Editorial Advisory Committee

Manson Benedict
E. Richard Cohen
E. C. Creutz
Frank G. Dawson
Paul Gast
D. H. Gurinsky
A. F. Henry
A. A. Johnson
C. H. Millar
L. W. Nordheim
Hugh C. Pakton
Fred W. Thalgott

ANS Officers

James R. Lilienthal
President
John W. Simpson
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
BARRETT M. SCHROEDER
Copy Editor
SIEGFRIED H. KRAPP
Production Manager
KATHRYN FROEHLICH
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 © 1973 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®

VOLUME 50, NUMBER 3, MARCH 1973

Contents

TECHNICAL PAPERS	
Numerical Methods of High Order Accuracy for One-Dimensional Diffusion Equation	
J. P. Hennart	185
The Neutron Diffusion Coefficient as a Second-	
Order Tensor—Theory and Calculations	
V. C. Boffi and T. Trombetti	200
Delayed Neutron Data for Fast Reactor Analysis	
J. E. Cahalan and K. O. Ott	2 08
On the Applicability of Sjöstrand's Area Method	
for Reactivity Measurement by the Pulsed-Neu-	244
tron Technique Jan B. Dragt	216
A Bilinear Formulation for Spatial Cross-Section	
Averaging Masaoki Komata, Richard B. Nicholson, and Earl M. Page	220
A Study of Several Methods for Analysis of Criti-	220
cal Assembly Heterogeneity R. G. Palmer,	
J. P. Plummer, and R. B. Nicholson	22 9
The Total Neutron Cross Sections of Uranium-238	
from 0.8 to 30 MeV S. H. Hayes, P. Stoler,	
J. M. Clement, and C. A. Goulding	243
Measurement of Bremsstrahlung Spectra Produced	
in Iron and Tungsten Targets by 15-MeV Elec-	
trons with Activation Detectors	0.40
Hideo Hirayama and Takashi Nakamura	248
The Californium-252 Fission Neutron Spectrum from 0.5 to 13 MeV	
L. Green, J. A. Mitchell, and N. M. Steen	257
A Study of Fission-Fragment-Induced Nucleation	
of Bubbles in Superheated Water	
L. W. Deitrich and T. J. Connolly	2 73
TECHNICAL NOTES	
Thermal Contact Conductance in Reactor Fuel	
Elements Gary Jacobs and Neil Todreas Errors in Perturbation Calculations	2 83
C. W. J. McCallien	290
Second-Order Boltzmann Equation from Invariant	
Imbedding Theory Zbigniew Weiss	2 94
Computational Experimentation on the Finite Ele-	
ment Method in Bare Slab Criticality Calcula-	
tions Juhani Pitkäranta and Pekka Silvennoinen	297
Variational Estimates of the Detector Response	
Change in a Fixed Source System Due to Cross Section Perturbations T. J. Hoffman	300
In-Core Neutron Flux Distribution Measurement	500
by a Circulating Fluid Activation Method	
Masaaki Fujii	302
COMPUTER CODE ABSTRACT	307

BOOK REVIEWS......

308