

Editorial Advisory Committee

MANSON BENEDICT
DEAN BROWN
E. RICHARD COHEN
E. C. CREUTZ
FRANK G. DAWSON
O. E. DWYER
PAUL GAST
D. H. GURINSKY
A. F. HENRY
A. A. JOHNSON
C. H. MILLAR
L. W. NORDHEIM
HUGH C. PAXTON
FRED W. THALGOTT

ANS Officers

JOHN W. LANDIS
President
JAMES R. LILIENTHAL
Vice President/President Elect
J. ERNEST WILKINS, JR.
Treasurer
RAYMOND D. MAXSON
Assistant Treasurer
OCTAVE J. DU TEMPLE
Executive Secretary

ANS Publications Staff

NORMAN H. JACOBSON
Publications Manager
RUTH FARMAKES
Assistant Staff Editor
KATHRYN L. FROELICH
Copy Editor
SIEGFRIED H. KRAPP
Production Manager
LINDA A. DOLBY
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 312/325-1991. Subscription rate is \$90/3 volumes, calendar year; \$35/single volume; single copy price is \$10 (special issues slightly higher); 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 © 1972 by the American Nuclear Society, Inc. Inquiries about the distribution and delivery of NUCLEAR SCIENCE AND ENGINEERING and requests for changes of address should be directed to the publisher, the American Nuclear Society, 244 East Ogden Avenue, Hinsdale, Illinois 60521. Allow 6 weeks for a change to become effective.

NUCLEAR SCIENCE and ENGINEERING®

VOL. 47 NO. 3 MARCH 1972

Contents

TECHNICAL PAPERS

- Small-Sample Doppler Effect Measurements and their Interpretation in Fast Reactor Spectra.
L. Barleon and E. A. Fischer 247
- The Formulation and Application of the Transfer-Scattering Matrix Method to Space-, Energy-, and Angular-Dependent Fast Reactor Kinetics . . .
H. L. Dodds, Jr., J. C. Robinson, and A. R. Buhl 262
- A Hybrid Method for Solving the Reactor Space-Time-Dependent Equations
D. Saphier 275
- Static and Dynamic Experiments with a Repetitively Pulsed Neutron Booster
John T. Mihalczo 290
- The Application of the Finite Element Method to the Multigroup Neutron Diffusion Equation.
L. A. Semenza, E. E. Lewis, and E. C. Rossow 302
- The Measurement of Total Delayed-Neutron Yields as a Function of the Energy of the Neutron Inducing Fission
M. S. Krick and A. E. Evans 311
- Heterogeneous Method for Calculating Long Term Reactivity Change in a Reactor Including Burnable Poison Rods.
Hisashi Hishida and Tamotsu Sekiya 319
- Experimental and Analytical Studies of Fast Neutron Transport in Iron
B. K. Malaviya, N. N. Kaushal, M. Becker, E. T. Burns, A. Ginsberg, and E. R. Gaerttner 329
- Low Energy Neutron Interactions with Uranium Carbide
C. Lajeunesse, W. E. Moore, and M. L. Yeater 349

TECHNICAL NOTES

- A Principle of Information Flow for the Treatment of Discontinuities in Synthesis Techniques
Martin Becker 365
- Addendum to Note on Subcritical Reactivity from Reactor Noise.
Medhat M. El-Zeftawy and Lawrence Ruby 370
- Thermal-Neutron Capture Cross Section and Resonance Integral for 10.7-Year Krypton-85.
C. E. Bemis, Jr., R. E. Druschel, J. Halperin, and J. R. Walton 371
- Measurements of the Total-Neutron Cross Section Minima in Natural Iron.
F. Rahn, H. Camarda, G. Hacken, W. W. Havens, Jr., H. Liou, J. Rainwater, M. Slagowitz, and S. Wynchank 372
- Last-Collision Model of the Air-Ground Interface Effect on Fast-Neutron Angle Distributions
R. L. French and L. G. Mooney 375
- Multiregion Analysis of the Effect of Rod Displacement on Heat Transfer in Slug Flow Through Closely Packed Rod Bundles
Chia-Jung Hsu 380

LETTERS TO THE EDITOR

- Comment on the Existence of a Measured Discontinuity in the Thermal-Neutron Diffusion Coefficient Across the Ice-Water Phase Transition.
Peter M. Williams 389
- Comments on Application of Nonlinear Programming
Daniel Tabak 389
- Reply to "Comments on Application of Nonlinear Programming"
Gregory F. Malan 389