#### Editorial Advisory Committee

MANSON BENEDICT DEAN BROWN IACK CHERNICK E. 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 Hugh C. Paxton FRED W. THALGOTT

## ANS Officers

Louis H. Roddis, Jr. President N. Joseph Palladino Vice President JAMES R. LILIENTHAL Treasurer OCTAVE J. DU TEMPLE **Executive Secretary** 

### ANS Publications Staff

TED F. MEINHOLD Senior Staff Editor RUTH FARMAKES Assistant Staff Editor DIANNE DORAN Copy Editor DENNIS BRUMMELL Design and Production Editor JEAN BARR Production Assistant SUZANNE RANDEGGER Art Editor

## Composition

BELJAN, ANN ARBOR, MICH.

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 \$25/volume: Volumes 39, 40, 41, and 42 will be published during 1970: single copy price is \$13 (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 © 1970 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

JUNE 1970

NO. 3 **VOL.** 40

#### Contents

#### TECHNICAL PAPERS

The Energy Distribution of Photoneutrons Produced by 150-MeV Electrons in Thick Beryllium and Tantalum	
Targets R. G. Alsmiller, Jr., T. A. Gabriel,	
and M. P. Guthrie	365
A Measurement of the Fission Cross Sections of <sup>239</sup> Pu and <sup>233</sup> U Relative to <sup>235</sup> U <i>E. Pfletschinger and F. Käppeler</i>	<b>37</b> 5
Measurement of the Ratios of Capture and Fission Neutron Cross Sections of <sup>235</sup> U, <sup>238</sup> U, and <sup>239</sup> Pu at 130 to 1400 keV	0.0
tron cross sections of U, U, and Pu at 130 to	383
Total Noutron Cross Section of <sup>242</sup> Du T. F. Vounce	303
and S. D. Reeder	389
Calculated <sup>56</sup> Fe Neutron Elastic and Inelastic Scattering	000
and Gamma-Ray-Production Cross Sections from 1.0 to	
7.6 MeV W. E. Kinney and F. G. Perey	396
Critical Parameters of a Uranium Solution Slab-Cylinder	
System Grover Tuck and Harold E. Clark	407
Analysis of Central Reactivity Worths in Fast Critical	
Assemblies R. A. Karam, K. D. Dance, T. Nakamura,	
and J. E. Marshall	414
An Approximate Solution to the Asymptotic Slowing Down	
Equations of Fast Neutrons M. Segev	424
Some Monte Carlo Techniques for the Calculation of	190
Doppler Coefficients L. B. Miller and G. H. Miley Verification of Space-Time Reactor-Kinetics Analysis by	438
Experiments	449
Space- and Time-Dependent Neutron Slowing Down	110
David J. Diamond and Sidney Yip	460
Effect of Neutron Anisotropy on the Depletion of a Cylin-	
drical Burnable Poison Pin	
and J. O. Berg	472
TECHNICAL NOTES	
Use of Gauss-Laguerre Numerical Integration for Point	
Kernel Shielding Calculations P. C. Cochrane	450
and D. W. Mesh Calculation of the Energy Deposited in Thick Targets by	478
High-Energy (1 GeV) Electron-Photon Cascades and	
Comparison With Experiment-II R. G. Alsmiller, Jr.	
and H. S. Moran	483
Prompt Gamma Rays from Thermal Neutron Fission of	
Uranium-235 R. W. Peelle and F. C. Maienschein	485
Photon Cross Sections of Uranium and Plutonium	
H. F. Atwater	487
A Numerical Calculation of the Time-Dependent Neutron	
Spectra in a Pulsed Homogeneous Multiplying System Pablo Rodríguez and Dong H. Nguyen	100
Several Particular Solutions of the One-Speed Transport	488
Equation M. N. Ožişik and C. E. Siewert	491
Prompt-Jump Correction of Inverse Kinetics Rod-Drop	101
Measurements	494
Approximate Calculation of Prompt-Critical Excursions.	
	498
Approximate Calculation of Prompt-Critical Excursions.	498 501
Approximate Calculation of Prompt-Critical Excursions.  Rubin Goldstein and Louis M. Shotkin	