Editorial Advisory Committee

Manson Benedict 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

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 ELSIE W. Cox Copy Editor SIEGFRIED H. KRAPP Production Manager KATHRYN FROEHLICH Production Assistant

Composition

BELJAN, ANN ARBOR, MICH.

NUCLEAR SCIENCE and ENGINEERING®

VOLUME 49, NUMBER 1, SEPTEMBER 1972

Contents

TECHNICAL PAPERS

Discrete Ordinate Neutron Transport Equation	
Equivalent to P_L Approximation	
Jungchung Jung, Hiroshi Chijiwa,	
Keisuke Kobayashi, and Hiroshi Nishihara	1
Spherical Harmonic Solutions of the Neutron	
Transport Equation from Discrete Ordinate	10
Codes	10
Effect of Singularities on Approximation in S_N	
Methods Jacek Arkuszewski,	•
Teresa Kulikowska, and Janusz Mika	20
A Timing Comparison Study for Some High Order	
Finite Element Approximation Procedures and a	
Low Order Finite Difference Approximation Pro-	
cedure for the Numerical Solution of the Multi-	
group Neutron Diffusion Equation	
Hans G. Kaper, Gary K. Leaf, and Arthur J. Lindeman	27
Spherical Harmonics Treatment of Epithermal	21
Neutron Spectra in Reactor Lattices	
Metrion Spectra in Reactor Lattices M. V. Mataušek	49
In-Core Fuel Management Optimization by Heu-	-10
ristic Learning Technique Tsutomu Hoshino	59
The Yield Stress Radiation Damage Function of	00
Iron	72
Monte Carlo Calculations of High-Energy Nucleon-	•-
Meson Cascades and Comparison with Experi-	
mentT. W. Armstrong, R. G. Alsmiller, Jr.,	
K. C. Chandler, and B. L. Bishop	8 2
A Numerical Calculation of the Redistribution of	
an Interstitial Solute in a Thermal Gradient	
G. P. Marino	93
TECHNICAL NOTES	
Linear Stability of Fast and Thermal Reactor	
Models Using Space-Time Kinetics	
Kenneth Alvin Solomon and William E. Kastenberg	99
Experimentally Measured Dose Albedos of Inter-	
mediate Energy Bremsstrahlung	
Thomas R. Crites	103
Hot Spot Expectation in Nuclear Reactor Core	
Thermal Design	106
COMPUTER CODE ABSTRACTS	109
LETTERS TO THE EDITOR	
Comments on Variation Flux Synthesis Methods	
for Multigroup Diffusion Theory A. J. Buslik	112
Reply to 'Comments on Variation Flux Synthesis	
Methods for Multigroup Diffusion Theory'	
W. M. Stacey, Jr.	114

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 SOIENCE 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 ENGI-NEERING 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.