PHYSOR 2000 Program

Sunday May 7, 2000

Workshop 1 : Sunday 1:00 PM - 5:00 PM

What's New in DOORS (ORNL DORT/TORT)

I. Monday May 8, 2000, 8:30 AM - 11:00AM

Welcome and Introductory Remarks
Dr. Alberto L. Casadei, PHYSOR General Chair

Plenary

Physics -The Foundation of Research
Research -The Foundation of Physics

Nuclear Physicists and Engineers … The Leaders Needed for Today's Commercial Power Industry
J. Fici

Department of Energy's Nuclear Energy Research and Development Agenda: Moving Forward on Generation IV Reactor Designs
W. D. Magwood, IV

Research Projects in Reactor Physics: A Combination of Basic Physics and Exacting Problems of Research
J. P. West

Radiation, Reactors, Neutrons and Medical Applications in the 20th Century and Beyond
J. Ethridge

II. Monday May 8, 2000, 1:00 PM - 3:05 PM

II.A. Computational Methods for Criticality Safety

An Analytical Solution to Sensitivity/Uncertainty Equations at Different Enrichments for Criticality Code Validation
C.S. Tripp and D.C. Morey

SAMS: A Sensitivity Analysis Module for Criticality Safety Analysis Using Monte Carlo Technique
B. T. Rearden

Monte Carlo Source Convergence and the Whitesides Problem
R. N. Blomquist

Criticality Code Validation for Borated Plates
E. F. Trumble and T. G. Williamson

Criticality Analyses Based on the Coupled NJOY/AMPX-II/TORT Systems
A. dos Santos, L. C. C. B. Fannaro, G. S. Andrade e Silva, A. Y. Abe, and A. G. Mendonca

II.B. Plutonium Disposition and Actinide Burners I

Plutonium Disposition/Recycling in PWR´s -German Experience in Design, Licensing and Validation
G. J. Schlosser and W. G. Stach

Pu Disposition in Russian VVERs: Physics Studies of Lead Test Assembly Designs
R J Ellis

VVER-1000 Weapons-Grade MOX Computational Benchmark Analysis
M. A. Kalugin, A. P. Lazarenko, A. G. Kalashnikov, and J. C. Gehin

Benchmark Calculations for VVER-1000 Fuel Assemblies Using Uranium or MOX Fuel
A. Lazarenko, M. Kalugin, S. Bychkov, A. Kalashnikov, A. Tsyboulia, W. Zwermann, S. Langenbuch, W. Stach, G. Schlosser, M. Delpech, F. Dolci, P. Girieud, and M.I. Vergain

Lead Coolant for Fast Reactor-Burner With Hard Neutron Spectrum
G.L. Khorasanov, A.P. Ivanov, and V.V. Korobeinikov

II.C. Transport Theory for Reactor Simulation

Acceleration and Parallelization of the Method of Characteristics for Lattice and Whole-Core Heterogeneous Calculations
G. S. Lee, N. Z. Cho, and S. G. Hong

Whole–Core Neutron Transport Calculations without Fuel-Coolant Homogenization
M. A. Smith, N. Tsoulfanidis, E. E. Lewis, G. Palmiotti, and T. A. Taiwo

Improvement of a PWR Transport Core Calculation Using a Two-Level Modeling to Generate the Homogeneous Cross Sections Libraries
A. Nicolas, S. Mengelle, and P. Lafarge

Applicability of the 3D Transport Code TORT to the Shielding Analysis of the Reactor Cavity Shielding Floor in the Prototype FBR Monju
K. Sasaki, S. Usami, T. Shiraki, K. Tada, and H. Yokobori

On Applicability of the <8F>-Approximation of the Surface Harmonics Method for Computing RBMK-Type Reactor
N.I. Laletin and A.A. Kovalishin

II.D. Reactor Methods and Analysis I

Validation of LEPRICON Adjusted Flux Through VENUS-1 Experiments
B. J. Moon, H. R. Hwang, J. H. Baik, and H. H. Kim

Coupled Fast-Thermal Reactor System: Theory and Experiment
O. F. Kukharchuk, A. V. Gulevich, A. P. Barzilov, K. V. Berejnoy, P. P. Dyachenko, and A. V. Zrodnikov

Advanced Methodology for Selecting Group Structures for Multigroup Cross Section Generation
A. Alpan and A. Haghighat

Interference Effects Between Resonance Absorbers
H. C. Huria

A Subgroup Method for Calculating Escape Cross Sections and Interference Factors
M. J. Miloševic

II.E. Computational Methods for Reactor Physics I

Interface Current Nodal Formulation of Simplified P2 Equations in Multi-Dimensional Hexagonal Geometry
T. K. Kim, Y. J. Kim, and Y.I. Kim

A Comparison of Two Self-Shielding Models On the Rowlands Pin-Cell Benchmark
A. Hebert and F. Fernex

A Consistent Coupling of Nodal Expansion Method, Analytic Nodal Method, and Finite Difference Method for 3-Dimensional Reactor Core Analysis
D. Lee, Y. H. Kim and Y. B. Kim

Application of Multigrid Correction Scheme to Nonlinear Nodal Method Solutions With Use of Core Reflector Boundary Conditions
K. Y. Chung and C. H. Kim

Numerical Optimization of Computing Algorithms of the Variational Nodal Method
W. S. Yang, G. Palmiotti, and E. E. Lewis

II.F. Neutronics - Thermal Hydraulics Development

Development and Validation of the Three-Dimensional Dynamic Code - KIKO3D
A. Keresztúri, G. Hegyi, M. Telbisz, and I. C. Hegedus

Development of a Coupled Dynamics Code With Transport Theory Capability and Application to Accelerator-Driven Systems Transients
J. E. Cahalan, T. Ama, G. Palmiotti, T. A. Taiwo, and W. S. Yang

Including the Travelling of Density Waves in the Analytical Modeling of Boiling Channel Stability
W.J.M. de Kruijf, R. Zboray, and T.H.J.J. van der Hagen

Sub- and Supercritical Bifurcations and Turning Points in a Simple BWR Model
Rizwan-uddin

EPRI CORETRAN Methodology
A. F. Dias and L. J. Agee

III. Monday May 8, 2000, 3:30 PM - 5:35 PM

III.A. Criticality Safety and Burnup Credit

Evaluating Experiments for Code and Cross-Section Validation for Criticality Safety
V. A. F. Dean

Effective Cross Sections for Calculations of Criticality of Dispersed Media
V.M. Shmakov, V.D. Lyutov, and V.F. Dean

Meeting the NRC Guidance On Burnup Credit
D. B. Lancaster

Feasibility Study for Burnup Credit in Spent-Fuel Storage for Nuclear Power Station
X. Xiaogang, L. Zhenhua, S. Leisheng, and Y. Lijun

III.B. Plutonium Disposition and Actinide Burners II

Fast Reactors Utilization for Long-Lived Nuclear Wastes Transmutation
I. Y. Krivitski

Utilization of Fast Reactor With Uranium-Free Fuel for Minor Actinides Transmutation
I. Y. Krivitski

A Comparative Design Analysis of Transuranic Burner Cores With Low Sodium Void Reactivity
S. J. Kim, N. Z. Cho, and Y. J. Kim

Optimisation of the Gas Cooled Fast Reactor for Plutonium and Minor Actinide Management
T. D. Newton, P. J. Smith, S. J. Crossley, and R. E. Sunderland

III.C. Mathematical and Numerical Methods for Transport Computations

Some Aspects of the Mathematical Modeling of Prompt Gamma Neutron Activation Analysis
J. P. Holloway and H. Akkurt

Two New Boundary Conditions for Use With the Maximum Entropy Closure and An Approximate Riemann Solver
T. A. Brunner and J. P. Holloway

Hierarchical Angular Preconditioning for the Finite Element-Spherical Harmonics Radiation Transport Method
C. R. E. de Oliveira, C. C. Pain, and M. D. Eaton

A "Mildly Inconsistent" Method for Accelerating Upstream Corner Balance Transport in Slab Geometry
J. C. Gulick and T. S. Palmer

III.D. Cross Section Evaluation and Libraries

Use of Integral Slab Experiments to Process Nuclear Data Adjustments: Study of Hafnium Neutron Cross-Sections Through Deterministic and Stochastic Computations
J.M. Palau

Analysis of LWR Benchmarks Based On Different Methods and Nuclear Data Evaluations
W. Bernnat, M. Mattes, S. Langenbuch, F. Moser, and W. Zwermann

ORLIBJ32 : the Set of New Libraries of ORIGEN2 Code Based On JENDL-3.2
K. Suyama , J. Katakura, Y. Ohkawachi, and M. Ishikawa

Nuclear Data Files and Libraries for Intermediate and High Energy Applications
Y. A. Korovin, A.Y, Konobeyev, P. E. Pereslavtsev, A.Y. Stankovsky, C. Broeders, I. Broeders, U. Fischer, and U. von Möllendorff

A Review of the Current Status of Nuclear Data for Major and Minor Isotopes of Thorium Fuel Cycle
S. Ganesan

III.E. Computational Methods for Reactor Physics II

Effect of Space Dependent Self-Shielding On Doppler Reactivity Calculation for Thermal Reactore Cells
T. Takeda, T. Sano, M. Hattori and H. Ikeda

Comparison of Resonance Shielding Methods for Application to PWR Core Design
H. Matsumoto and Y. Tahara

A Sensitivity Method for CANDU Core Analysis
D. H. Kim, J. Kyung, and K. H. Choi

CHAPMAN-ENSKOG Analysis of Discretized Transport Equations
B. Laubsch and T. S. Palmer

Response Kernels for Ex-Core Ionization Chambers
F. Wasastjerna and P. Siltanen

III.F. Neutronics - Thermal Hydraulics Analysis

MSLB Exercise 2: 3-D Kinetics Results With RELAP5/PANBOX
R. Böer, H. Finnemann, and A. Knoll

Analysis of the OECD MSLB Benchmark With the Coupled Neutronic and Thermal-Hydraulics Code RELAP5/PARCS
T. Kozlowski, R. M. Miller, T. Downar, and D. D. Ebert

Sensitivity Analysis for the OECD PWR Main Steam Line Break (MSLB) Benchmark Problem Using the Coupled Code System ATHLET-QUABOX/CUBBOX
S. Langenbuch, K.-D. Schmidt, and K. Velkov

Application of the Coupled Three Dimensional Thermal-Hydraulics and Neutron Kinetics Models to PWR Steam Line Break Analysis
M. Gonnet and M. Canac

Comparative Analysis of BWR Core Transient Benchmarks
H. Fu, J. S. Rodarte, K. Ivanov, A. Baratta, M. Zhang, and A. Hotta

IV. Tuesday May 9, 2000, 8:00 AM - 10:05 AM

IV.A. Core Loading and Burnup Optimization

A New Reactor Burnup Concept "CANDLE"
H. Sekimoto and K. Ryu

Parallel Computing Adaptive Simulated Annealing Scheme for Fuel Assembly Loading Pattern Optimization in PWR's
H. C. Lee, H. J. Shim, and C. H. Kim

Interactive Nuclear Design Analysis Process Automation On World Wide Web
Y.S. Park, C.S. Yoo, J.H. Park, K.M. Lee, and S.K. Chung

Core Loading and Burnup Optimization
K. Dhaene, H. Druenne, and Y. Comhaire

IV.B. Accuracy of Depletion Calculations

APOLLO 2 : A New Two-Level Scheme Calculation Applied to PWR Assembly Depletion Computation
P. Magat, A. Nicolas, I. Zmijarevic, G. Mathonnière, H. Golfier, C. Poinot-Salanon, P. Marotte and C. Bangil

Qualification of the APOLLO 2 Assembly Code Using PWR-UO2 Isotopics Assays. the Importance of Irradiation History and Thermomechanics on Fuel Inventory Prediction
C. Chabert, A. Santamarina, R. Dorel, D. Biron and C. Poinot-Salanon

KENOREST-98 A New Three Dimensional Fuel Assembly Code System for Combing KENO-V.A AND OREST-98 for Reactivity and Inventory Calculations
U.Hesse, B.Gmal, Th. Voggenberger, M.Baleanu, K.Hummelsheim, W.Heinicke, W.Zwermann and S.Langenbuch

Intranodal Depletion Effects in MOX Cores
P. Forslund, E. Muller and S. Lindahl

Two Group Micro-Depletion Correction Model for ALPH/PHOENIX-P/ANC Code System
T. Ida and Y. Tahara

IV.C. Deterministic Transport Methods

Polarwise Interface Current Characteristics Method
J. Cho, C. Lee and T. J. Downar

Calculating Adjoint Fluxes in the Code DRAGON Using the Collision Probability Method
T. Courau and G. Marleau

Analytical Constant Nodal Method for Monoenergetic Sn Eigenvalue Problems in X, Y Geometry
H. A. Filho, F. C. da Silva and R.C.Barros

Studies of Deterministic Transport Methods for Thermal Radiation on Unstructured Meshes
R. P. Smedley-Stevenson

Spectral Solution for Time-Dependent One-Dimensional Transport Problem in a Slab
R. P. Pazos and M. T. de Vilhena

IV.D. MOX Fuel Core Analysis I

Validation of Nuclear Data for Transmutation from Evaluation of MOX Fuel Irradiations
S. Pilate, R. Jacqmin, Ch. Chabert, Ch. De Raedt, J. Kuijper, Th. Maldague, G. Nicolaou, St. Van Winckel, and A. Ventura

Optimization of MOX Enrichment Distributions in Typical LWR Assemblies Using a Simplex Method-Based Algorithm
G. F. Cuevas Vivas, T. A. Parish and G. L. Curry

High Burn-up BWR MOX Fuel Design with Maximized Plutonium Inventory
D. Goto, K. Hida and N. Yoshida

Analysis of the Reactivity Coefficients and the Stability of a BWR Loaded with MOX Fuel
Ch. Demazière

Dynamic Aspects of Plutonium Recycling in PWR's : Influence of the Moderator-to-Fuel Ratio
J. L. Kloosterman

IV.E. Physics Measurements, Instrumentation and their Analysis I

Pin-by-Pin Gamma Scan Measurement on MOX and UO2 Fuel Assemblies and Evaluation
S. Misu, H. Spierling, H. Moon and A. Koschel

Analysis of the CREOLE Experiment on the Reactivity Temperature Coefficient Using the APOLLO2 Code and the JEF2.2 Nuclear Data File
L. Erradi and A. Santamarina

Estimation of Moderator Temperature Coefficient using Wavelet Transform
Y. Shimazu and R. Katsumata

Comparisons of Calculated and Measured ^{241}Am and ^{243}Am Concentrations in PWR and VVER Spent Fuel
W. S. Charlton, W. D. Stanbro and R. T. Perry

Analysis of Void Experiments with a Continuous Energy, Probabilistic Methodology
G.B. Bruna, C. Garat, C. Trakas, J. - L. Guillet and G. Rouvière

IV.F. Neutronics - Thermal Hydraulics Methodologies and Computations

A Pin-by-Pin Fuel Temperature Model for LWR Detailed Neutron Kinetics and Thermal Hydraulics Calculations
A. Avvakumov, V.Malofeev and V.Sidorov

Multi-level Coupled Methodology for Local Evaluation of Safety Parameters in PWR's
D. Ziabletsev, K. Ivanov, A. Baratta, L. Hochreiter and C. Frepoli

Parallel Coupling Methodology for Evaluation of Local Safety Parameters in BWR
J. Solís-Rodarte, A. Baratta, K. N. Ivanov, L. Hochreiter and C. Frepoli

EPRI CORETRAN-01 Benchmark Results
D. D. Hines, R. L. Grow and L. J. Agee

Analysis of a Load Rejection Event at the Nuclear Power Plant Goesgen with Coupled Neutronic/Thermal-Hydraulic Code Systems
K. Kuehnel, G. Gerth, H. Finnemann, G. Meier, J. Watson, K. Ivanov and A. Baratta

V. Tuesday May 9, 2000, 10:30 AM - 11:45 AM

V.A. Core Design and Fuel Management I

HELIOS Calculations in Developing New Fuel Management Plan for the PSBR
V.J. Bilovsky, K.N. Ivanov, S.H. Levine and H. Hiruta

V.B. Medical Applications

V.C. Advanced Neutron Sources I (Session Dedication to the Memory of Jacques Devooght)

V.D. Nuclear Data Measurements and Models

V.E. Analysis of Critical Benchmark Experiments I

First Critical for Zeus, an Intermediate Neutron Energy Spectrum Experiment
P. J. Jaegers and R. G. Sanchez

V.F. Noise Analysis and Diagnostics I

Disentangling Up and Down Flow Characteristics of a Turbulent Nuclear Fluidised Bed by Auto-Regressive Modeling of Gamma-Transmission Fluctuations
T.H.J.J. van der Hagen, W. Harteveld, R.F. Mudde and S. Verdoold

Measurement and Analysis of the Dynamic Response of Reactor Instrumentation of Safety and Regulating Systems
O. Glockler, D.F. Cooke, G.C. Czuppon and K.K. Kapoor

Vibration Monitoring by Neutron Noise Analysis and Acceleration Measurements Inside Operating Nuclear Power Reactors
J. Runkel, D. Stegemann, J. Fiedler, P. Heidemann, R. Blaser, F. Schmid, M. Trobitz, L. Hirsch and K. Thoma

VI. Tuesday May 9, 11:50 AM - 2:00 PM, Luncheon and Guest Speaker

Future Research Needs for Reactor Physics and Computations - Challenges and Opportunities
M. A. Feltus

VII. Tuesday May 9, 2000, 2:00 PM - 3:40 PM

VII.A. Core Design and Fuel Management II

Evaluation of Load Follow Performance of Korean Next Generation Reactor (KNGR)
Y. Kim and M. Park

URA Core Physics Workstation
D. Hodges and K. R. O'Sullivan

Eighteen-Versus Twelve-Month In-Core Fuel Cycle : ALPS Economics Search Capability
Y. A. Shatilla, D. C. Little, B. R. Beebe and J. A. Penkrot

Effect of Core Calculation Accuracy on Fuel Cycle Cost
A. Yamamoto

VII.B. Advanced Reactor Concepts and Design I

The AMSTER Concept (Actinides Molten Salt TransmutER)
J. Vergnes, P. Barbrault, D. Lecarpentier, Ph. Tetart and H. Mouney

Long-Life Cores with Small Burnup Reactivity Swing
E. Greenspan, H. Shimada and K. Wang

BWR Performance Improvement Feasibility Using Hydride Fuel
E. Greenspan and K. Wang

New Developments in Representativity Approach to Study Advanced Assembly Concepts in the EOLE Critical Facility
P. Blaise, P. Fougeras and S. Cathalau

VII.C. Advanced Neutron Sources II

A Dual Spectrum Core for the ATW - Preliminary Feasibility Study
N. Stone, E. Greenspan, P. Chambre and M. Lowenthal

Codes and Tools to Investigate Sub-Critical Accelerator-Driven Systems
Yu. A. Korovin, A. Yu. Konobeyev, V. N. Sosnin and M. Vecchi

Coupled Fast/Thermal Spectrum Subcritical Blanket for ADS
A. P. Barzilov, A. V. Gulevich, P. P. Dyachenko, E. A. Ivanov, O. F. Kukharchuk and A. V. Zrodnikov

VII.D. Parallel Computing for Reactor Physics Applications

Performance Measurement of Monte Carlo Photon Transport on Parallel Machines
A. Majumdar and W. R. Martin

Pthreads v*s* MPI Parallel Performance of Angular-Domain Decomposed Sn Methods on SMP Architectures
Y. Y. Azmy and D. A. Barnett

STYX 3D Implementation on SMP Architectures
C. Aussourd

Angular Multigrid Acceleration for Parallel S_n Method With Application to Shielding Problems
V. Kucukboyaci and A. Haghighat

VII.E. Analysis of Critical Benchmark Experiments II

Detailed Analysis of the Initial ZEUS Critical Condition with MCNP™ and ENDF/B-VI
R. D. Mosteller and P. J. Jaegers

Utilizing Benchmark Data from the ANL-ZPR Diagnostic Cores Program
R. W. Schaefer and R. D. McKnight

TRIGA Mark II Reactor Benchmark
R. Jeraj, M. Ravnik, T. Zagar, A. Persic, and V. Dean

Evaluation of Water-Moderated Lattices of UO2-2.0 wt. % PuO2 Rods
J. Campbell, F. Rahnema, R. Bartholomay, and T. L. White

VII.F. Noise Analysis and Diagnostics II

Theory of Neutron Noise Induced by Spatially Randomly Distributed Noise Sources
C Demazière and I. Pázsit

The Importance of Using Noise Diagnostic Methods to Enhance the Safety of the VVER Reactors in the Third Millennium
G. Por

The Influence of Different SPN-Detector Emitter Materials to the Results of Neutron Noise Analysis
B. Hellmich, J. Fiedler, J. Runkel, D. Stegemann, G. Pór, and D. Bódizs

A Unified Theory of Zero and Power Reactor Noise via a Master Equation Approach
I. Pázsit, A. K. Prinja, and Z. F. Kuang

VIII. Tuesday May 9, 2000, 4:10 PM - 6:30 PM

VIII.A1. Modeling & Simulation under the DOE/ASCI Program

The ASCI Program: Ushering in the Era of Terascale Scientific Simulations
P. Messina

Monte Carlo Advances for the Eolus ASCI Project
J. S. Hendricks, G. W. McKinney, and L. J. Cox

Coupled Electron-Photon Radiation Transport
L. J. Lorence, R. P. Kensek, C. R. Drumm, W. C. Fan, J. L. Powell, and G. D. Valdez

3-D Deterministic Transport Methods Research at LANL Under ASCI
J. E. Morel

KULL: LLNL's ASCI Inertial Confinement Fusion Simulation Code
J. A. Rathkopf, D. S. Miller, J. M. Owen, L. M. Stuart, M. R. Zika, P. G. Eltgroth, N. K. Madsen, K. P. McCandless, P. F. Nowak, M. K. Nemanic, N. A. Gentile, N. D. Keen, and T. S. Palmer

VIII.A2. Joint PHYSOR 2000 and ANS-Pittsburgh Section Meeting

Food Irradiation: Are We Ready ?
R. Durante

IX. Wednesday May 10, 2000, 8:00 AM - 10:05 AM

IX.A. Monte Carlo Methods I

What Are Quasirandom Numbers and Are They Good for Anything Besides Integration?
M. Mascagni and A. Karaivanova

Modular, Object-Oriented Redesign of a Large-Scale Monte Carlo Neutron Transport Program
B. S. Moskowitz

Calculation and Use of Multigroup Cross Sections Including Electron-Photon Cascade for a 3D Monte Carlo Neutron-Gamma Transport Code. Comparisons With MCNP-4B
D. Riz

Adjoint Monte Carlo Photon Transport in Continuous Energy Mode with Discrete Photons from Annihilation
J. E. Hoogenboom

Impact of Ray Effects on A3MCNP Performance for a Purely Absorbing Medium with Void Region
A. Patchimpattapong and A. Haghighat

IX.B. Physics of Reactor Operation and Control I

Core Watch: Advanced BWR Core Monitoring
J. J. Casal

The New Core Monitoring System for the Hope Creek Station
D. Bollacasa, S.E. Dlugolenski, C.-Å. Jonsson, C. Vidal, and J. M. Porter

Core Monitoring and Assistance to Operation in Belgian PWRs
R. Fraikin

Capricore, A New On-Line Core Monitoring System
M. Albendea and A. Crespo

Operating Strategy Generator Method And Utilization In POWERTRAX™ PWR Core Monitoring System
H. Moon, M. Beczkowiak, and J. R. Caves

IX.C. MOX Fuel Core Analysis II

Comparison of Criticality Benchmark Calculations on the UO2 And MOX Fuel Arrays Using ENDF/B-V and ENDF/B-VI Data
J. G. Ahn, H. R. Hwang, J. H. Baik, and N. Z. Cho

OECD/NEA International Benchmark on Power Distribution Within MOX Fueled Assemblies
B. C. Na, E. Sartori, and S. Cathalau

Lattice Physics Codes Comparisons for the NEA BWR-MOX Benchmark
J. L. François and C. M. del Campo

Elaboration and Experimental Validation of the APOLLO2 Depletion Transport Route for PWR Pu Recycling
C. Chabert, A. Santamarina, and P. Bioux

Prediction of Spent MOX and LEU Fuel Composition and Comparison with Measurements
B. D. Murphy and R. T. Primm III

IX.D. Reactor Methods and Analysis II

Calculation of Temperature Reactivity Coefficients in KRITZ-2 Critical Experiments Using WIMS
D. J. Powney

New Capabilities of the WIMS Code
J. L. Hutton

Comparison of WIMS/PANTHER Calculations with Measurement on a Range of Operating PWR
J. L. Hutton, D. J. Powney, P. K. Hutt, M. P. Knight, P. Bryce, A. Goddard, C. R. Schneidesch, D. Vantroyen, S. Bosso, and O. Ergo

Coarse Mesh Finite Difference Methods and Applications
Y. A. Chao

A Study on Effects of Pin Cell Homogenization in an Actual Reactor Core Geometry
M. Tatsumi, A. Yamamoto, S. Kosaka, and E. Saji

IX.E. Physics Measurements, Instrumentation and their Analysis II

Application of Stochastic and Artificial Intelligence Methods for Nuclear Material Identification
S. Pozzi and F. J. Segovia

Prompt Neutron Decay for Delayed Critical Metal Spheres of Pu, and Natural-Uranium-Reflected Pu and HEU
J. T. Mihalczo

Thermal Neutron Distribution Measurement at Core of the LVR-15 Reactor
L. Viererbl, M. Marek, J. Ernest, S. Flíbor, and J. Rataj

An Analysis of the Experiments with Erbium for the RBMK Design
E. V. Burlakov, A.V.Glembotsky, G. B. Davydova, V. E. Jitarev, V. M. Kachanov, A. N. Kuzmin, A.V. Krayushkin, and A. M. Fedosov

Analyses of MISTRAL and EPICURE Experiments with SRAC and MVP Code Systems
K. Hibi, M. Tatsumi, T. Umano, A. Fushimi, T. Yamamoto, M. Ueji, and Y. Iwata

IX.F. Diffusion Theory and Kinetics

Application of Symmetries in Three-Dimensional Hexagonal-Z Nodal Diffusion Calculation
S. Zhang and Z. Xie

A Refinement of the Analytic Function Expansion Nodal Method with Transverse Gradient Basis Functions and Interface Flux Moments
S. W. Woo, N. Z. Cho, and J. M. Noh

An Assesment of Consistent Bilinear Weighted Two-Group Spatial Kinetics for MOX Fuel Applications
C. Lee, T. J. Downar, K. O. Ott, H. G. Joo

Space-Time Kinetics Calculations Using Coarse-Grid Acceleration Technique
S. Kaveh, J. Koclas, and R. Roy

An Analysis of Xenon Oscillations Using Multi-Point Kinetics Equations
K. Kobayashi and S. Tsumura

X. Wednesday May 10, 2000, 10:30 AM - 12:10 PM

X.A. Monte Carlo Methods II

Practical Advice on Modeling Complex Systems in MCNP
F. Wasastjerna

An Assessment of MCNP Weight Windows
J. S. Hendricks and C. N. Culbertson

Particle Reflection in Correlated Coupling of Monte Carlo Forward-Adjoint Histories
T. Ueki and J.E. Hoogenboom

Evaluation of Perturbation Effect Due to Fission-Source Change in Eigenvalue Problems by Monte Carlo Methods
Y. Nagaya and T. Mori

X.B. Physics of Reactor Operation and Control II

Core-Monitoring in CANDU Reactors Using In-Core Detectors
B. Arsenault

Load Follow Software Development for the KRŠKO NPP Process Computer
A. Trkov, M. Kromar, and B. Zefran

Support Vector Machines for Nuclear Reactor State Estimation
N. Zavaljevski and K. C. Gross

Integration of an Engineering-Grade, Reload Specific Core Model Into a Real-Time Training Simulator
J. Borkowski, K. Smith, D. Hagrman, and J. Rhodes, III

X.C. MOX Fuel Core Analysis III

An Assessment of Advanced Nodal Methods for MOX Fuel Analysis in Light Water Reactors
T. Downar, C.H. Lee, and G. Jiang

Application of the Surface Pseudosources Method to Multigroup Calculation of the BWR Reactor Cell with a MOX Fuel
N. V. Sultanov and V. G. Karabanova

Using VISTA for the Evaluation of MOX Fuel Trends
R. Shani

BASALA: Advanced BWR MOX Core Physics Experiments
T. Yamamoto, Y. Iwata, M. Ueji, S. Cathalau, P. Fougeras, J.P. Chauvin, P. Blaise, and A. Santamarina

X.D. Reactor Methods and Analysis III

Enhancements of BWR Core Analysis Code
S.-Y. Kosaka, E. Saji, and K. S. Smith

Increasing Complexity in the Modelling of BR2 Irradiations
C. D. Raedt, E. Malambu, B. Verboomen, and Th. Aoust

The QCALC Power Profile Model for Calculating Burnup Dependent Radial Power Distributions in Light and Heavy Water Reactor Fuel Pins
F. Dusch

Sensitivity and Uncertainty Assessment Associated to Burnup Calculations
J.C. Kuijper, P.M.G. Damen, H. Koning, and J. Oppe

X.E. Analysis of Experiments for Fast Reactors

Analyses of the Jupiter Fast Reactor Experiments Using the ERANOS and JNC Code Systems
K. Sugino and G. Rimpault

ERANOS Neutronics Calculations of a $^{11}B_4C$ Moderated Subassembly and Experimental Validation in MASURCA
G. Rimpault, R. Soule, J.F. Lebrat, M. Martini, J.P. Chauvin, R. Jacqmin, P. Morris, D. Biron, S. Janski, and D. Verrier

Advances in Fast Neutron Reactor Neutronics Calculations, An Overview of the Validation Process Using Measurements Performed In Fast Reactors PHENIX and SUPER-PHENIX
S. Czernecki, F. Varaine and J. Tommasi

Uncertainties Associated to the use of The ERANOS Code System When Applied to the Moderated ECRIX Irradiations In The Fast Reactor PHENIX
F. Varaine, C. De Saint Jean and G. Rimpault

X.F. Resonance Cross Sections

Neutron Transfer Kernels in the Resonance Domain in the Harmonic Crystal Model
D. G. Naberejnev

Statistical Distributions of the Resonance Parameters
N. B. Janeva and A. A. Lukyanov

Handling of External Levels in Neutron Resonance Fitting; Application to ^{52}Cr
F. H. Frohner and O. Bouland

Evaluation of Neutron Resonance Parameters for 19 Fission Products
S-Y. Oh, J. Chang, and S.F. Mughabghab

XI. Wednesday May 10, 2000, 1:30 PM -

XI.A. Reactor Physics Education in the New Century I

Nuclear Education and Training: Causes for Concern? A Study by OECD Nuclear Energy Agency
H. Yamagata presented by E. Sartori (OECD)

Crisis in the Workplace: Declining Enrollments in Nuclear Engineering
W. R. Martin (USA)

The Burnup of Nuclear Engineering Education in Canada
T. Courau and E. Varin (Canada/France)

The Future of Reactor Physics Education in Our Universities
R. Szollosy (USA)

Nuclear Energy and Related Research in Universities; Achieving the Intellectual and Funding Framework
A J H Goddard and C R E de Oliveira

The DOE-NE Role in Supporting Nuclear Engineering: Education of the Next Generation of Nuclear Reactor Engineers, *M. A. Feltus (USA)*

XI.B. Reactor Physics Standards

Reactor Physics Standards in the New Millenium
D. Cokinos

A Review of ANS Standard 19.3.4, The Determination of Thermal Energy Deposition Rates in Nuclear Reactors: The Past, Present, and Future
R. T. Perry

Reactor Pressure Vessel Fluence a Proposed ANS Standard
L. Lois and J. Carew

Parlor Papers and Computer Programs in Topical Areas

XI.C. Reactor Physics General

A PWR Thorium Pin Cell Burnup Benchmark
X. Zhao, E. E. Pilat, K. D. Weaver, and P. Hejzlar

RAMA, Radiation Analysis Modeling Application
D. B. Jones, K. E. Watkins, and S. P. Baker

CPM-3, A State-Of-The-Art Nuclear Fuel Lattice Physics Burnup Code
D. B. Jones, S. P. Baker, and K. E. Watkins

Radiation Activity and Fluence Trending Evaluations for Reactor Systems (RAFTER)
K. E. Watkins, S. P. Baker, and M. E. Lujan

TRANSMGU, A Model Generation Utility Code
D. B. Jones, S. P. Baker, and W. J. Wilson

XI.D. Physics Measurement, Modeling and Nuclear Data

Modeling of Benchmark Experiments Performed at ZR-6 Critical Facility and Validation of the MCU-REA Code
N. I. Alexeyev, E. A. Gomin, M.I. Gurevich, L.V. Maiorov, and D.A. Shkarovsky

RASTA: Radiation Source Term Analysis Code
R.L. Frost, S.J. Nathan, T.L. White

SUSD3D, A Multi-Dimensional, Discrete Ordinates Based Cross Section Sensitivity and Uncertainty Code
I.Kodeli

PUFF-III: A Multigroup Covariance Processing Code for the AMPX Cross Section Processing System
M. E. Dunn and B. L. Broadhead

SINBAD 98 RSICC Data Library DLC-191
H.T. Hunter, E. Sartori, I. Kodeli

RIVNO NPP Underground Laboratory: The Research of Properties and Interaction of Electronic Antineutrino with Protons and Deuterons for Fundamental and Plutonium Monitoring
V.I. Grantsev, I.P. Dryapachenko, B.A. Rudenko, V.A. Korovkin, D.A. Sokolov, V.V. Tokarevskij, and N.A. Trofimova

XI.E. Physics Analysis and Core Modeling Methods, Measurements and Codes

APOLLO2 : A Physical Analysis Tool
S. Loubière and A. Nicolas

SIEMENS' Integrated Code System CASCADE-3D for Core Design and Safety Analysis
R. G. Grummer , S. K. Merk, H. Finnemann, R. Böer, L. Hetzelt , A. Knoll, and H.-J. Winter

DYN3D - Three-Dimensional Core Model for Steady-State and Transient Analysis of Thermal Reactors
U. Grundmann, U. Rohde, and S. Mittag

WIMSBUILDER
E. B Webster

In-Depth Analysis of the In-Core Measurements
Y. Comhaire, H. Druenne, D. Vantroyen, and A. Charlier

XI.F. Transport Methods

PARTISN
R. E. Alcouffe, R. S. Baker, J. A. Dahl, and S. A. Turner

DOORS 3: Discrete Ordinates Oak Ridge System
D. B. Simpson

GRAVE: An Interactive Geometry Construction and Visualization Software System for the TORT Radiation Transport Code
E. D. Blakeman

GRTUNCL3D: A Three-Dimensional XYZ Geometry First Collision Source and Uncollided Flux Code
R. A. Lillie

VIM: A Continuous Energy Monte Carlo Criticality Code
R. N. Blomquist

PENTRAN™ (Parallel Environment Neutral-particle TRANsport) Code System
A. Haghighat and G. E. Sjoden

XII. Wednesday May 10, 2:00 PM - 6:30 PM Poster Papers / Exhibits / Mixer

XIII. Wednesday May 10, 7:30 PM Banquet, Guest Speaker and Awards

Dr. Charles W. Pryor, President and CEO,
Westinghouse Electric Company

XIV. Thursday May 11, 2000, 8:00 AM - 10:05 AM

XIV.A. Reactor Physics Education in the New Century II

How to Balance the Future in a Small Country with Huge Nucelar Past and Present: The Swedish Example
I. Pazsit (Sweden)

The Current Status of the Education of Reactor Physics and Nuclear Engineering in China
Z. Xie (China)

Nuclear Engineering Education in the Future
H. L. Dodds (USA)

Nuclear Engineering Postgraduate Education in Belgium: Toward a European Degree
M. Giot and E. Mund (Belgium)

Nuclear Engineering Education at Politecnico di Torino and in Italian Universities
P. Ravetto (Italy)

Representing Spain
J. M. Aragones

Representing Korea
N. Z. Cho

Present Situation of Nuclear Education in Mexico
J. L. François and E. del Valle-Gallegos (Mexico)

Teaching Of Reactors Physics In France
P. Reuss (France)

Graduate Education in Reactor Physics -Influence of Advancements in Computing Technologies
A. Haghighat (USA)

A Graduate Student Perspective on Future Research Opportunities in Reactor Physics
R. M. Miller (USA)

The Use of Active Learning Strategies in the Instruction of Reactor Physics Concepts
M. A. Robinson (USA)

XIV.B. Benchmarks and Validation of Codes I

DRAGON Solutions for Benchmark BWR Lattice Cell Problems
R. Roy and G. Marleau

EPRI CPM-3 Benchmark Results
R. L. Grow and K. M. Smolinske

CPM-3 Benchmarking to the DOE/B&W Critical Experiments
K. M. Smolinske and R. L. Grow

Evaluation of the CM-PRESTO Nodal Code Accuracy in Modeling A SVEA 96/GE9 Mixed Core
S. Baker, W. Wilson, and K. Buckwheat

Assessment Of CANDU Physics Analysis Tools Using Measurement Data of Wolsong Nuclear Power Plant 2
D. Park, H. Choi, and C. Jeong

XIV.C. Space and Research Reactors

Calculational Aspects of Integrated Design of Optimum Radiation Protection of Space Nuclear Power Systems
À.À. Dubinin, À.P. Pyshko, A.Ju. Plotnikov, and A.G. Eremin

Fuel Conversion (HEU/LEU) of A Research Reactor (HOR)
P.F.A. de Leege, and H.P.M. Gibcus

Preliminary Characterization of the Irradiation Facilities within the LEU-Fueled UMass-Lowell Research Reactor
J. R. White, A. Jirapongmed, and J. Byard

Calculational Support for the Startup of the LEU-Fueled UMass-Lowell Research Reactor
J. R. White, J. Byard, and A. Jirapongmed

Radiological Characterization of the Activation of the Structure Materials of the BR1 Research Reactor
N. Messaoudi, H. A. Abderrahim, and Luc Noynaert

XIV.D. Reactor Dynamics and Safety Analysis I

Dynamic Core Stability Analysis of a Fluidized Bed Nuclear Reactor
V.V. Golovko, J.L. Kloosterman, H. van Dam, and T.H.J.J. van der Hagen

On the Qualification of Boiling Water Reactor Stability Margin Indicators Using Linear Stability Analysis
R. Zboray, W.J.M. de Kruijff, T.H.J.J. van der Hagen, and H. van Dam

Studies Of Recriticality Transients In BWRs During Reflooding: SIMULATE-3K Development And Analyses
L. Nilsson, D. Kropaczek, and W. Frid

Experiments With the CIRCUS Facility on Flashing-Induced Instabilities During Start-up of Natural-Circulation-Cooled BWRs
A. Manera, W.J.M. de Kruijf, T.H.J.J. van der Hagen, and R.F. Mudde

Influence Of Fluctuation of Coolant Flow on the Nuclear Reactor Thermal Parameters
B. O. Abbani, and K. Pytel

XV. Thursday May 11, 2000, 10:30 AM - 12:10 PM

XV.A. Reactor Physics Education in the New Century III

Continuation of session XIV.A and open discussion

XV.B. Benchmarks and Validation of Codes II

Validation of the ARROTTA Code Agianst Experimental RBMK Critical Facility Data
B.R. Sehgal, H.W. Cheng, and A. Romas

Benchmarking and Validation of MOCUP
K. Wang , T-P Lou, E. Greenspan , and J. Vujic

Validation Of 3-Dimensional Neutron Transport Calculations of CANDU Reactivity Devices
J. V. Donnelly, and M. Ovanes

Spherical Harmonic Solutions to the 3D Kobayashi Benchmark Suite
P. N. Brown, B. Chang, and U. R.. Hanebutte

XV.C. Advanced Reactor Concepts and Design II

Coolant Options for a Water-Cooled Reactor with a Hard Neutron Spectrum
H. Takahashi, J.Zhang, D.Cokinos, U.Rohatgi, and T. J. Downar

Reactivity Control of Soluble Boron Free PWR By Introducing Pu-238 Added Fuel
S. Y. Kim, J. K. Kim, G. D. Jeun, S. Park, U. C. Lee, and H. C. Suk

Once-Through Thorium Fuel Cycle Options for the Advanced PWR Core
M.-H. Kim, and I.-T. Woo

A Search into the Optimal U-Pu-Th Fuel Cycle Options for the Next Millennium
V. Jagannathan, U. Pal, and R. Karthikeyan

XV.D. Reactor Dynamics and Safety Analysis II

Analysis of Rod Removal Transient Experiments in VVER Reactors at Zero Power
F. C. Difilippo

Modeling the Kinetic Behavior of Reflected-Reactor Systems Near And Above Prompt Critical
D. M. Minnema and A. S. Heger

Evaluation of the Postulated Fresh Fuel Drop Scenario in the RBMK Ingalina Nuclear Power Plant
B.R. Sehgal, A. Romas, and H.W. Cheng

Investigation of Void Reactivity Behaviour in RBMK Reactors
M. Clemente, S. Langenbuch, P. Kusnetzov, and I. Stenbock

Workshops

Workshop 2: Thursday 1:30 PM – 5:30 PM

New Capabilities in MCNP4C (LANL)

Workshop 3: Friday 8:00 AM – 12:00 NOON

PENTRAN™ 3-D Parallel Sn (Penn State Univ. (PSU))

Workshop 4: Friday 1:00 PM – 5:00 PM

Automated Variance Reduction with A^{3}MCNP™ for Shielding Problems (PSU)