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# Proceedings of the International Conference on Physics of Reactors (PHYSOR 2024)

- 
- 1 Plenaries**
- 
- 2 Plenary I: Session on Industry Progress Towards Reactor Deployment**
- 3 Plenary II: The Role of National Laboratories in Advanced Reactor Deployment**
- 4 Plenary III: Current and Future Needs for Reactor Physics Experimental Facilities**
- 
- 5 Panels**
- 
- 6 Early Career Reactor Physicist Award**
- 7 Unleash Your Vision: Crafting the Blueprint for Launching Your Game-Changing Startup!**
- 8 Key Regulatory Developments and Needs for Advanced and Small Modular Reactors**
- 9 Nuclear at COP28**
- 10 Status of the ICSBEP, IRPhE, SFCOMPO, and SINBAD Benchmark Handbooks**
- 11 OECD NEA Activities Related to Scientific Issues of Nuclear Reactor Systems**
- 12 Reactor Startup and First Criticality**
- 13 Computational Reactor Physics Methods to Support I&C**
- 14 Generative AI for Reactor Physics**
- 
- 15 Experimental Reactor Physics**
- 
- 17 Research Reactors for Reactor Physics Analysis and Simulation: I**
- 18 Reactor Pressure Vessel Characterization Methods Development for the High Flux Isotope Reactor to Support Future Vessel Replacement—*D. Chandler (ORNL), K. Burg (ORNL)***
- 28 Californium-252 Production Validation Studies at the High Flux Isotope Reactor with Campaign 78 Data—*D. Hartanto (ORNL), D. Chandler (ORNL), G. Power (ORNL), J. Bae (ORNL), K. Burg (ORNL)***
- 38 Prediction of the TREAT Facility Power and Temperature of Sirius-2c Nuclear Propulsion Fuel Experiment—*Mustafa K. Jaradat (INL), Sebastian Schunert (INL), Frederick N. Gleicher (INL), Mark DeHart (INL)***
- 48 Testing and Implementation of 6% Enriched UO<sub>2</sub> Fuel at the PULSTAR Reactor—*N.C. Fleming (NCSU), A.I. Hawari (NCSU)***
- 58 Current Status of the Water Activation Loop at JSI TRIGA Reactor—*D. Kotnik (Jožef Stefan Institute), J. Peric (Jožef Stefan Institute), L. Snoj (Jožef Stefan Institute), I. Lengar (Jozef Stefan Institute)***
- 67 Nuclear Criticality and Safety: I**
- 68 Application of Monte Carlo Solver Solomon to Critical Mass Calculation of Fuel Randomization System—*Tomooki Watanabe (Japan Atomic Energy Agency), Taro Ueki (Japan Atomic Energy Agency), Kenya Suyama (Japan Atomic Energy Agency)***
- 78 Statistical Error Estimation of Autocorrelation Method Using Circular Block Bootstrap Method—*Ryoga Hirota (Nagoya Univ.), Tomohiro Endo (Nagoya Univ.), Akio Yamamoto (Nagoya Univ.), Kenichi Watanabe (Kyushu Univ.), Junichi H. Kaneko (Hokkaido Univ.)***
- 87 Sensitivities of Configurations with Missing Fuel Rods—*Benjamin Dechenaux (IRSN)***
- 97 Investigation of Subcriticality Monitoring Method Using Improved Simplest Reactivity Estimator with Bilateral Filter—*Taiyo Moribe (Nagoya Univ.), Tomohiro Endo (Nagoya Univ.), Akio Yamamoto (Nagoya Univ.), Junichi H. Kaneko (Hokkaido Univ.)***
- 107 Evaluation of Thermal Scattering Law for U<sub>3</sub>Si<sub>2</sub> Using Temperature-Dependent Phonon Density of States—*Junhyoung Gil (NCSU), Ayman I. Hawari (NCSU)***

- 117 Research Reactors for Reactor Physics Analysis and Simulation: II**
- 118 Sub-Critical Gamma Noise Measurements in the CROCUS Zero-Power Reactor—*F.B. Darby (Univ. Michigan), O.V. Pakari (École Polytechnique Fédérale de Lausanne), M.Y. Hua (Univ. Michigan), V.P. Lamirand (École Polytechnique Fédérale de Lausanne), S.D. Clarke (Univ. Michigan), A. Pautz (École Polytechnique Fédérale de Lausanne), S.A. Pozzi (Univ. Michigan)*
- 128 Adding New Experimental Capacities to the CABRI Nuclear Reactor—*D. Bonvalet (CEA), F. Rodiac (CEA)*
- 136 Neutron Noise Measurements of a Fast HEU Copper System—*Cole Kostelac (LANL), Robert Weldon (LANL), Nicholas Whitman (LANL), Nicholas Thompson (LANL), Theresa Cutler (LANL), Ayodeji Alajo (Missouri Univ. Science and Technology)*
- 146 Capturing Reactor Pulse Characteristics: Cherenkov Power Meter in JSI TRIGA Pulse Experiments and Pulse Database—*Julijan Peric (Jozef Stefan Institute), Ingrid Svajger (Jozef Stefan Institute), Vladimir Radulovic (Jozef Stefan Institute), Luka Snoj (Jožef Stefan Institute)*
- 155 Measurement of the Prompt Decay Constant in a Zero Power Reactor Using a Novel 3D Detector System—*Michel Saliba (École Polytechnique Fédérale de Lausanne), Oskari Pakari (École Polytechnique Fédérale de Lausanne), Wilfried Monange (IRSN), Andreas Pautz (École Polytechnique Fédérale de Lausanne), Vincent Lamirand (École Polytechnique Fédérale de Lausanne)*
- 165 Experimental Reactor Physics for Advanced Reactors**
- 166 Reactivity Relative Monitoring Using Threshold Fission Chambers with the Current-to-Flux Method for the Accelerator Driven VENUS-F Subcritical Reactor—*N. Marie (Normandie Univ.), A. Billebaud (Univ. Grenoble Alpes), S. Chabod (Univ. Grenoble Alpes), A. Kochetkov (SCK CEN), A. Krása (SCK CEN), F.-R. Lecolley (Normandie Univ.), J.-L. Lecouey (Normandie Univ.), G. Lehaut (Normandie Univ.), N. Messaoudi (SCK CEN), G. Vittiglio (SCK CEN), J. Wagemans (SCK CEN)*
- 176 Epithermal Neutron Spectrum Filtering Experiment Design at the VENUS-F Zero Power Fast Reactor—*Federico Grimaldi (SCK CEN), Patrick Blaise (Framatome), Antonin Krása (SCK CEN), Pierre-Etienne Labeau (Univ. Libre de Bruxelles), Guido Vittiglio (SCK CEN), Jan Wagemans (SCK CEN)*
- 186 Understanding the Moderator Temperature Coefficient of Reactivity of Prismatic Graphite-Moderated Gas-Cooled Reactors with Burnable Absorbers—*D. Bazzani (Politecnico di Milano), S. Wijaya (KAIST), A. Cammi (Politecnico di Milano), Y. Kim (KAIST)*
- 196 A Data-Driven Incident Detection Method for the Safe Operation of Molten Salt Fast Reactors—*N. Abrate (Politecnico di Torino), N. Caruso (Politecnico di Torino), S. Dulla (Politecnico di Torino), S. Lorenzi (Politecnico di Milano), N. Pedroni (Politecnico di Torino)*
- 207 Transient Modeling and Simulation for Deimos, an Advanced Reactor Experiment—*Alexis Maldonado (LANL), Theresa E. Cutler (LANL), Kristin N. Stolte (LANL), Holly R. Trelue (LANL)*
- 217 Nuclear Criticality and Safety: II**
- 218 Pulsed Neutron Experiments in the Inherently Safe Subcritical Assembly—*D. Siefman (LLNL), W. Zywiak (LLNL), C. Percher (LLNL), D. Heinrichs (LLNL)*
- 227 Critical Experiment Plans on the New STACY to Clarify the Criticality Characteristics of the Molten Core-Concrete Interaction Products—*Satoshi Gunji (Japan Atomic Energy Agency), Shouhei Araki (Japan Atomic Energy Agency), Kazuhiko Izawa (Japan Atomic Energy Agency), Kenya Suyama (Japan Atomic Energy Agency)*
- 237 Designing a Deimos-Based Microreactor Criticality Experiment with MCNP and Whisper—*Alexis Maldonado (LANL), Keenan J. Hoffman (LANL), Kristin N. Stolte (LANL), Christopher Perfetti (Univ. New Mexico), Theresa E. Cutler (LANL), Holly R. Trelue (LANL)*
- 247 The National Criticality Experiments Research Center: Capability Expansion and Experiments in the Last Three Years—*George E. McKenzie (LANL), Theresa E. Cutler (LANL), Travis J. Grove (LANL), Jesson D. Hutchinson (LANL), Juliann R. Lamproe (LANL), Nicholas W. Thompson (LANL), Nicholas H. Whitman (LANL), Joetta M. Goda (LANL)*
- 257 Hermes Reactor Demonstration, Initial Startup and Physics Testing—*N. Satvat (Kairos Power), K. Riley (Kairos Power), F. Vitullo (Kairos Power), R. Hernandez (Kairos Power), M. Fratoni (Univ. California, Berkeley), B. Haugh (Kairos Power), E. Blandford (Kairos Power)*
- 265 Research Reactors for Reactor Physics Analysis and Simulation: III**
- 266 Experiments at the JSI TRIGA Research Reactor for Validation of Nuclear Fuel Depletion Calculations—*Anže Pungerčič (Jožef Stefan Institute), Vladimir Radulovic (Jožef Stefan Institute), Alireza Haghghat (Virginia Tech), Luka Snoj (Jožef Stefan Institute)*

- 277 Lead Neutron Data Validation Using Integral Experiments at the VENUS-F and BFS Zero Power Reactors—*Antoine de Barys (SCK CEN), Federico Grimaldi (SCK CEN), Anatoly Kochetkov (SCK CEN), Antonin Krasa (SCK CEN), Guido Vittiglio (SCK CEN), Marie-Laure Vuyge (SCK CEN), Jan Wagemans (SCK CEN)*
- 287 High Burn-up Code Results Intercomparison on a Research Reactor Assembly Numerical Benchmark—*R. Ichou (IRSN), F.X. Le Dauphin (IRSN), T. Nicol (CEA), C. Carmouze (CEA), F. Estebe (TechnicAtome)*
- 297 Preparing a New Reference Neutron Field in the Graphite-Shaped Reference LR-0 Reactor Core—*Tomáš Peltan (Research Centre Rez), Tomáš Czakoř (Research Centre Rez), Eva Vilímová (Univ. West Bohemia), Jan Šimon (Research Centre Rez), Vlastimil Juříček (Research Centre Rez), Michal Košťál (Research Centre Rez)*
- 306 Measurement of the High Energy Gamma Spectrum up to 13 MeV in the Special Core of the LR-0 Reactor—*Michal Kostal (Research Center Rez), Tomas Czakoř (Research Center Rez), Tomas Peltan (Research Center Rez), Evzen Losa (Research Centre Rez), Martin Schulc (Research Center Rez), Vlastimil Juricek (Research Centre Rez), Jan Šimon (Research Center Rez), Vojtěch Rypar (Research Center Rez), Filip Mravec (Masaryk Univ.), František Cvachovec (Univ. Defence), Zdenek Matej (Masaryk Univ.), Roberto Capote (IAEA)*

### 315 Nuclear Criticality and Safety: III

- 316 NAUTILUS: A Project for the Development of Experimental Methods for Investigating Innovative Approaches to Nuclear Waste Management and to Nuclear Safety—*M. Viebach (Technische Univ. Dresden), A. Knospe (Technische Univ. Dresden), C. Lange (Technische Univ. Dresden), B. Merk (Univ. Liverpool), A. Hurtado (Technische Univ. Dresden)*
- 326 Preliminary Analysis of a Nuclear-Grade Sandwich Composite for Transportable Microreactor Shielding—*Ryan H. Stewart (INL), Samuel E. Bays (INL), Adam X. Zabriskie (INL), Joshua N. Zelina (INL), Abderrafi M. Ougouag (INL), Robert C. O'Brien (INL)*
- 336 Exploring Boron Monitoring Solutions in Pressurized Water Reactors for Enhanced Loss of Coolant Accidents Mitigation—*Nouhaila Tabti (CEA), Adrien Sari (CEA), Dominique Tromson (CEA)*
- 346 Reliability Assessment of Passive Nuclear Systems Influenced by Corrosion in Stratified Hot Fluids—*Akmali Masood (Assystem Energy and Operation), R. Plana (Assystem Energy and Operation)*

### 357 Fuel Cycle and Other Applications

- 359 Nonproliferation and Safeguards, Accident Dose Analysis and Reactor Physics Analyses for Externally Driven Systems
- 360 SCALE 6.3.1 Radiation Source Terms and Shielding Analysis for a Postulated Sodium-Cooled Fast Reactor Accident Scenario—*G. Radulescu (ORNL), D. Hartanto (ORNL), F. Bostelmann (ORNL), W. Wieselquist (ORNL)*
- 370 An Open Source Multiphysics Workflow for the Analysis of Fusion Driven Systems—*Matthew J. Nyberg (Univ. Wisconsin, Madison), Joseph T. Eickman (Univ. Wisconsin, Madison), Patrick C. Shriwise (ANL), Ben A. Lindley (Univ. Wisconsin, Madison)*
- 380 Theory of Neutron Multiplicity Counting in an Energy-Dependent Transport Model—*Victor Dykin (Chalmers Univ. Technology), Senada Avdic (Univ. Tuzla), Imre Pázsit (Chalmers Univ. Technology)*
- 389 Development of a Steady State Reactor Physics Surrogate Model for the Idaho State University AGN-201 Digital Twin Using MOOSE—*Quinton J. Williams (Oregon State), Ryan H. Stewart (INL), Todd S. Palmer (Oregon State), Camille J. Palmer (Oregon State), Chad Pope (Idaho State), Ashley Shields (INL), Christopher Ritter (INL)*
- 399 Sub-Pin Fission Product Sensitivity to Assembly and Core Models on High-Burnup Fuel and Comparison to Experimental Measurements—*Andrew Conant (ORNL), Mehdi Asgari (ORNL), Aaron Graham (ORNL), Greg Balco (LLNL)*

### 409 Methods

#### 411 Methods for Reactor Physics Analyses: I

- 412 Nemo: A Centralized Model Representation for Reactor Physics Solvers—*P.E. Burke (Naval Nuclear Laboratory), S.J. Douglass (Naval Nuclear Laboratory), D.F. Gill (Naval Nuclear Laboratory), D.P. Griesheimer (Naval Nuclear Laboratory), M.W. Hackemack (Naval Nuclear Laboratory), B.R. Nease (Naval Nuclear Laboratory)*
- 423 Assessment of Heuristics for the Automated Generation of 2D Method of Characteristics Mesh—*Kyle Vaughn (Univ. Michigan), Brendan Kochunas (Univ. Michigan)*
- 432 Geometric Acceleration Structures to Speed Up Cell Searches in OpenMC—*Saad Amin (Mission San Jose High School), Gavin Ridley (MIT), Benoit Forget (MIT)*
- 442 A Recursive Subdivision Algorithm for Delta-Tracking on Bezier Curve Geometries in SCONE—*Jamie K. Edwards (Univ. Cambridge), Andrew Davis (UKAEA), Eugene Shwageraus (Univ. Cambridge)*

452 A Delta-Tracking Method that Supports Finite-Element Material Properties in Mesh-Based Monte Carlo Codes—Pablo A. Vaquer (LANL), Michael E. Rising (LANL), Joel A. Kulesza (LANL), Colin A. Weaver (LANL), Colin J. Josey (LANL)

#### 463 Multi-Physics Reactor Simulations and Validation: I

464 Impact of the Multiphysics Coupling on the Reactivity Swing and Fuel Depletion of an SFR Phenix Like Subassembly—V. Viallon (CEA), E.Y. Garcia-Cervantes (CEA), L. Buiron (CEA)

474 Investigation of Ring-Heterogeneous Geometry Approximation for Efficient and Practical SFR Analysis—Namjae Choi (INL), Stefano Terlizzi (INL), Yaqi Wang (INL), Hansol Park (ANL), Changho Lee (ANL), Javier Ortensi (INL)

484 Modeling and Validation of Axial Thermal Expansion in the ARMI Framework—Chris Keckler (TerraPower), Anthony L. Alberti (TerraPower)

493 Modeling of Sodium Fast Reactors Thermal Expansion Reactivity Feedback Using GeN-Foam and Serpent—Giovanni Nervi (École Polytechnique Fédérale de Lausanne), Alessandro Scolaro (École Polytechnique Fédérale de Lausanne), Mathieu Hursin (École Polytechnique Fédérale de Lausanne), Carlo Fiorina (TAMU)

503 Uniform and Non-Uniform Geometric Deformations in Monte Carlo with Virtual Density Theory—Anuj Dubey (Univ. Cambridge), Mikolaj Adam Kowalski (Univ. Cambridge), Eugene Shwageraus (Univ. Cambridge)

#### 513 Advancements in UQ and Validation Methodologies: I

514 A Comparison of the Modal Expansion Method and Exact-to-Precision Generalized Perturbation Theory Capabilities in Reactor Physics—T. Sauzedde (CEA), P. Archier (CEA), F. Nguyen (CEA)

524 Adjoint-Based Perturbation Theory for Heat Conduction and Dynamics Coupled Multiphysics Simulations of Nuclear Reactor Transients—Alexis Maldonado (LANL), Christopher M. Perfetti (Univ. New Mexico)

534 Development of an Adjoint Approach for Calculating Sensitivities of Effective Kinetic Parameters in Continuous-Energy Monte Carlo Code RMC—S. Jiang (Tsinghua Univ.), K. Wang (Tsinghua Univ.), P. Shen (Tsinghua Univ.)

541 Bayesian Inverse Problem and Uncertainty Quantification in the Joint Analysis of Neutron and Gamma Correlations—Paul Lartaud (CEA), Philippe Humbert (CEA), Josselin Garnier (Institut Polytechnique de Paris)

551 Comparison of Bayesian Model Calibration Techniques for Future Application to Fuel Performance Behavior Models—S. Maccario (École Polytechnique Fédérale de Lausanne), A. Scolaro (École Polytechnique Fédérale de Lausanne), A. Vasiliev (Paul Scherrer Institute), M. Hursin (Paul Scherrer Institute)

#### 561 Data, Methods, Code Validation: I

562 An Optimization Approach to Improve Thermal Scattering Law Using Experimental Total Cross Section Data—Vaibhav Jaiswal (IRSN)

572 Generation of Enrichment-Dependent Thermal Neutron Scattering Data—B.K. Laramée (NCSU), N.C. Fleming (NCSU), J.P.W. Crozier (NCSU), A.I. Hawari (NCSU)

582 Development of Thermal Scattering Law and Cross Sections of Hydrogen in Paraffin Wax—T. Ahmed (NCSU), N.C. Fleming (NCSU), A.I. Hawari (NCSU)

591 Thermal Neutron Scattering Behavior of Nitrogen-Enriched Uranium Mononitride—Amelia Trainer (Naval Nuclear Laboratory), Jonathan Wormald (Naval Nuclear Laboratory), Jesse Holmes (Naval Nuclear Laboratory), Mike Zerkle (Naval Nuclear Laboratory)

601 Embedding Neural Thermal Scattering (NeTS) Modules in SERPENT for Higher Fidelity Advanced Reactor Analysis—Jonathan P.W. Crozier (NCSU), Ayman I. Hawari (NCSU)

#### 611 Methods for Reactor Physics Analyses: II

612 Hobbes: Multigroup Cross Section Generation for Mixed-Architecture Computing Environments—S.J. Douglass (Naval Nuclear Laboratory)

622 Understanding the Macroscopic Cross Section Treatment in Hybrid Continuous Energy and Multigroup Depletion Using the Shift Monte Carlo Code—Vidor Lujan (Georgia Tech), Bailey Painter (Georgia Tech), Inhyung Kim (Univ. California, Berkeley), Massimiliano Fratoni (Univ. California, Berkeley), Thomas M. Evans (ORNL), Tara M. Pandya (ORNL), Dan Kotlyar (Georgia Tech)

632 Derivation of the History Variable Calculation for Macro-Depletion in Nodal Simulators—Thomas Folk (Univ. Michigan), Brendan Kochunas (Univ. Michigan)

642 Initial Assessment of Online Cross Section Generation Capability of Griffin for Gas-Cooled Pebble-Bed Reactor—Hansol Park (ANL), Yeon Sang Jung (ANL), Changho Lee (ANL), Yaqi Wang (INL), Javier Ortensi (INL)

654 Application of Expanded Transfer Functions for Predicting Coarse Mesh, One-Group Macroscopic Cross Sections in a 3D Realistic PWR Core—Bailey Painter (Georgia Tech), Dan Kotlyar (Georgia Tech)

## 665 Multi-Physics Reactor Simulations and Validation: II

- 666 Initial Validation of the SIMULATE5-K and the CMS5 Reactor Modeling Suite with the SPERT-III Experiments—*William C. Dawn (Studsvik Scandpower), Gerardo Grandi (Studsvik Scandpower), Tamer Bahadir (Studsvik Scandpower)*
- 676 High-Fidelity Serpent2/SCF Solutions for Rod Ejection Scenarios in Support to the Verification of the CAMIVVER APOLLO3®/CATHARE3 Coupling Prototype—*L. Mercatali (Karlsruhe Institute for Technology), G. Huaccho (Karlsruhe Institute for Technology), B. Vezzoni (Framatome), B. Calgaro (Framatome), P. Mosca (CEA), F. Damian (CEA), V.-H. Sanchez-Espinoza (Karlsruhe Institute for Technology)*
- 686 Computational Modeling and Verification of MSR Transients via MSRE Reactivity Insertion Tests—*M. Elhareef (Virginia Commonwealth Univ.), T. Fei (ANL), Z. Wu (Virginia Commonwealth Univ.)*
- 696 A Step Towards a Comprehensive Uncertainty Quantification in Transient Analysis—*Evgeny Ivanov (IRSN), Antonio Sargeni (IRSN), Franck Bernard (IRSN)*
- 706 ZDkin, a Neutronic Point Kinetics Code with Modular Temperature Feedback—*E. Lefevre (TechnicAtome), J. Couybes (TechnicAtome), G. Kozlowski (TechnicAtome)*

## 717 Advancements in UQ and Validation Methodologies: II

- 718 A Comparative Study of Efficient Sampling Techniques for Uncertainty Quantification due to Cross-Section Covariance Data—*Tatsuya Fujita (Japan Atomic Energy Agency)*
- 728 Nuclear Data Uncertainty Methods in CASMO5 Using ENDF/B-VIII Covariances—*Joshua Hykes (Studsvik Scandpower), Charles Wemple (Studsvik Scandpower), Rodolfo Ferrer (Studsvik Scandpower)*
- 739 Computation of Sensitivity in Monte-Carlo Codes: Investigation of Convergence for Reactor Cores with High Dominance Ratio—*M. Rababah (LPSC), A. Bidaud (LPSC)*
- 748 Uncertainty Analysis of the Reaction Rates in Ringhals—*Jacob Persson (Vattenfall Nuclear Fuel)*
- 757 Uncertainty Quantification in Fluoride-Based Molten Salt Reactors with Open Sourced Tools—*Zsolt Elter (Uppsala Univ.), Augusto Hernandez Solis (SCK CEN), Mario Ponce Tovar (Seaborg Technologies)*

## 767 Data, Methods, Code Validation: II

- 768 Preliminary Validation of Intra-Pin Reaction Rate Predictions from the Deterministic Transport Codes GeN-Foam and MPACT—*Tom Mager (École Polytechnique Fédérale de Lausanne), Kyle Vaughn (Univ. Michigan), Mathieu Hursin (École Polytechnique Fédérale de Lausanne), Brendan Kochunas (Univ. Michigan), Andreas Pautz (Paul Scherrer Institute)*
- 778 Initial Benchmarking of a New ENDF/B-VIII.1.β2-Based CASMO5 Neutron Data Library—*Rodolfo Ferrer (Studsvik Scandpower), Charles Wemple (Studsvik Scandpower), Joshua Hykes (Studsvik Scandpower)*
- 790 Verification and Validation of the VANGARD Pinwise Nodal Code with Preliminary Analyses of BEAVRS Benchmark—*Seoyoon Jeon (Seoul Nat'l Univ.), Brendan Kochunas (Univ. Michigan)*

## 801 Methods for Reactor Physics Analyses: III

- 802 Response Matrix Benchmark for the 1D Transport Equation with Matrix Scaling—*B.D. Ganapol (Univ. Arizona), J.K. Patel (Univ. Michigan)*
- 811 Synthetic Perturbation as Flux Initializer for the Method of Characteristics Solver of APOLLO3®—*A. Gammicchia (CEA), S. Santandrea (CEA), A. Brighenti (Framatome)*
- 820 Surface Characteristics Scheme for Solving the Transport Equation in Extruded and Unstructured 3D Geometries—*Arthur Le Bars (CEA), Simone Santandrea (CEA), Sandra Dulla (Politecnico di Torino)*
- 830 Linear Source Approximation in the Random Ray Method—*Rufus Neame (Univ. Cambridge), Paul Cosgrove (Univ. Cambridge)*
- 840 Implementation of the Discontinuous Galerkin Method into FENNECS and Other New Improvements for LWR Analysis—*Romain Henry (GRS), Jeremy Bousquet (GRS), Armin Seubert (GRS)*

## 851 Multi-Physics Reactor Simulations and Validation: III

- 852 Multiphysics Simulations of the KRUSTY Criticality Experiment Using BlueCrab—*Yan Cao (ANL), Yinbin Miao (ANL), Kun Mo (ANL), Nicolas Stauff (ANL), Changho Lee (ANL)*
- 862 Coupled Multiphysics Modeling of Heat Pipe Microreactors Using Cardinal, BISON, and Sockeye—*M. Eltawila (Univ. Illinois, Urbana-Champaign), A.J. Novak (Univ. Illinois, Urbana-Champaign), Y. Miao (ANL)*
- 872 Application of Basis Projection Methods to Temperature Distribution Construction in Heat Pipe Microreactor—*Dean Price (Univ. Michigan), Majdi I. Radaideh (Univ. Michigan), Brendan Kochunas (Univ. Michigan)*

- 882 Multiphysics Simulation of TRISO Fuel Compacts and the Effects of Homogenization—*Aya Hegazy (Univ. Illinois, Urbana-Champaign), April J. Novak (Univ. Illinois, Urbana-Champaign), Rizwan-uddin (Univ. Illinois, Urbana-Champaign)*
- 892 Thermal-Mechanical Considerations for the Radiantly Integrated TPV-Microreactor System—*Naiki Kaffezakis (Georgia Tech), Dan Kotlyar (Georgia Tech)*
- 903 Advancements in UQ and Validation Methodologies: III**
- 904 Developing a Deterministic Calculation Scheme for Perturbations of In-Core Instrumentation of an MTR-Core in Support to Bayesian Calibration—*S. Lapaire (CEA), T. Bonaccorsi (CEA), J.-M. Palau (CEA)*
- 914 Impact of Integral Experiments Choice for a GLLSM Data Assimilation Process: Application to Spent Fuel Pool Storage—*Romain Bossoutrot (IRSN), Frédéric Fernex (CEA), Julien Taforeau (IRSN)*
- 924 Results of the CAMIVVER V&V Campaign of the NEMESI Multi-Parameter Library Generator Prototype Based on APOLLO3®—*M. Tiberger (EDF), B. Vezzoni (Framatome), A. Willien (EDF), A. Brighenti (Framatome), G. Huaccho Zavala (Karlsruhe Institute for Technology), N. Guler (EDF), P. Laurent (EDF), L. Mercatali (Karlsruhe Institute for Technology), P. Mosca (CEA)*
- 934 Demonstration of Uncertainty Reduction for Generic Pebble-Bed Fluoride-Salt-Cooled High Temperature Reactor (gFHR)—*Noah A.W. Walton (Univ. Tennessee, Knoxville), Nader Satvat (Kairos Power), Vladimir Sobes (Univ. Tennessee, Knoxville)*
- 943 Data, Methods, Code Validation: III**
- 944 Analytical Description of the Neutron Up-Scattering in the Resonance Range—*A. Bengoechea (CEA), G. Noguere (CEA), D. Bernard (CEA), P. Tamagno (CEA)*
- 953 Implementation of Unresolved Resonance Region Probability Tables in the GNDS Format—*M.-A. Descalle (LLNL), C.M. Mattoon (LLNL), M.S. McKinley (LLNL), J. Northrop (Oregon State), G. Gert (LLNL), B.R. Beck (LLNL), A. Dreyfuss (LLNL)*
- 963 Improved Evaluated Nuclear Data in the Resonance Region by Combining Energy Dependent Measurements and Depletion Calculations: Application to Pu-239+n, Pu-240+n and Pu-241+n—*M. Hursin (Ecole Polytechnique Fédérale de Lausanne), D. Rochman (Paul Scherrer Institute), S. van der Marck (Nuclear Research and Consultancy Group)*
- 973 On the Possible use of Propagation of Resonance Parameters Uncertainties Using the R-Matrix Formalism—*Pierre Sole (IRSN), Vaibhav Jaiswal (IRSN), Cédric Jouanne (CEA)*
- 982 Predicting (n,2n) Cross Sections Using Machine Learning—*Rohan Gaya (Univ. Cambridge), Valeria Raffuzzi (Univ. Cambridge), Eugene Shwageraus (Univ. Cambridge), Lee Morgan (AWE)*
- 993 Methods for Reactor Physics Analyses: IV**
- 994 Comparison of Two Infinite Homogeneous Medium Ultra Fine Group Neutron Slowing-Down Solvers in APOLLO3®—*Terry Levy (CEA), Li Mao (CEA), Richard Sanchez (CEA), Emeline Rosier (CEA), Igor Zmijarevic (CEA), Stéphane Mengelle (CEA), Cédric Jouanne (CEA), Odile Petit (CEA)*
- 1004 A Collision Probability Formulation of the Resonance Spectrum Expansion (RSE) Self-Shielding Method—*Alain Hebert (Institut de Genie Nucleaire)*
- 1015 A Generalized Differential Equation and Numerical Method for the Standard and Deformed Doppler Broadening Functions—*William Vieira de Abreu (Federal Univ. Rio de Janeiro), Adilson Costa da Silva (Federal Univ. Rio de Janeiro), Alessandro da Cruz Gonçalves (Federal Univ. Rio de Janeiro), Aquilino Senra Martinez (Federal Univ. Rio de Janeiro)*
- 1025 Resonance Treatment of Double-Heterogeneous Fuel Using a Deterministic Statistical Geometry Method in Heterogeneous Transport Calculation Code GALAXY-Z—*Kazuya Yamaji (Mitsubishi Heavy Industries), Hiroki Koike (Mitsubishi Heavy Industries), Koji Asano (Mitsubishi Heavy Industries), Satoshi Takeda (Osaka Univ.), Akio Yamamoto (Nagoya Univ.)*
- 1036 Simplified Treatment of Coating Layers in TRISO Fuel in Statistical Geometry Method in Monte Carlo Calculation—*Akio Yamamoto (Nagoya Univ.), Tomohiro Endo (Nagoya Univ.), Satoshi Takeda (Osaka Univ.), Kazuya Yamaji (Mitsubishi Heavy Industries), Hiroki Koike (Mitsubishi Heavy Industries), Koji Asano (Mitsubishi Heavy Industries)*
- 1049 Multi-Physics Reactor Simulations and Validation: IV**
- 1050 On the Impact of Fuel Velocity Profile on Loss of Delayed Neutron Precursors in the Molten Salt Reactor Experiment—*Mario Ponce Tovar (Seaborg Technologies), Lorenz Fischer (Seaborg Technologies), Lubomir Bures (Seaborg Technologies)*
- 1060 Development of the Molten Salt Reactor Application in French Reference System Code CATHARE3—*Ruggero Rosselli (CEA), Nathan Greiner (CEA), Marine Anderhuber (CEA), Théotime Le Borgne de Palfray (CEA)*
- 1070 Development of a Delayed Neutron Precursor Tracking Module for Molten Salt Reactors in the iMC Monte Carlo Code—*Inyup Kim (KAIST), Taesuk Oh (KAIST), Yonghee Kim (KAIST)*



- 1080 Quantifying Uncertainties: Evaluating the Impact of Molten Salt Thermal Property Variability on Reactor Operation—*Davide Rotilio (Univ. California, Berkeley), Mauricio Tano (INL), Abdalla Abou-Jaoude (INL), Samuel Walker (INL), Massimiliano Fratoni (Univ. California, Berkeley), Renato Gatto (Sapienza Univ. di Roma)*
- 1090 Squirrel; a MOOSE Based App for Solving Quasi-Static Point Kinetics in Molten Salt Reactors—*P. Pfahl (Technical Univ. Denmark), A. Chambon (Technical Univ. Denmark), J. Groth-Jensen (Seaborg Technologies), B. Lauritzen (Technical Univ. Denmark)*
- 1101 Data, Methods, Code Validation: IV**
- 1102 Verification of a CARIBOU-OpenMC Workflow for the Analysis of HTGR-Like Systems Using the Proposed Ontario Tech Subcritical Assembly—*Kevin Sawatzky (Ontario Tech Univ.), Kirk D. Atkinson (Ontario Tech Univ.)*
- 1112 Comparison of Burnup Sensitivity Between Prismatic HTGR and LWR—*Go Chiba (Hokkaido Univ.)*
- 1122 Nuclide Inventory Validation: Effect of Nuclear Data Libraries—*Germinal Illas (ORNL), Jesse Brown (ORNL)*
- 1131 Simultaneous Adjustment of Uncertain Modeling Parameters and Experimental Data Through Post-Irradiation Examination Data Analyses—*Keita Yoshikawa (Hokkaido Univ.), Go Chiba (Hokkaido Univ.), Yuya Inagaki (Hokkaido Univ.), Junshuang Fan (Hokkaido Univ.)*
- 1140 Extension of RMC Burnup Calculations with an Energy-Dependent Branching Ratio Treatment—*Hao Luo (Tsinghua Univ.), Jiang Shihang (Tsinghua Univ.), Huang Shanfang (Tsinghua Univ.), Wang Kan (Tsinghua Univ.)*
- 1147 Methods for Reactor Physics Analyses: V**
- 1148 An Iterative RSA-DEM Method for High Packing Fraction Stochastic Media—*Zhe Chuan Tan (Singapore Nuclear Research and Safety Initiative), Zhi Yuan Feng (Tsinghua Univ.), Kan Wang (Tsinghua Univ.)*
- 1156 ODR-VS Method for High Packing Fraction of Dispersed Fuel Particles in Annular Container—*Zhiyuan Feng (Tsinghua Univ.), Jingang Liang (Tsinghua Univ.), Wenli Guo (Tsinghua Univ.), Kan Wang (Tsinghua Univ.)*
- 1166 Modeling Enhancements and Benchmarking of Pebble Bed Reactors in the Shift Monte Carlo Code—*Tarek Ghaddar (ORNL), Friederike Bostelmann (ORNL), Tara Pandya (ORNL), Matthew Jessee (ORNL)*
- 1176 Development of an Equilibrium Modeling Method for Modeling Micro-Modular Pebble-Bed High-Temperature Gas-Cooled Reactors—*Annie M. Berens (Univ. Tennessee, Knoxville), Friederike Bostelmann (ORNL), Nicholas R. Brown (Univ. Tennessee, Knoxville)*
- 1186 Investigating the Accuracy of Porous-Medium Treatments in the Analysis of Nuclear Thermal Propulsion Systems—*Zach Hughes (TAMU), Carlo Fiorina (TAMU), Nolan MacDonald (Ultra Safe Nuclear), Cristian Garza (Ultra Safe Nuclear), Thomas Guilbaud (École Polytechnique Fédérale de Lausanne), Alessandro Scolaro (École Polytechnique Fédérale de Lausanne)*
- 1197 Special Session on TVA Watts Bar Benchmark: I**
- 1198 VERA Solution to the Watts Bar Benchmark Problem—*Scott Palmtag (NCSU), Khaldoon Al-Dawood (NCSU), Andrew Godfrey (Veracity Nuclear)*
- 1208 NEA/OECD TVA Watts Bar Unit 1 Multi-Physics Multi-Cycle Depletion Benchmark with CASMO5 and SIMULATE5—*Emiliya L. Georgieva (Studsvik Scandpower), Tamer Bahadir (Studsvik Scandpower)*
- 1218 Variability Due to Nuclear Data Applied to the Watts Bar Unit 1 Benchmark with CASMO5/SIMULATE5 Code Sequence—*S. Bonthoux (IRSN), J. Tafureau (IRSN)*
- 1229 First Steps of the ANTARES Validation with TVA Watts Bar Unit 1 Cycle 1 Benchmark—*F. Bernard (IRSN), S. Bonthoux (IRSN), M. Forestier (IRSN), G. Girault (IRSN), A. Sargeni (IRSN), J. Tafureau (IRSN)*
- 1239 Methods for Reactor Physics Analyses: VI**
- 1240 Preliminary Analysis of iDTMC-Assisted Predictor-Corrector Quasi-Static Monte Carlo Simulation in the iMC Code—*Taesuk Oh (KAIST), Yonghee Kim (KAIST)*
- 1250 Implementation and Assessment of the Crank-Nicolson Method for the Monte Carlo Multilevel Kinetics Module—*Firas Abdullatif (Ohio State), Dean Wang (Ohio State)*
- 1261 A Time-Slicing Method for Capturing Neutron Source Locations for Initializing Dynamic Monte Carlo Simulations—*John Tchakerian (MIT), Gavin Ridley (MIT), Timothy Burke (LANL), Benoit Forget (MIT)*
- 1271 Development and Benchmarking of Two Distinct Time-Dependent Random Ray Methods—*Maximilian Kraus (Univ. Cambridge), Paul Cosgrove (Univ. Cambridge), Eugene Shwageraus (Univ. Cambridge)*

- 1281 Benchmarking Time Dependent COMET in a Set of Multigroup Kinetic Single Assembly I2S-LWR Problems—*Dingkang Zhang (Georgia Tech), Farzad Rahnama (Georgia Tech)*
- 1291 Reactor Physics Methods in Control and Optimization Problems**
- 1292 Parallel Simulated Annealing, Genetic Algorithms and Hybrid Method Applied to the Multiobjective Optimization of the Nuclear In-Core Fuel Management—*W. Kubinski (Framatome), G. Giorgi (Framatome), M. Segond (Framatome)*
- 1302 Pressurized-Water Reactor Core Design Using Multiobjective Plant Fuel Reload Optimization Platform—*Junyoung Kim (INL), Mohammad G. Abdo (INL), Congjian Wang (INL), Yong-Joon Choi (INL), Juan Cristhian Luque Gutierrez (NCSU), Jason Hou (NCSU)*
- 1312 Pressurized Water Reactor Gadolinia Pin Location Optimization—*Jin Whan Bae (ORNL), Andrew Bielen (U.S. Nuclear Regulatory Commission), Ugur Mertuyrek (ORNL), Mehdi Asgari (ORNL)*
- 1322 Optimizerr: A BWR Nuclear Bundle Design Optimizing Tool—*Rasmus Renberg (Vattenfall Nuclear Fuel)*
- 1331 Extending MOOSE Capabilities with Discrete and Combinatorial Shape and Topology Optimization for Nuclear Engineering Applications—*Muhammad Ramzy Altahhan (NCSU), Sebastian Schunert (INL), Yousry Azmy (NCSU)*
- 1343 Special Session on TVA Watts Bar Benchmark: II**
- 1344 MC21/CTF Solutions to OECD/NEA TVA Watts Bar Unit 1 Multiphysics Cycle 1 Benchmark Exercises 1 and 2—*Edwin J. Grant (Naval Nuclear Laboratory), Daniel J. Kelly III (Naval Nuclear Laboratory), Brian N. Aviles (Naval Nuclear Laboratory)*
- 1354 MC21/CTF Solutions to OECD/NEA TVA Watts Bar Unit 1 Multiphysics Cycle 1 Benchmark Exercise 3—*Edwin J. Grant (Naval Nuclear Laboratory), Daniel J. Kelly III (Naval Nuclear Laboratory), Brian N. Aviles (Naval Nuclear Laboratory)*
- 1364 Development of Serpent -- CTF External Coupling for the OECD/NEA TVA WB1 Benchmark Activities—*T. Albagami (NCSU), P. Rouxelin (NCSU), A. Abarca (NCSU), S. Palmtag (NCSU), M. Avramova (NCSU), K. Ivanov (NCSU)*
- 1375 Methods for Reactor Physics Analyses: VII**
- 1376 The Random Ray Method Applied to Fixed Source Transport Problems—*P. Cosgrove (Univ. Cambridge), J.R. Tramm (ANL)*
- 1386 Application of the Random Ray Method to Global Variance Reduction in Radiation Shielding Problems—*V. Raffuzzi (Univ. Cambridge), P. Cosgrove (Univ. Cambridge), P.C. Shriwise (ANL), J.R. Tramm (ANL)*
- 1396 Monte Carlo Calculations in Support of Rod Insertion Measurements—*Tanja Goričanec (Jožef Stefan Institute), Luka Snoj (Jožef Stefan Institute), Marjan Kromar (Jožef Stefan Institute)*
- 1406 Applicability of Shift-Generated Albedos for Reactor Analysis with MPACT—*Nicholas Herring (Univ. Texas, Austin), Benjamin Collins (Univ. Texas, Austin), Kevin Clarno (Univ. Texas, Austin)*
- 1417 Machine Learning and Artificial Intelligence for Reactor Physics: I**
- 1418 State Estimation and Control in Digital Twins for TRIGA Research Reactors—*John Ross (Univ. Texas, Austin), Ben Collins (Univ. Texas, Austin), Kevin Clarno (Univ. Texas, Austin)*
- 1427 Demonstration of Microreactor Reactivity Control with Reinforcement Learning—*Majdi I. Radaideh (Univ. Michigan), Dean Price (Univ. Michigan), Kamal Abdulraheem (Univ. Michigan), Moutaz Elias (Lam Research)*
- 1437 Machine Learning Prediction of Pebble History in Pebble Bed Reactors—*Ian Kolaja (Univ. California, Berkeley), Tatiana Silarafas (Univ. California, Berkeley), Yves Robert (Univ. California, Berkeley), Jaewon Lee (Univ. California, Berkeley), Massimiliano Fratoni (Univ. California, Berkeley)*
- 1447 C3-LPO: A Machine Learning Based Surrogate Model for Reactor Design Evaluation and Optimization—*Kingsley Ogujiuba (NCSU), Jake Mikouchi-Lopez (NCSU), Gregory Delipei (NCSU), Jason Hou (NCSU)*
- 1457 Generative AI Tools in the Nuclear Engineering Community: A Survey-Based Evaluation of the Current Adoption and Impacts—*Oskari Pakari (École Polytechnique Fédérale de Lausanne), Alessandro Scolaro (École Polytechnique Fédérale de Lausanne), Carlo Fiorina (TAMU)*
- 1467 Multi-Physics Reactor Simulations and Validation: V**
- 1468 Initial Steps in a Serpent-McStas Two-Way Coupling and its Potential Applications at FRM II—*D. Bonete Wiese (Technische Univ. Munchen), C. Hauf (Technische Univ. Munchen), C. Reiter (Technische Univ. Munchen)*
- 1478 Full Core Calculation for FRM II with Serpent 2 and Ansys CFX—*Kaltrina Shehu (Forschungs-Neutronenquelle Heinz Maier-Leibnitz), Christian Reiter (Forschungs-Neutronenquelle Heinz Maier-Leibnitz)*

- 1488 Development of High-Fidelity Multi-Physics Platform JAMPAN—Kenichi Tada (Japan Atomic Energy Agency), Ryoichi Kondo (Japan Atomic Energy Agency), Tomohiro Kamiya (Japan Atomic Energy Agency), Taku Nagatake (Japan Atomic Energy Agency), Ayako Ono (Japan Atomic Energy Agency), Yasunobu Nagaya (Japan Atomic Energy Agency), Hiroyuki Yoshida (Japan Atomic Energy Agency)
- 1498 Recent Advanced Reactor Multiphysics Model Highlights in the Virtual Test Bed (VTB)—Abdalla Abou-Jaoude (INL), Guillaume Giudicelli (INL), Samuel Walker (INL), Emily Shemon (ANL), Hansol Park (ANL), Yiqi Yu (ANL), Nicolas Stauff (ANL)
- 1509 Data, Methods, Code Validation: V**
- 1510 Validation of ENDF/B-VIII.0 Cross-Section Library for METAL-FAST Graphite Systems—Paul Vollrath (Georgia Tech), Farzad Rahnema (Georgia Tech), Alex Shaw (ORNL)
- 1517 Investigation of the Impact of TSL Data Libraries and Geometry Variations on the MSRE Benchmark—Aidana Bauyrzhan (NCSU), Ayman I. Hawari (NCSU)
- 1527 Assessing Criticality Implications of Small Angle Neutron Scattering and Porosity Misrepresentation in ENDF/B-VIII.1 TSLs for Nuclear Graphite—Kemal Ramic (ORNL), Iyad Al-Qasir (ORNL), Friederike Bostelmann (ORNL), Chris W. Chapman (ORNL), Anne Campbell (ORNL), Kyle Grammer (ORNL), Zain Karriem (ORNL), Jose Ignacio Marquez Damian (European Spallation Source), Mark Baird (ORNL), Dorothea Wiarda (ORNL), Luke Daemen (ORNL), Eric Novak (ORNL), Jesse Brown (ORNL), Goran Arbanas (ORNL), Luiz Leal (ORNL), Germina Ilas (ORNL), William A. Wieselquist (ORNL)
- 1539 Comparison of Coarse Energy Group Structures for Graphite Moderated Molten Salt Reactors and Molten Salt Reactor Experiment Modeling—J. Faulkner (Georgia Tech), B. Petrovic (Georgia Tech)
- 1549 Reactivity Impact of Updated  $^{35}\text{Cl}$  Nuclear Data on the Molten Chloride Reactor Experiment—T. Cisneros (TerraPower), M. Wargon (TerraPower), K. Hanselman (LANL), T. Kawano (LANL), S.A. Kuvin (LANL), H.Y. Lee (LANL)
- 1561 Methods for Reactor Physics Analyses: VIII**
- 1562 Hybrid Resolution Approach in Energy and Geometry for Efficient Monte Carlo Coupled Depletion Calculation—Inhyung Kim (Univ. California, Berkeley), Vidor H. Lujan (Georgia Tech), Dan Kotlyar (Georgia Tech), Massimiliano Fratoni (Univ. California, Berkeley)
- 1572 Verification of Neutronics Analysis Method Using CBZ and GENESIS for a Prismatic High-Temperature Gas-Cooled Reactor—Akio Yamamoto (Nagoya Univ.), Go Chiba (Hokkaido Univ.)
- 1581 Parametric Analysis of Two-Point Reactors Kinetic Model—Anže Mihelčič (Jožef Stefan Institute), Gašper Žerovnik (Jožef Stefan Institute), Luka Snoj (Jožef Stefan Institute)
- 1591 Optimization of the Forced Fission Coefficient via Stochastic Calculus—Tamás Zoltan Hajas (Budapest Univ. Technology and Economics), Gabor Tolnai (Budapest Univ. Technology and Economics), Elod Pazman (Budapest Univ. Technology and Economics), David Legrady (Budapest Univ. Technology and Economics)
- 1600 Computation of HTR-PROTEUS Reaction Rates Ratios C8/F5, F8/F5, and F9/F5 Using MCNP6 with ENDF/B-VIII.0—John D. Bess (JFoster & Assoc.), Oliver Köberl (Axpo Power/Kernenergie)
- 1611 Methods for Reactor Physics Analyses: IX**
- 1612 Preliminary Study on Two-Dimensional SP3 Calculation Based on POD-Local/Global Iterations—Masato Ito (Nagoya Univ.), Akio Yamamoto (Nagoya Univ.), Tomohiro Endo (Nagoya Univ.), Yasuhiro Kodama (Nuclear Fuel Industries), Taichi Takeishi (Nuclear Fuel Industries), Hiroaki Nagano (Nuclear Fuel Industries)
- 1622 Real-Time 3D Fine Spatial Mesh Kinetics Simulator Using POD for Coupled Core—Kaito Ito (Nagoya Univ.), Kosuke Tsujita (Nuclear Engineering), Tomohiro Endo (Nagoya Univ.), Akio Yamamoto (Nagoya Univ.)
- 1632 Neutron Flux Reconstruction from Out-Core Sparse Measurements Using Data-Driven Reduced Order Modelling—Stefano Riva (Politecnico di Milano), Sophie Deanesi (Politecnico di Milano), Carolina Introini (Politecnico di Milano), Stefano Lorenzi (Politecnico di Milano), Antonio Cammi (Politecnico di Milano)
- 1642 Reconstruction of In-Core Power Distribution Based on POD Using Ex-Core Detector Signals—Yuki Urase (Nagoya Univ.), Tomohiro Endo (Nagoya Univ.), Akio Yamamoto (Nagoya Univ.)
- 1652 Hybrid Reduced-Order Modeling Based on Reduced Basis and PCQM Methods for Time-Dependent Diffusion Problem with Cross Section Feedback—Qicang Shen (Univ. Michigan), Brendan Kochunas (Univ. Michigan)
- 1663 Machine Learning and Artificial Intelligence for Reactor Physics: II**
- 1664 Comparison of Various DNN Modelling Strategies for Assembly Node Averaged Multigroup Cross Section Representation for Nodal Codes—Yi Meng Chan (KTH Royal Institute of Technology), Jan Dufek (KTH Royal Institute of Technology)

- 1674 An Alternative Approach for Group Constants Regression Based on Supervised Learning Techniques—*Lorenzo Loi (Politecnico di Milano), Stefano Riva (Politecnico di Milano), Carolina Introini (Politecnico di Milano), Enrico Padovani (Politecnico di Milano), Francesca Giacobbo (Politecnico di Milano), Antonio Cammi (Politecnico di Milano)*
- 1684 Predicting PWR Fuel Assembly CIPS Susceptibility with Convolutional Neural Networks: Performance and Uncertainty Quantification—*Aidan Furlong (NCSU), Farah Alsafadi (NCSU), Scott Palmtag (NCSU), Andrew Godfrey (Veracity Nuclear), Stanley Hayes (Duke Power), Xu Wu (NCSU)*
- 1694 Monte Carlo with Single-Cycle Latency: Optimization of a Continuous Energy Cross Section Lookup Kernel for AI Accelerator Hardware—*John Tramm (ANL), Bryce Allen (ANL), Kazutomo Yoshii (ANL), Andrew Siegel (ANL)*
- 1703 Advancements in the Genetic-Driven Optimisation of the Few-Group Structures for Lead Fast Reactors Analysis—*A. Aimetta (Politecnico di Torino), N. Abrate (Politecnico di Torino), M. Massone (ENEA), S. Dulla (Politecnico di Torino)*
- 1713 Data, Methods, Code Validation: VI**
- 1714 Neutron Shielding Calculation with the ACE-FRENDY-CBZ Sequence—*Go Chiba (Hokkaido Univ.)*
- 1722 Multigroup Cross-Section Data Processing for Deterministic Electron-Transport Calculation—*Xiaoying Li (Xi'an Jiaotong Univ.), Yunzhao Li (Xi'an Jiaotong Univ.), Ruizhi Shao (Xi'an Jiaotong Univ.), Ning Xu (Xi'an Jiaotong Univ.), Liangzhi Cao (Xi'an Jiaotong Univ.), Tiejun Zu (Xi'an Jiaotong Univ.), Yilin Liang (Xi'an Jiaotong Univ.), Junwei Qin (Xi'an Jiaotong Univ.), Wei Shen (CANDU Owners Group)*
- 1732 Analytic Sensitivity Coefficients for General Multigroup Infinite Medium  $k$ -Eigenvalue Problems—*Colin A. Weaver (LANL), Michael E. Rising (LANL), Joel A. Kulesza (LANL), Christopher M. Perfetti (Univ. New Mexico), Pablo A. Vaquer (LANL)*
- 1744 Leveraging the Tensor Train Format for Many Energy Groups Deterministic Neutron Transport—*Mario I. Ortega (LANL), Duc P. Truong (LANL)*
- 1753 Impact of the Multigroup Velocity Approximation in the Evaluation of the Effective Neutron Lifetime—*Giorgio Valocchi (CEA), Jean Tommasi (CEA)*
- 1763 Methods for Reactor Physics Analyses: XI**
- 1764 Particle Tracking in Involute-Based Reactor Geometries in SCONE Monte Carlo Code—*Mikolaj Adam Kowalski (Univ. Cambridge), Congjin Ding (Univ. Cambridge), Eugene Shwageraus (Univ. Cambridge)*
- 1774 Calculating the Change in Power Shape due to Localised Perturbations to Nuclear Data Using a Generalised Sensitivities Method in MONK—*Andrew J. Cox (ANSWERS Software Service), Richard P. Hiles (ANSWERS Software Service), Simon D. Richards (ANSWERS Software Service), Paul N. Smith (ANSWERS Software Service)*
- 1782 Seismic Deformation of Spacer Grids -- Extension of ARCADIA and Validation of Proposed Neutronic Model—*J. Marten (Framatome), M. Schneider (Framatome), G. Sieber (Framatome), H. Keßler (Framatome)*
- 1792  $UO_2$ -Mo Composite Fuel Model Development and Simulation Using the ENIGMA Code—*Aiden Peakman (Univ. Manchester), Glyn Rossiter (National Nuclear Laboratory)*
- 1801 Methods for Reactor Physics Analyses: X**
- 1802 Stability Analyses of the Monte Carlo Neutron Transport with Thermal-Hydraulics Feedback—*Kaiwen Li (Tsinghua Univ.), Nan An (Tsinghua Univ.), Hao Luo (Tsinghua Univ.), Jingang Liang (Tsinghua Univ.), Ding She (Tsinghua Univ.), Zhihong Liu (Tsinghua Univ.), Kan Wang (Tsinghua Univ.)*
- 1812 Coarse Mesh Finite Difference Acceleration for Pebble Tracking Transport in Griffin—*Yaqi Wang (INL), Joshua Hanophy (INL), Namjae Choi (INL)*
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- 1845 Data, Methods, Code Validation: VII**
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- 2036 Assessment of Worth of Telescopic Control Rods in a Pebble Bed Reactor Model—*Ethan P. Fowler (Univ. Wisconsin, Madison), Gabriel Paramucchio (Univ. Wisconsin, Madison), Adrien Couet (Univ. Wisconsin, Madison), Peter Wilkinson (Unaffiliated), Ben Lindley (Univ. Wisconsin, Madison)*
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- 2100 Coupled Simulation of the Sodium Cooled Fast Reactor BN-800 with the GRS System ATHLET-PARCS—*J. Bousquet (GRS), Y. Perin (GRS), R. Henry (GRS)*
- 2110 Breakeven Feasibility Study of Chlorine-Based MSFR with Discontinuous and Continuous Fuel Processes—*Eunhyug Lee (KAIST), Taesuk Oh (KAIST), Yonghee Kim (KAIST)*
- 2120 New Design Core Options of Micro-Modular Lead Cooled Fast Reactors (MMLFR) for Facilitating Natural Circulation—*Seungnam Lee (Hanyang Univ.), Ser Gi Hong (Hanyang Univ.)*
- 2130 Neutronic Benchmark on the Westinghouse Lead Fast Reactor—*Nicolas E. Stauff (ANL), Ahmed Abdelhameed (ANL), Alex Levinsky (Westinghouse Electric Co.), Fausto Franceschini (Westinghouse Electric Co.)*
- 2144 Neutronic Analysis of MOX-1000MWth Fast Reactor by Two-Step System Code MCS/RAST-F—*Saisundar Mohanty (Ulsan Nat'l Institute Science and Technology), Tran Quoc Tuan (Ulsan Nat'l Institute Science and Technology), Fathurrahman Setiawan (Ulsan Nat'l Institute Science and Technology), Murat Serdar Aygul (Ulsan Nat'l Institute Science and Technology), DeokJung Lee (Ulsan Nat'l Institute Science and Technology)*
- 2153 Light-Water Reactors Design and Core Analysis: II**
- 2154 Towards 2D Reference Deterministic Calculations in Support of Industrial Model Verification and Advanced Reflector Modeling Setup—*F. Inzirillo (Politecnico di Milano), A. Brighenti (Framatome), A. Cammi (Politecnico di Milano), L. Graziano (Framatome), A. Hebert (Polytechnique Montréal), G. Marleau (Polytechnique Montréal), S. Santandrea (CEA), B. Vezzoni (Framatome)*
- 2164 New Thermal and Leakage Synthetic Algorithms Applied to Best Estimate Schemes in Lattice Calculations—*A. Brighenti (Framatome), S. Santandrea (CEA), L. Graziano (Framatome), B. Vezzoni (Framatome)*
- 2174 Enhancing PWR Monte Carlo Simulations with GREAPMC: A GPU-Accelerated Approach—*Muhammad Rizwan Ali (Ulsan Nat'l Institute Science and Technology), Murat Serdar Aygul (Ulsan Nat'l Institute Science and Technology), Deokjung Lee (Ulsan Nat'l Institute Science and Technology)*
- 2184 Enrichment Interpolation for High-Assay Low-Enriched Uranium Fuel Macroscopic Cross Section for Polaris/PARCS—*Junsu Kang (Univ. Michigan), Andrew M. Ward (Univ. Michigan), Ugur Mertyurek (ORNL), Thomas J. Downar (Univ. Michigan)*
- 2194 Core Physics Characteristics of Extended Enrichment and Higher Burnup Boiling Water Reactor Fuel—*Ugur Mertyurek (ORNL), Riley Cumberland (ORNL), William A. Wieselquist (ORNL)*
- 2205 Designing Reactors for Integrated Energy Systems and Space Nuclear Reactors Design and Core Analysis**
- 2206 Comparative Analysis on the Passive Flow Rate Control in the Load-Follow Simulation for HoloS-Quad Microreactor—*Sooyoung Choi (Univ. Michigan), Qicang Shen (Univ. Michigan), Claudio Filippone (HoloGen), Brendan Kochunas (Univ. Michigan)*
- 2216 Modeling Nuclear Thermal Propulsion Using Nodal Diffusion Codes with Jacobian-Free Newton Krylov Generated Correction Parameters—*Jacob Smith (Georgia Tech), Dan Kotlyar (Georgia Tech)*
- 2226 Concept Study of a Fission Fragment Propulsion Nuclear System—*Dacai Zhang (Tsinghua Univ.), Xirui Zhang (Tsinghua Univ.), Zhechuan Tan (Tsinghua Univ.), Yuanhao Gou (Tsinghua Univ.), Minzhi Xiong (Tsinghua Univ.), Ganglin Yu (Tsinghua Univ.)*
- 2236 Mass and Power Estimations of Moderated and Unmoderated HALEU Fueled Heat-Pipe Reactors for Space Applications—*Riccardo Boccelli (Politecnico di Milano), Marco E. Ricotti (Politecnico di Milano), Angelica Peressotti (Thales Alenia Space Italia), Stefano Lorenzi (Politecnico di Milano), Andrea D'Ottavio (Thales Alenia Space Italia)*
- 2247 Advanced Reactors Design and Core Analysis: I**
- 2248 A Preliminary Neutronic Analysis of the ALFRED Reactor Core—*V. Vitali (newcleo), M. Falabino (newcleo), D. Tomatis (newcleo), M. Carta (newcleo)*

- 2258 Reactor Physics Modelling Challenges of the FLEX Reactor—*Simon Boddington (MoltexFLEX), Tom Taylor (MoltexFLEX), Peter Haigh (MoltexFLEX), Eduardo Cuoc (MoltexFLEX), Chris Hankinson (MoltexFLEX), Luke Godfrey (MoltexFLEX)*
- 2268 Updates on the OECD NEA Working Party on Scientific Issues and Uncertainty Analysis of Reactor Systems (WPRS)—*Oliver Buss (OECD NEA), Hakim Ferroukhi (Paul Scherrer Institute), Kostadin Ivanov (NCSU)*
- 2278 Initial Demonstration of New Griffin Capability for Simulating the Running-In Phase of Pebble-Bed Reactors with Multiphysics—*Joshua Hanophy (INL), Javier Ortensi (INL), Paolo Balestra (INL), Yaqi Wang (INL)*
- 2288 Calculation and Analysis of Physical Characteristics of Gaseous Fuel Reactor—*Dacai Zhang (Tsinghua Univ.), Wenxiang Fang (Tsinghua Univ.), Zhechuan Tan (Tsinghua Univ.), Minzhi Xiong (Tsinghua Univ.), Yu Ganglin (Tsinghua Univ.)*
- 2299 Fuel-Cycle Physics and Scenarios**
- 2300 A Study of Fuel Choice Effects when Transitioning to a Closed Fuel Cycle—*S. Richards (ANL), T. Kim (ANL)*
- 2308 3D Full Core Depletion Analysis Using BSOLVE+MCNP6 Analysis of the Washington State University Reactor—*Meng-Jen (Vince) Wang (Univ. Nevada, Las Vegas), Glenn E. Sjoden (Univ. Utah), C. Corey Hines (Washington State)*
- 2317 Thermal Analysis of the Sirius-3 Nuclear Propulsion Fuel Experiments—*Frederick N. Gleicher (INL), Mustafa K. Jaradat (INL), Sebastian Schunert (INL), Mark DeHart (INL)*
- 2330 Progress on Transport and Transmutation Analysis of Proton Beam Irradiating Long-Lived Spent Nuclear Waste—*Charlotte I. Wickert (MIT), Grigor Tukharyan (MIT), Jiankai Yu (MIT), Areg Danagoulian (MIT), Zachary Hartwig (MIT), Benoit Forget (MIT)*
- 2338 Long Time Scale Multiphysics Simulation of Spent Nuclear Fuel Canister in MOOSE—*Rodrigo de Oliveira (INL), Joshua Hanophy (INL), Paolo Balestra (INL), Derek Gaston (INL)*
- 2347 Advanced Reactors Design and Core Analysis: II**
- 2348 Implementation of a Novel ERANOS Procedure for the Adjoint Power Evaluation in Coupled Depletion Problems—*Matteo Stanzani (Univ. Bologna), Donato Maurizio Castelluccio (ENEA), Francesco Lodi (ENEA), Vincenzo Giuseppe Peluso (ENEA), Giacomo Grasso (ENEA), Marco Sumini (Univ. Bologna)*
- 2358 Reactivity Decrease by Assembling Fuel Assemblies in a Heavy Water-Cooled Reactor—*Tomoatsu Shinohara (Tokyo City Univ.), Naoyuki Takaki (Tokyo City Univ.)*
- 2367 Fuel Cycle Analysis of Wielenga Innovation Static Salt Reactor (WISSR)—*Puran Deng (Univ. Michigan), Won Sik Yang (Univ. Michigan), Thomas Wielenga (Wielenga Innovation Foundation)*
- 2377 Multiphysics Analysis of a Minor Actinide Burning Molten Salt Reactor—*J. Eickman (Univ. Wisconsin, Madison), M. Nyberg (Univ. Wisconsin, Madison), U. Baker (Univ. Wisconsin, Madison), B. Lindley (Univ. Wisconsin, Madison)*
- 2387 Dynamics and Stability Analysis Study of a Thermal Molten Salt Reactor—*Thabit Abuqudaira (TAMU), Ümran Üzen (TAMU), Dahvien Dean (TAMU), Pavel Tsvetkov (TAMU), Piyush Sabharwall (INL)*
- 2397 Light-Water Reactors Design and Core Analysis: III**
- 2398 The LVR-15 Reactor Full Core Analysis in Serpent 2/ RINNOVO—*Jan Pinta (Research Centre Rez)*
- 2408 On Reactor Neutron Noise Induced by Fuel Assembly Vibrations in Large and Small Heterogeneous Water-Cooled Cores—*Salma Magdi Hussein (Chalmers Univ. Technology), Paolo Vinai (Chalmers Univ. Technology), Christophe Demaziere (Chalmers Univ. Technology)*
- 2418 Neutronic Design of a PWR-Based SMR (Small Modular Reactor) Core Using GdN Coating Burnable Absorber for Soluble Boron-Free Operation—*Sung Hyun Cho (Hanyang Univ.), Woojin Lee (Hanyang Univ.), Ser Gi Hong (Hanyang Univ.)*
- 2427 ANCKVIPRE Coupled Code Application to PWR Rod Withdrawal from Subcritical Event Analysis—*Peter A. Hilton (Westinghouse Electric Co.), Yixing Sung (Westinghouse Electric Co.), Michael Gavalek (Westinghouse Electric Co.), John McMonigal (Westinghouse Electric Co.), Daniel Torres (Westinghouse Electric Co.), Gregory Stehle (Westinghouse Electric Co.)*
- 2437 LDR Lite Benchmark: Coupled 3D Neutronics and Thermal-Hydraulics Analysis of a Control Rod Drop Transient—*Rebekka Komu (VTT Technical Research Centre of Finland), Ville Valtavirta (VTT Technical Research Centre of Finland), Riku Tuominen (VTT Technical Research Centre of Finland), Seppo Hillberg (VTT Technical Research Centre of Finland)*
- 2447 Micro-Reactors Design and Core Analysis: I**
- 2448 The Preliminary Assessment of the Feasibility of Transporting a Spent Microreactor from Shielding Perspective—*T. Fei (ANL), M. Atz (ANL)*
- 2458 Modeling Approaches for Depletion of a TRISO-Fueled Microreactor—*Keenan J. Hoffman (LANL), Alexis Maldonado (LANL), Todd S. Palmer (Oregon State)*

2468 Global Core Environment Effects on Multigroup Cross Sections for Finer Energy Structures Within Microreactors—*Aaron Sommer (Georgia Tech), Farzad Rahnama (Georgia Tech), Abderrafi M. Ougouag (Georgia Tech), Dingkang Zhang (Georgia Tech), Mark DeHart (Georgia Tech)*

2478 Exploring Effects of Homogenization on an OpenMC Depletion Analysis of a TRISO Fueled, Helium Cooled Microreactor—*Lewis I. Gross (Univ. Wisconsin, Madison), Patrick Shriwise (ANL), Benjamin Lindley (Univ. Wisconsin, Madison), Paul P.H. Wilson (Univ. Wisconsin, Madison)*

### 2489 Fuel Management and Optimization

2490 Loading Pattern Optimization for LWRs Using Monte Carlo Tree Search—*Rikuto Kasama (Nagoya Univ.), Akio Yamamoto (Nagoya Univ.), Tomohiro Endo (Nagoya Univ.)*

2500 Scalarized Multiobjective Fuel Loading Optimization of Extended-Cycle NuScale Power Module with Evolutionary Algorithms—*Thomas Jayasankar (Univ. Michigan), Dean Price (Univ. Michigan), Majdi I. Radaideh (Univ. Michigan), Brendan Kochunas (Univ. Michigan)*

2510 Learning Nuclear Fuel Management, Case Study: Design of a Two-Year Equilibrium Cycle of a BWRX-300-like Small Modular Reactor—*Arturo Jiménez-Facio (Univ. Nacional Autónoma de México), Juan-Luis Francois (Univ. Nacional Autónoma de México)*

2520 Stochastic Optimization to Find Reference Core Configuration for Refueling Simulations of Waste-Burning Stable Salt Reactor—*Seungug Jae (Univ. Michigan), Won Sik Yang (Univ. Michigan), Thanh Hua (ANL), Yan Cao (ANL), Tom Taylor (Moltex Energy), Luke Godfrey (Moltex Energy)*

2529 First Results of Uranium Nitride Fuel Characterization Using Accelerated Fuel Qualification Process—*A. Levinsky (LANL), Z. Miller (LANL), M. Fratoni (Univ. California, Berkeley), T. Matthews (LANL), G.T. Craven (LANL), M.W.D. Cooper (LANL), V. Mehta (LANL), D.A. Andersson (LANL), J.T. Rizk (LANL)*

### 2539 Micro-Reactors Design and Core Analysis: II

2540 Mobile Small Reactor Minor-Actinide Proliferation Resistant Fuel in LEU+ Once-Through Operation Cycle Performance Verification—*Gray S. Chang (JFoster & Assoc.), John D. Bess (JFoster & Assoc.), Patrick Moo (JFoster & Assoc.), Julie Foster (JFoster & Assoc.)*

2554 Progress Toward the Development of a High-Fidelity Neutronic Model of MARVEL Using Griffin—*S. Terlizzi (INL), I. Trivedi (INL)*

2561 Steady-State and Transient Analysis of a Heat-Pipe Cooled Micro-Reactors Using the DireWolf Code Suite—*Tatiana Silaraferas (Univ. California, Berkeley), Vefa Kucukboyaci (Westinghouse Electric Co.), Mykola Boychenko (Westinghouse Electric Co.), Massimiliano Fratoni (Univ. California, Berkeley)*

2571 Modeling of a Representative MHTGR 350MWth Supercell with RAPTOR—*Luke Wells (Georgia Tech), Andrew Johnson (Ultra Safe Nuclear), Dan Kotlyar (Georgia Tech)*

### 2581 Workshops

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2582 Core Level SMR Simulations with the Kraken Framework

2583 MCNP6® New Features and Improvements for Reactor Physics Applications

2584 ART/NEAMS Modeling and Simulation – Pebble Bed Reactors

2585 Scientific Machine Learning for Nuclear Engineering Applications

2586 Validation with SCALE: How to Connect Paper Reactors with Reality

2587 ART/NEAMS Modeling and Simulation – Molten Salt Reactors