

## 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. PAXTON  
FRED W. THALGOTT

## ANS Officers

JOHN W. SIMPSON  
President  
J. ERNEST WILKINS, JR.  
Vice President/President Elect  
HARRY LAWROSKI  
Treasurer  
RAYMOND D. MAXSON  
Assistant Treasurer  
OCTAVE J. DU TEMPLE  
Executive Director

## ANS Publications Staff

NORMAN H. JACOBSON  
Publications Manager  
RUTH FARMAKES  
Assistant Staff Editor  
BARRETT M. SCHROEDER  
Copy Editor  
SIEGFRIED H. KRAPP  
Production Manager  
KATHRYN FROELICH  
Production Assistant

## Composition

BELJAN, ANN ARBOR, MICHIGAN

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 51, NUMBER 4, AUGUST 1973

## Contents

### TECHNICAL PAPERS

- The Stability of Power Reactors Subject to Stochastic Macroscopic Parameter Variation . . . . .  
*G. A. Krist and C. G. Poncelet* 347
- Fission Cross Section of Californium-249 . . . . .  
*M. G. Silbert* 376
- Measurement of the Uranium-238 Capture Cross Section for Incident Neutron Energies up to 100 keV . . . . .  
*G. de Saussure, E. G. Silver, R. B. Perez, R. Ingle, and H. Weaver* 385
- Thermal-Neutron Spectrum Indexes in D<sub>2</sub>O-Mod-erated Uranium and Uranium-Plutonium Clus-tered Fuel Elements in the Temperature Range from 20 to 200°C . . . . .  
*S. Guardini, N. Schiavone, and S. Tassan* 405
- Heterogeneity Effects in ZPPR Assembly 2—A Plutonium-Fueled Demonstration Fast Reactor Study . . . . .  
*W. G. Davey, P. I. Amundson, P. J. Collins, and R. G. Palmer* 415
- Neutron Resonance Absorption in Heterogeneous Fast Reactor Assemblies . . . . .  
*Yukio Ishiguro* 441
- Finite Element Methods for Reactor Analysis . . . . .  
*C. M. Kang and K. F. Hansen* 456

### TECHNICAL NOTES

- Neutron Capture Gamma-Ray Yields in Iron . . . . .  
*J. E. White, C. Y. Fu, and K. J. Yost* 496
- Elastic Scattering Probability Functions in Arbitrary Coordinate Systems . . . . .  
*B. R. Wienke* 508
- Application of Intermediate Treatment of Reso-nance Absorption to Heterogeneous Fast Reactor Assembly . . . . .  
*Yukio Ishiguro* 512

### LETTERS TO THE EDITOR

- Transport Results for the Uniform Source Half-Space Problem . . . . .  
*G. C. Pomraning* 515
- Reply to "Transport Results for the Uniform Source Half-Space Problem" . . . . .  
*W. P. Petrick, C. T. McDaniel, and A. Leonard* 516

VOLUME 51 AUTHOR and SUBJECT INDEXES . . . . . 517