Editorial Advisory Committee

Manson Benedict DEAN BROWN **IACK CHERNICK** F. RICHARD COHEN E. C. CREUTZ Frank G. Dawson O. E. DWYER PAUL GAST D. H. Gurinsky A. F. HENRY D. G. Hurst A. A. Johnson L. W. Nordheim RALPH T. OVERMAN Hugh C. Paxton FRED W. THALGOTT A. M. WEINBERG

ANS Officers

KARL P. COHEN
President
LOUIS H. RODDIS, JR.
Vice President
JAMES R. LILIENTHAL
Treasurer
OCTAVE J. DU TEMPLE
Executive Secretary

ANS Publications Staff

John Graham
Senior Staff Editor
RUTH FARMAKES
Assistant Staff Editor
DENNIS BRUMMELL
Design and Production Editor
JUNE JOHNSON
Art Editor
DIANNE DORAN
Copy Editor
JEAN BARR
Production Assistant

Composition

BELJAN, ANN ARBOR, MICH.

Nuclear Science and Engineering is published monthly by the American Nuclear Society, Incorporated, with executive and business offices at 244 East Ogden Avenue, Hinsdale, Illinois 60521—telephone 312/825-1991. Subscription rate is \$25/volume: Volumes 35, 36, 37, and 38 will be published during 1969: address subscription orders to the American Nuclear Society (back issues of Volumes 1-17 are available from Academic Press, 111 Fifth Avenue, New York, N.Y.). Second-class postage is paid at Hinsdale, Illinois and at additional mailing offices. Nuclear Science and Engineering is printed in Danville, Illinois. Copyright® 1969 by the American Nuclear Society, Inc.

NUCLEAR SCIENCE and ENGINEERING

VOL. 35, No. 3 MARCH, 1969

Contents

TECHNICAL PAPERS	
Extremum Variational Principles for the Mono- energetic Neutron Transport Equation with Arbi-	
trary Adjoint Source	303
Models	319
J. H. Warner, Jr., and R. C. Erdmann Axial Propagation of Neutron Waves in Heterogeneous Media	332
R. G. Cochran, and D. E. Emon Energy-Dependent Shielding Factors for ²³⁵ U Foils from Transmission Experiments	342
R. L. Bramblett and J. B. Czirr Material Buckling Measurements with 2.1 wt $\%$ ²³⁵ U Enriched Uranium Tubes in Light Water	350
C. L. Brown, L. E. Hansen, and H. Toffer Average s- and p-Wave Resonance Parameters of 115 In and 127 I	358
and John R. Tucker Neutron Dose Rate Attenuation by Iron and Lead	364
K. Shure, J. A. O'Brien, and D. M. Rothberg Fast-Neutron Spectrum and Dose-Rate Measurements in Water and Aluminum-Water Lamina-	371
tionsG. I. Coulbourn and T. G. Williamson Effects of Condensation on the Transport of Matter from Vapor and Noncondensable Gas Mixtures	376
M. Necati Özişik and Daniel Hughes	384
TECHNICAL NOTES The Effect of Coolant pH on Reactor Reactivity	004
N. G. Sjöstrand A Nonlinear Xenon Stability Criterion for a Spatially Dependent Reactor Model	394
Weston M. Stacey, Jr. Review of Epithermal Integral Measurements of Neutron Capture and Fission in 233U	395
S. B. Gunst and D. E. Comway A Comprehensive System for Computer Gain Changing of Scintillation Spectra J. J. Steyn	396
and D. G. Andrews Differential Dose Albedo for Fast Neutrons	399
Y. T. Song, C. M. Huddleston, and A. B. Chilton The Effects of Multiple Coulomb Scattering and Range Straggling in Shielding Against Solar- Flare Protons	401
J. Barish, and W. W. Scott The Attenuation of Space Protons by Thin Cylindrical Shell and Slab Disk Shields.	405
Richard Madey and G. Thomas Huetter	406
COMPUTER CODE ABSTRACT	409
BOOK REVIEWS	410
LETTER TO THE EDITOR Comments on a Paper Concerning Neutron Diffusion in Light and Heavy Water P. B. Parks, D. J. Pellarin, N. P. Baumann,	
and M. M. R. Williams	412
VOLUME AUTHOR and SUBJECT INDEXES following page	412

Indexed in "Engineering Index" and Abstracted in "Nuclear Science Abstracts"