at the Naval Ordnance Laboratory, Silver Spring, Maryland. Chuck is also chairman of the Publications Committee of the ANS Shielding and Dosimetry Division.

* * * * *

William E. Kreger is now with Physics International Co., San Leandro, California. Bill was formerly with the U.S. Naval Radiological Defense Laboratory.

VISITORS TO RSIC

Visitors to RSIC during the month of November were: Marcel Barbier, CERN, Geneva, Switzerland; C. D. Griffies, Reactor Division, and T. A. Welton, Physics Division, ORNL; Koeswono S. Soedirdjo, National Atomic Energy Agency of Indonesia, Djakarta, Indonesia, presently at ORNL.

NOVEMBER ACCESSION LIST OF LITERATURE

The RSIC is now aware of the literature cited in the following list. This literature has either been obtained by RSIC or has been placed on order. When received, this material will be examined and assigned to various files if suitable for our information system. The accession list is divided into three fields (1) reactor and weapons shielding, (2) space and accelerator shielding, and (3) shielding computer codes. These titles are announced before processing and indexing so that there will be no delay and can serve as a prompt announcement of current literature.

RSIC is not a documentation center. Copies of the literature cited must generally be obtained from the author or from a documentation center such as the Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia 22151.

RSIC maintains a microfiche file of literature entered into its information system. Computer searches of this system (which produces a special bibliography) and duplicate microfiche copies of the literature in our file are available upon request. Naturally, we cannot supply copies of literature which is copyrighted (such as books or journal articles) or whose distribution is restricted. Neither service is available for the codes literature.

REACTOR AND WEAPONS SHIELDING

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An Evaluation of the Neutron Cross-Section Data for Zirconium and its Stable Isotopes in the Resolved Resonance Range
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- AERE-Trans-1104 November 1967
Radioactive Contamination in Workshops and Laboratories. Vol. I. Techniques for Detection and Measurement
B. Werderer
Available: CFSTI as PB-185822T
- AERE-Trans-1105 January 1968
Radioactive Contamination in Workshops and Laboratories. Vol. II. Collective Protection Techniques
J. P. Perotin, B. Werderer
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- AI-64-Memo-189 August 1964
Calculation of Neutron Energy Spectra from Measured Foil Activities by the Orthonormal Polynomial Method
B. D. O'Reilly
- BRL-1444 July 1969
Application of Green's Function Analysis to the Solution of the Neutron Diffusion Equation in Heterogeneous Systems
N. E. Banks, G. L. Blackshaw
Available: CFSTI as AD-692828
- CEA-R-3713 (In French) May 1969
Space Synthesis: An Application of Synthesis Method to Two and Three Dimensional Multigroup Neutron Diffusion Equations
H. Nguyen-Ngoe
Available: AEC Depository Libraries; CFSTI (U.S. Sales only)

CEA-tr-A-1998 (In French) (Trans. from *Z.Naturforsch.*, 2a, 376-84[1947])

Slowing and Absorption of Neutrons in Concrete

P. Jensen, O. Ritter

Available: AEC Depository Libraries; CFSTI (U.S. Sales Only)

DASA-2333

May 30, 1969

Neutron-Induced Gamma-Ray Production Cross Sections for Silicon and Tungsten

W. E. Tucker, P. S. Buchanan

EGG-1183-1438

May 26, 1969

Measured High-Altitude Neutron and Gamma Dose Distributions Due to a 14-MeV Neutron Source

A. E. Fritzsche, N. E. Lorimier, Z. G. Burson

EUR-4230.d (In German)

August 1969

Shielding Experiments at the Geesthacht Research Reactor

E. Bagge, E. Fischer, D. Buenemann, T. B. Enginol, R. Fiebig,

F. Frisius, H. Harders, G. C. Schnier

Available: AEC Depository Libraries; CFSTI (U.S. Sales Only)

FTD-HT-23-61-69

Translation date May 22, 1969

Article written 1967

Distribution of Radiation Appearing in a Slit During Direct Transmission from a Circular Plane Source

V. S. Anastasevich

Available: CFSTI as AD-693515

GA-9438

August 28, 1969

Neutron Attenuation in Some Selected Nonhydrogenous Media

C. A. Goetzmann

Available: AEC Depository Libraries; CFSTI

MITNE-101 (NASA-CR-103597)

June 30, 1969

Fast Neutron Shielding Studies

S. Wilensky, L. E. Beghian, F. Clikemann

Available: CFSTI as N69-32341

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1969

Radiation Effects to Refractory Metals and Alloys

J. Moteff

In: *Am. Nucl. Soc. Fast Reactor Systems, Mater. and Components*, p.225-

Available: CFSTI

NASA-TM-X-1877

September 1969

Evaluation of the ICOHORT-2 Monte Carlo Shielding Code: Gamma Ray Transport Using Source Direction Biasing

H. S. Bloomfield, L. Clemons, Jr.

Available: CFSTI as N69-35848

NucE-34 (THESIS)

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Point Source Green's Functions for Monoenergetic Neutral Particle Transport

J. F. Meyer

The Pennsylvania State University, Department of Nuclear Engineering

ORO-3858-1 (CONF-690108)

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Virginia Polytechnic Institute, Blacksburg

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May 12, 1969

Experimental Evaluation of the Fallout Radiation Protection Provided by Structures in the Control Point Area of the Nevada Test Site

Z. G. Burson

Available: CFSTI

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May 26, 1969

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Remote Handling of Mobile Nuclear Systems

D. C. Layman, G. Thornton

Health Phys., 17, 295-304 (August 1969)

Absorbed Fractions, Specific Absorbed Fraction, and Dose Build-Up Factors for Dosimetry of Internal Photon Emitters

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J. M. Arras

J. Mater. Sci., 4(9), 817-835 (1969)

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M. R. Hawkesworth, J. Walker

J. Nucl. Energy, 23, 371-3 (July 1969)

A New Theoretical Approach to the Determination of Fast Neutron Spectra

B. Volmerange, M. Cadiac

- J. Nucl. Sci. Technol. (Tokyo)*, 6(8), 424-432 (August 1969)
Gamma-Rays and Neutrons Streaming Through Air Filled Cylindrical
Ducts in Water with Off-Set Alignment
H. Yamaki, Y. Fukushima, S. Uchida
- Nucl. Eng. Design*, 10(2), 169-186 (June 1969)
Shielding Experiment for the First Nuclear Ship in Japan
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Neutron Streaming Through Ducts (Tech. Notes)
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X-Ray Spectrum from a 2MVP Alternating Potential Generator
W. L. Saylor
- Radioprotection*, 3, 265-91 (1968) (In French)
Resolution of the Transport Equation by the Method of Invariant
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A. Chapot
- Senpaku Gijutsu Kenkyujo*, 6(2), 33-47 (March 1969) (In Japanese)
On the Neutron Transport Problems by the Discrete-Ordinates-Numerical
Integration Method
K. Takeuchi, I. Kataoka
- Soviet J. At. Energy, English Transl.* 24(1), 64 (January 1968)
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Energy Buildup Factors in Slab Geometry. (Letter to the Editor)
V. V. Golub, A. M. Panchenko
- Soviet J. At. Energy, English Transl.*, 24(1), 83-84 (January 1968)
Angular Distributions of γ -Ray Doses Outside Graphite Containing
a 4.43 MeV Source. (Letter to the Editor)
V. G. Zolotukhin, B. A. Efimenko, E. S. Matusevich, S. S. Omarov
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Penetration by Fast Neutrons of a Channel Partially Obstructed by
a Shield. (Letter to the Editor)
G. M. Bozin, S. F. Degtyarev, B. I. Sinitsyn, V. V. Tarasov,
V. K. Tikhonov, S. G. Tsypin

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Heavy Concrete with Iron Pigs as Aggregate. (Science and Engineering News)

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Matrix Method for Calculating Gamma Shields in Slab Geometry. (Abstract)

S. A. Churin, L. E. Gokhshtein, L. S. Sheiman

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E. J. Henley, J. Lewins (Eds.)

Academic Press, New York and London

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Physical Problems of Reactor Shielding. Vol. 3

D. L. Broder, et al.

Atomizdat, Moscow

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Bulletin of the Information Center on Nuclear Data

Addendum: The Propagation of Resonance Neutrons in Homogeneous Media - Theory and Special Functions

L. P. Abagyan, F. F. Mikhailus, M. N. Nikolaev, V. V. Orlov

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High Energy Electrons in Solar Flares
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J. Engelmann, A. Hautdidier, L. Koch
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W. Czyz
- JINR-P1-4562 (In Russian) 1969
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Z. Ogrzevalskii, Z. S. Strugalskii
Available: AEC Depository Libraries; CFSTI (U.S. Sales Only)
- JINR-P2-4662 (In Russian) (CONF-690814-6) 1969
Interaction Mechanism of High and Superhigh Energy Particles with
Atomic Nuclei, New Types of Elementary Particle Interactions
V. S. Barashenkov, K. K. Gudima, S. M. Eliseev, A. S. Il'inov,
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- MT-330 (JINR-P2-4568)
Intranuclear Cascades with the Account of α -Clusters
V. S. Barashenkov, O. B. Abdinov
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M. Koshiha
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Program for Computation of Radiation Doses

J. Brettes, J. P. Philippon

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A Method for Estimating Particle Fluxes Affecting a Satellite in Space

G. Quaranta

In: *CERTS Determination of Radiation Doses in Space*, pp. 165-171 (1968)

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Considerations Concerning Radiation Dosage in View of Quantifying the Biological Effects in the Case of Supersonic Transport

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L. Kaufman

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May 2, 1969

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H. J. Schaefer

Available: CFSTI as N69-35735

ORNL-TM-2722

August 15, 1969

Electromagnetic- and Nuclear-Cascade Calculations and Their Applications in Shielding and Dosimetry

R. G. Alsmiller, Jr.

Available: CFSTI

ORNL-TM-2751

September 11, 1969

The Energy Distribution of Photoneutrons Produced by 150-MeV Electrons in Thick Be and Ta Targets

R. G. Alsmiller, Jr., T. A. Gabriel, M. P. Guthrie

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September 15, 1969

Calculation of the Neutron Spectra from Proton-Nucleus Nonelastic Collisions in the Energy Range 15-18 MeV and Comparison with Experiment

R. G. Alsmiller, Jr., O. W. Hermann

TRI-68-4

December 1968

Shielding and Activation in a 500 MeV H⁻ Cyclotron Facility

I. M. Thorson

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Solar Flares

H. Friedman

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Yu. A. Emel'yanov, Yu. T. Lukin

Bull. Acad. Sci. USSR, Phys. Ser.

(*English Transl.*), 32(3), 466-469 (March 1968)

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Showers Initiated in Lead by 600, 1000 and 1300 MeV Electrons

V. I. Logachev, V. G. Sinitsina

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(English Transl.), 32(3), 458-460 (March 1968)
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More on Cascade Curves for Superhigh Energies
A. A. Pomanskii

Trans. Amer. Nucl. Soc., 12, 392-3 (June 1969) (CONF 690609)

Electron Energy Deposition, Computations with an Empirical Analytic
Form
B. Liley

Trans. Amer. Nucl. Soc., 12, 393-4 (June 1969) (CONF 690609)

Energy and Angular Distribution of Electrons Transmitted Through Tin
J. A. Lonergan, D. G. Costello

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| Calculation of Region-Dependent Thermal Neutron Spectra by the Monte Carlo Code MEGMOC
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FORTRAN, CDC-3400 | | |
| CEA Note N 824
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| Program for the Calculation of Fission Product Activity
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GESP-295		LCDUCT
Two-Bend Rectangular Duct Radiation Leakage Analysis by W. E. Edwards and W. B. Henderson FORTRAN - time sharing on the GE MARK II		
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October 1969

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March 1969

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by C. R. Forrey, Jr.
IBM 360/40

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Users Manual - FMC-G, Flexible Monte Carlo-Gamma
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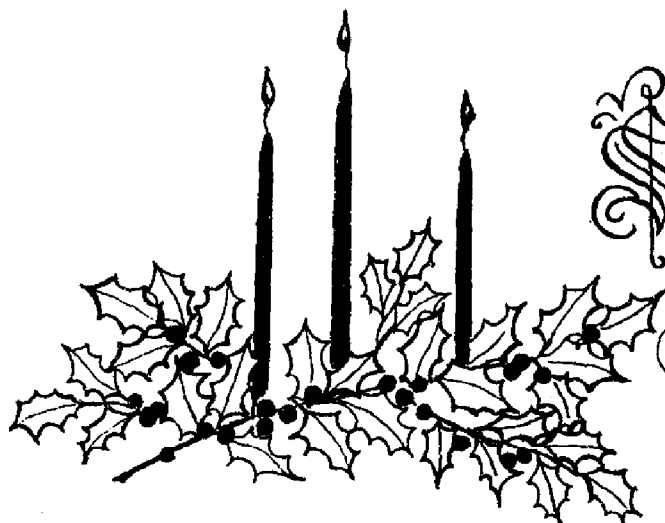
Evaluation of Scattered Dose Rate by Single Compton Scattering
by D. L. Rising
FORTRAN IV for CDC 6600

WAPD-TM-781

June 1969

BE-21

A Few-Group Slab Transport Program in FORTRAN IV
by E. Schmidt
FORTRAN IV for CDC 6600



Season's Greetings

And best wishes for the coming year