**Y-12 National Security Complex**
**301 Bear Creek Rd, Oak Ridge, TN 37830**

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| **SUBJECT:** | Report on Foreign Travel to ICNC 2023, Japan |
| **DATE:** | 10/31/2023 |
| **TO:** | Dr. Angela Chambers, Nuclear Criticality Safety Program Manager, National Nuclear Security Administration / NA-ESH-21 |
| **FROM:** | Matthew Buttrey, Benjamin Martin, and Kevin Reynolds |

**MEETING TITLE: The 12th International Conference on Nuclear Criticality Safety**

**MEETING LOCATION: Sendai International Center, Miyagi, Japan**

**MEETING DATES: October 1st – 6th, 2023**

**ATTENDEES ON BEHALF OF NCSP:** Matthew Buttrey, Benjamin Martin, and Kevin Reynolds

**MEETING PURPOSE:** Opportunity for communication among an international delegation of researchers, engineers, plant operators, students and regulators related to criticality safety.

**MEETING BENEFITS TO THE NCSP:** Attendees were able to share information on current projects at Y-12 and UPF and engage in a broader conversation with conference participants on progress in the international NCS community. Attendees developed relationships with other professionals and gained knowledge that can translate back to the work at Y-12 and UPF, furthering the ability for our sites and the NCSP to deliver for the mission.

**PURPOSE OF TRAVEL**
Attend the International Conference on Nuclear Criticality Safety in Sendai, Japan.

**Persons Contacted at ICNC 2023**
General discussions with conference attendees, both at sister DOE sites as well as members of the international NCS community.

**Presentations, Chair Responsibilities, Etc.:**
Sessions attended are highlighted green and the two presentations given by listed attendees are highlighted yellow.

**Distribution:**
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## *Time Schedule*

*Sunday, October 1, 14:00–16:30: Workshop, Room 2*
*Sunday, October 1, 15:00–19:00: Registration, Exhibition Hall 1 (Welcome Cocktail for 17:00–19:00)*

| Monday, October 2 | Tuesday, October 3 | Wednesday, October 4 | Thursday, October 5 |
|---|---|---|---|
| | *8:00–8:30, Coffee*<br>*Exhibition Hall 1* | | |
| *8:30–11:00, Plenary Session*<br>*Exhibition Hall 2* | *8:30–10:35, Session 4*<br>*Room 1: Track 1, Codes and Other Calculation Methods*<br>*Room 2: Track 8, Criticality Accidents and Incidents*<br>*Room 3: Track 6, Operational Practices and Safety Cases*<br>*Room 4: Track 5, Standards, Assessment Methodology, Regulations* | *8:30–10:35, Session 7*<br>*Room 1: Track 1, Codes and Other Calculation Methods*<br>*Room 2: Track 7, Storage, Transport, and Disposal Issues*<br>*Room 3: Track 9, Professional Development Issues and Training*<br>*Room 4: Track 4, Measurements, Experiments, and Benchmarks* | *8:30–10:35, Session 11*<br>*Room 1: Track 3, Uncertainty and Sensitivity Analysis*<br>*Room 2: Track 7, Storage, Transport, and Disposal Issues*<br>*Room 3: Special Session 2, Machine Learning, Deep Learning* |
| *11:00–11:30, Coffee*<br>*Exhibition Hall 1* | | *10:35–11:05, Coffee*<br>*Exhibition Hall 1* | |
| *11:30–12:45, Session 1*<br>*Room 1: Track 2, Nuclear Data*<br>*Room 2: Track 8, Criticality Accidents and Incidents*<br>*Room 3: Track 6, Operational Practices and Safety Cases*<br>*Room 4: Special Session 1, Fukushima Dai-Ichi Nuclear Power Plant* | *11:05–12:45, Session 5*<br>*Room 1: Track 1, Codes and Other Calculation Methods*<br>*Room 2: Track 7, Storage, Transport, and Disposal Issues*<br>*Room 3: Track 4, Measurements, Experiments, and Benchmarks*<br>*Room 4: Track 5, Standards, Assessment Methodology, Regulations* | *11:05–12:45, Session 8*<br>*Room 1: Track 1, Codes and Other Calculation Methods*<br>*Room 2: Track 7, Storage, Transport, and Disposal Issues*<br>*Room 3: Track 9, Professional Development Issues and Training*<br>*Room 4: Track 4, Measurements, Experiments, and Benchmarks* | *11:05–12:45, Closing Session*<br>*Exhibition Hall 2* |
| | *12:45–14:00, Lunch*<br>*Exhibition Hall 1* | | |
| *14:00–15:40, Session 2*<br>*Room 1: Track 2, Nuclear Data*<br>*Room 2: Track 8, Criticality Accidents and Incidents*<br>*Room 3: Track 6, Operational Practices and Safety Cases*<br>*Room 4: Special Session 1, Fukushima Dai-Ichi Nuclear Power Plant* | *14:00–16:05, Session 6*<br>*Room 1: Track 2, Nuclear Data*<br>*Room 2: Track 7, Storage, Transport, and Disposal Issues*<br>*Room 3: Track 6, Operational Practices and Safety Cases*<br>*Room 4: Track 4, Measurements, Experiments, and Benchmarks* | *14:00–15:40, Session 9*<br>*Room 1: Track 3, Uncertainty and Sensitivity Analysis*<br>*Room 2: Track 7, Storage, Transport, and Disposal Issues*<br>*Room 3: Track 10, Future Challenges*<br>*Room 4: Track 4, Measurements, Experiments, and Benchmarks* | |
| *15:40–16:10, Coffee*<br>*Exhibition Hall 1* | *16:05–16:10, Coffee Exhibition Hall 1* | *15:40–16:10, Coffee*<br>*Exhibition Hall 1* | |
| *16:10–17:50, Session 3*<br>*Room 1: Track 1, Codes and Other Calculation Methods*<br>*Room 2: Track 8, Criticality Accidents and Incidents*<br>*Room 3: Track 6, Operational Practices and Safety Cases*<br>*Room 4: Special Session 1, Fukushima Dai-Ichi Nuclear Power Plant* | *16:10–17:50, Poster Session*<br>*Exhibition Hall 1* | *16:10–17:50, Session 10*<br>*Room 1: Track 3, Uncertainty and Sensitivity Analysis*<br>*Room 2: Track 7, Storage, Transport, and Disposal Issues*<br>*Room 3: Track 10, Future Challenges*<br>*Room 4: Track 4, Measurements, Experiments, and Benchmarks* | |

*Tuesday, October 3, 18:30–21:00: Banquet, Hotel Metropolitan Sendai (Cocktail for 18:30–19:00)*
*Friday, October 6: Technical Tours*

## *Session 1: MONDAY, OCTOBER 2, 11:30 – 12:45*

| Room 1<br>Track 2<br>NUCLEAR DATA<br><br>Chairs: Shoichiro Okita (JAEA), Michael L. Zerkle (Naval Nuclear Lab.) | Room 2<br>Track 8<br>CRITICALITY ACCIDENTS AND INCIDENTS<br>Chairs: Yuichi Yamane (JAEA) Matthieu Duluc (Framatome) | Room 3<br>Track 6<br>OPERATIONAL PRACTICES AND SAFETY CASES<br>Chairs: Georgios Kyriazidis (CEA), Andrew Charles Buchan (AWE) | Room 4<br>Special Session 1<br>FUKUSHIMA DAI-ICHI NUCLEAR POWER PLANT<br>Chairs: Jesson Hutchinson (LANL), Yasushi Nauchi (CRIEPI) |
|---|---|---|---|
| Thermal Neutron Scattering Law of $UBe_{13}$ and $PuBe_{13}$<br>*J.L. Wormald, M.L. Zerkle* | Completion of the CEA Guide for Criticality Accident Studies<br>*Michael Laget, Francis Barbry* | APM Reprocessing Facility – Dismantling of Hot Cells Dedicated to Uranium and Plutonium Purification – Criticality Safety Case<br>*Laurent Cholvy, Frédéric Antegnard, Koalyann Nuon et al.* | Impact on Criticality of Using Pure Water with Coriumcoming from Nuclear Reactor Core Melting<br>*Aurélie Bardelay, Wilfried Monange* |
| Molecular Dynamics Analysis of Reactor Graphite for Preparing Thermal Neutron Scattering Law<br>*Shoichiro Okita, Minoru Goto* | More Critiques of Historical Criticality Accidents through the Lens tf Behavioral Economics<br>*Brittany Williamson* | Strategic Characterisation to Support the Development of Criticality Safety Assessments for Decommissioning<br>*B. J. Greenhalgh, T. Page* | Criticality Assessment Assuming Spent Fuel Failure at Fukushima Daiichi Nuclear Power Plant Unit 1<br>*Takahiro Koide, Takashi Yoshii, Keita Fukawa* |
| Impact of Light Water Covariance on Integral Benchmarks<br>*Chris W. Chapman, Doro Wiarda, B.J. Marshall* | The Nuclear Criticality Accident in Japan, Revisited<br>*Hiroshi Okuno, Kenya Suyama* | Phenix – The Neutronography Reactor and Its Auxialiary Circuits – Criticality Safety Issues<br>*Laurent Cholvy, Quentin Simon, Nadine Bonny et al.* | Features of Fukushima Daiichi Nuclear Power Plant Accident and Information on Fuel Debris Obtained from PCV Internal<br>*Kenji Owada, Masakuni Kumeda, Takeshi Honda et al.* |

## *Session 2: MONDAY, OCTOBER 2, 14:00 – 15:40*

| Room 1<br>Track 2<br>NUCLEAR DATA<br><br>Chairs: Dimitri Alexandre Rochman (PSI)<br>Tomoaki Watanabe (JAEA) | Room 2<br>Track 8<br>CRITICALITY ACCIDENTS AND INCIDENTS<br>Chairs: Hiroshi Okuno (JAEA)<br>Michael Laget (CEA) | Room 3<br>Track 6<br>OPERATIONAL PRACTICES AND SAFETY CASES<br>Chairs: Andrew B. Smiley (LANL)<br>Amy Elizabeth van der Vyver (Sellafield) | Room 4<br>Special Session 1<br>FUKUSHIMA DAI-ICHI NUCLEAR POWER PLANT<br>Chairs: Aurélie Bardelay (IRSN)<br>Yasushi Nauchi (CRIEPI) |
|---|---|---|---|
| Automated, Reproducible Data Processing, Verification, and Validation at the NEA<br>*Andrew Holcomb, Daniela Foligno, Michael Fleming* | A New Analysis of the Windscale Criticality Accident Using Monte-Carlo Code MONK<br>*Emma Sayce, Neil Harris, Nathan Sayle* | JHR Fuel Storage Pool Criticality Safety Analysis<br>*Eric Fillastre, Georges Kyriazidis, Manuel Bergman et al.* | Criticality Control Method for Fuel Debris Retrieval in Fukushima Daiichi NPP<br>*Yasuhiro Harada, Makoto Nakano, Yamato Hayashi et al.* |
| The TENDL Nuclear Data Library: For Criticality Calculations and More<br>*D. Rochman, A.J. Koning, S.C. van der Marck* | Multiphysics Analysis of Reactivity Changes due to Solution Flow in the Past Criticality Accident at Windscale Works in 1970<br>*Kodai Fukuda, Yuichi Yamane* | Providing a Criticality Warning System Omission Case for a Legacy Reactor Facility at AWE<br>*Essam Mohammed, Mark A Roydhouse* | Development of Criticality Approach Monitoring Method Using Neutron Detectors for Fuel Debris Retrieval in Fukushima Dai-ichi NPP<br>*Yamato Hayashi, Makoto Nakano, Yuichi Morimoto* |
| Comparison of Neutronic Characteristics of BWR Burnup Fuel between JENDL-4.0 and JENDL-5<br>*Tomoaki Watanabe, Kenichi Tada, Tomohiro Endo et al.* | Preliminary analysis of GODIVA supercritical transient behaviors by using the Multi-region Integral Kinetic code including delayed neutron effect<br>*Hiroki Takezawa, Toru Obara* | Criticality Safety Analysis of the RECUMO Project<br>*Gert Van den Eynde, Mireille Gysemans, Marijke Geerts et al.* | Investigation of Sub-criticality Monitoring System Based on Feynman-alpha Method for Large-Scale Fuel Debris<br>*Satoshi Wada, Makoto Shimizu, Yamato Hayashi et al.* |
| Comparison of Calculated Bare Critical Masses between Two Versions of the Japanese Evaluated Nuclear Data Library, JENDL-5 and JENDL-4.0<br>*Akito Oizumi* | Sensitivity Analysis of the Parameters in Consequence Analysis of Postulated Fuel Debris Criticality Accident in Fukushima Dai-ichi NPP<br>*Yuichi Yamane, Kenya Suyama* | EPEE: A Tool to Compare the Moderating Efficiency of a Material to the One of Water<br>*Aurélien Dorval, David Noyelles, Michaël Prigniau et al.* | Detector Shielding-Moderator Design Effect to Eigenvalue Estimation Results Based on Feynman-a Method<br>*Rei Kimura, Yamato Hayashi, Makoto Shimizu* |

## *Session 3: MONDAY, OCTOBER 2, 16:10 – 17:50*

| Room 1<br>Track 1<br>CODES AND OTHER CALCULATION METHODS<br>Chairs: Michael Rising (LANL)<br>Yasunobu Nagaya (JAEA) | Room 2<br>Track 8<br>CRITICALITY ACCIDENTS AND INCIDENTS<br>Chairs: Emma Louise Sayce (UKNNL)<br>Kodai Fukuda (JAEA) | Room 3<br>Track 6<br>OPERATIONAL PRACTICES AND SAFETY CASES<br>Chairs: Tom Page (Cerberus Nuclear)<br>Laurent Cholvy (CEA) | Room 4<br>Special Session 1<br>FUKUSHIMA DAI-ICHI NUCLEAR POWER PLANT<br>Chairs: Catherine Percher (LLNL)<br>Yasushi Nauchi (CRIEPI) |
|---|---|---|---|
| Novel Methods in MONK for Criticality Modelling in Highly Disordered Random Heterogeneous Media<br>*Jessica Fildes, Richard Hiles, Brian Jones et al.* | Generalized CAAS Probe Positioning Methodology for a Variety of Fissile Material Processes<br>*Adrien Gallozzi Ulmann, Prosper Liu, Sasha Philips et al.* | Review of the Facility Criticality Safety Manager Role at AWE<br>*Andrew Buchan, Christopher Hodkinson, Paul Holloway et al.* | Development of the Fuel Debris Criticality Characteristics Measurement System<br>*Jun Nishiyama, Seiya Manabe, Hideki Harano et al.* |
| Random Media Criticality Analysis Methods in Monte Carlo Solver Solomon<br>*Taro Ueki* | Criticality Accident Alarm System Modeling for the Uranium Processing Facility<br>*M. Buttrey, S. Goluoglu, K. Reynolds* | Dealing with the Past and Present – Criticality Safety Considerations Associated with Residues Clean-up at the NNL Preston Laboratory<br>*Deborah Hill, Lauren Flint, Martin Watson et al.* | Estimation of $^{235}U$ Enrichment by Neutron Induced Gamma Ray Spectroscopy<br>*Yasushi Nauchi, Shunsuke Sato, Motomu Suzuki et al.* |
| Overview of NEA/WPNCS Activities on Criticality Problems in Random Media<br>*Andrea Zoia, Jessica Fildes, Brian Jones et al.* | Using MCNP to Predict Effects of a Postulated Criticality Accident on Personal Dosimetry<br>*Mark N Neeley, Krista I Kaiser, Matthew M. Conrady* | Criticality Control Flow Diagram: Your NCS Assessment in One Diagram<br>*Grégory Caplin, Raphaël Reynaud, Gilles Neron de Surgy* | Critical Assemblies in JAEA and the Role of the New STACY<br>*Hiroki Sono, Kazuhiko Izawa, Tsutomu Yoritsune et al.* |
| Method for Criticality Calculations and Estimation of the Fissile Mass Based on the Theory of Multiplicity Counting<br>*Imre Pázsit, Victor Dykin, Senada Avdič* | Criticality Safety Evaluation of High Radioactive Liquid Waste during the Evaporation to Dryness Process at Tokai Reprocessing Plant<br>*Takatomo Miura, Atsunari Kudo, Daisuke Koyama et al.* | Criticality Safety Officer Program at Technical Area 55 in Los Alamos National Laboratory<br>*Leah Berman, David Kimball, James Bunsen* | Debris-Simulated Core Analysis under Fuel Procurement Constraints in New STACY Experiments<br>*Shouhei Araki, Satoshi Gunji, Yu Arakaki et al.* |

## *Session 4: TUESDAY, OCTOBER 3, 8:30 – 10:35*

| Room 1<br>Track 1<br>CODES AND OTHER CALCULATION METHODS<br>Chairs: Simon Richards (Jacobs)<br>Kenichi Yoshioka (Toshiba ESS) | Room 2<br>Track 8<br>CRITICALITY ACCIDENTS AND INCIDENTS<br>Chair: Mark N. Neeley (PNNL)<br>Hiroki Takezawa (Nagaoka Univ. of Tech.) | Room 3<br>Track 6<br>OPERATIONAL PRACTICES AND SAFETY CASES<br>Chairs: Essam Mohammed (AWE)<br>Gert Van den Eynde (SCK CEN) | Room 4<br>Track 5<br>STANDARDS, ASSESSMENT METHODOLOGY, REGULATIONS<br>Chairs: Alexander Lang (ORNL)<br>David Noyelles (CEA) |
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| Verification and Validation of the New MCNP6.3 Criticality Features<br>*Michael E. Rising, Alexander R. Clark, Jennifer L. Alwin* | IRSN Progress on Emergency Preparedness and Response in Case of Criticality Accident<br>*Julien Rannou, Gaël Loubert* | Challenges in the Development of the Metal Purification Process at Y-12<br>*Benjamin Martin, Tom Young, Chris Haught* | A Competent Authority's View on Licensing and Foreign Certificate Validation of Transport Packages for Fissile Material<br>*Dirk Schulze Grachtrup, Benjamin Ruprecht* |
| Confirmation of ICSBEP Benchmarking (LCT and LST) Using MVP3 Code<br>*Shigeaki Aoki* | An Analysis of Criticality Safety "Near Misses"<br>*Fabien Duret, Matthieu Duluc, Johann Herth* | Development of Low Enriched Uranium Plus (LEU+) Enrichment Capability and the Associated Impacts on Criticality Safety<br>*Mark Savage, Charlotta Sanders* | Regulating Criticality Safety in the UK: Experience from Office for Nuclear Regulation Cross-sites Inspection Series<br>*Eoin Flannery, Clive Ingram, Adam Nichols* |
| Automating the Production of Criticality Handbook Curves<br>*Sareena Hussain, Stuart Watson, Monis Janjua et al.* | Neutron Leakage, H/D, and Geometric Buckling Changes in Containers with Small H/D Ratios<br>*Ashley R. Raster, Robert D. Busch, John A. Miller* | Development of a Modular Storage of Non Irradiated Mixed Oxide Fuel<br>*C. Jacques Gasnot, S. Duquenne, G. Caplin* | Strategies for Establishing Adequate Subcritical Margin for Cases Involving Insufficient Benchmark Data at Enrichment and Fuel Fabrication Facilities (HALEU Applications)<br>*Jeremy W. Munson* |
| Radiation Safety Information Computational Center: An Information Analysis Center for Nuclear Criticality Safety<br>*Timothy E. Valentine* | Nuclear Criticality Safety Lessons Learned from the Rocky Flats Plant Fires<br>*Patrick Huston, Kaelin Glover* | Neutron Moderating Materials Other than Water: How, Why and When the Problems Arose and the Solutions Proposed by the CEA<br>*Georgios Kyriazidis, Aurelien Dorval*<br><br>A Device Designed to Detect Hydrogen in Moderation Controlled Wokshops<br>*Olivier Ravat* | Assessment of a Sophisticated PWR Burn-up Credit Application for a Transport Cask Design<br>*Benjamin Ruprecht, Dirk Schulze Grachtrup*<br><br>Development of a SKB Burn-up Credit Methodology for BWR<br>*Fredrik Johansson, Jesper Kierkegaard, John Loberg et al.* |

## *Session 5: TUESDAY, OCTOBER 3, 11:05 – 12:45*

| Room 1<br>Track 1<br>CODES AND OTHER CALCULATION METHODS<br>Chairs: Yi-Kang Lee (CEA)<br>Kenya Suyama (JAEA) | Room 2<br>Track 7<br>STORAGE, TRANSPORT, AND DISPOSAL ISSUES<br>Chairs: Michel Call (USNRC)<br>Tim Hicks (Galson Sciences) | Room 3<br>Track 4<br>MEASUREMENTS, EXPERIMENTS, AND BENCHMARKS<br>Chairs: Catherine Percher (LLNL)<br>Cheol Ho Pyeon (Kyoto Univ.) | Room 4<br>Track 5<br>STANDARDS, ASSESSMENT METHODOLOGY, REGULATIONS<br>Chairs: Dirk Schulze Grachtrup (BASE)<br>Eoin Flannery (ONR) |
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| Recent Developments to MONK® and Visual Workshop for Criticality Safety Applications<br>*Simon Richards, Adam Bird, Andrew Cox et al.* | International Approaches to Post-Closure Criticality Safety : French Agency Strategy<br>*A. Feuerle* | Status of the International Criticality Safety Benchmark Evaluation Project<br>*C. Percher, J.D. Bess, W.J. Marshall et al.* | Basis of 10CFR71.15(b) for Consideration into SSR-6 Para. 417<br>*Alexander Lang, Andrew B. Barto, Douglas G. Bowen* |
| New Bateman Equation Solvers in MENDEL version 3.1<br>*S. Lahaye, A. Anne, R. Baron et al.* | Comparison of Burn-up Credit Methodologies for Post-Closure Criticality Safety Assessments Using a Simplified Reference Modelling Configuration<br>*Jasdeep Bansal, Callum Eldridge, Ahmed Shama et al.* | The Case for and Against a Gadolinium Bias in SCALE: Round 2<br>*W.J. Marshall, A.M. Shaw, T.M. Greene et al.* | International Standards for Nuclear Criticality Safety<br>*Ben Webborn, Douglas G. Bowen, Grégory Caplin* |
| Improvements of the SCALE Testing Framework<br>*Shane W. D. Hart, Seth R. Johnson, Robert A. Lefebvre et al.* | UK Perspective on Post-Closure Criticality Safety Assessments in the Final Disposal of Higher Activity Waste<br>*Liam Payne, Stuart Watson, Robert Mason et al.* | Preliminary Model Development in Support of a New Criticality Safety Benchmark for HEU Metal Annuli and Cylinders with Reflectors of Three- to Nineteen-Inch Thickness<br>*Kathryn Worrell, Gabriel Lentchner, John Mihalczo et al.* | New CEA Handbooks for Criticality Safety Assessment Demonstrations<br>*David Noyelles, Aurélien Dorval, Michaël Prigniau* |
| The CRISTAL Criticality Package: from 2.0 towards 2.1 Version<br>*Arnaud Entringer, Aurélie Bardelay, Sébastien Lahaye et al.* | Swiss Perspective on Post-Closure Criticality Safety Assessments in the Final Disposal of High-Level Waste<br>*Madalina Wittel, Susanne Pudollek* | A High-Fidelity Benchmark of the AGN-201M Reactor at the University of New Mexico<br>*Rowdy Davis, Christopher M. Perfetti, Larry L. Wetzel et al.* | Evaluation of the Sum-of-Fractions Methodology for Water and Polyethylene Moderated Systems<br>*Travis J. Zipperer, Andrew W. Prichard, Travis M. Greene et al.* |

## *Session 6: TUESDAY, OCTOBER 3, 14:00 – 16:05*

| Room 1<br>Track 2<br>NUCLEAR DATA<br><br>Chairs: Coralie Carmouze (CEA)<br>Kenichi Tada (JAEA) | Room 2<br>Track 7<br>STORAGE, TRANSPORT, AND DISPOSAL ISSUES<br>Chairs: Adrien Feuerle (ANDRA)<br>Madalina Wittel (Nagra) | Room 3<br>Track 6<br>OPERATIONAL PRACTICES AND SAFETY CASES<br>Chairs: Aurélien Dorval (CEA)<br>Deborah Ann Hill (UKNNL) | Room 4<br>Track 4<br>MEASUREMENTS, EXPERIMENTS, AND BENCHMARKS<br>Chairs: Jesson Hutchinson (LANL)<br>Shouhei Araki (JAEA) |
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| FP Concentrations Evaluation With FPY Data Considering Fission Rate Spectrum<br>*Kohei Matsuo, Takanori Kitada, Satoshi Takeda et al.* | A Criticality Analysis for Disposal Canister Considering Fuel Burnup and Iron Corrosion Effect<br>*Shin Sung Oh, Kyu Jung Choi, Ser Gi Hong* | Altering the Requirement to Assay Waste Drums containing Plutonium Contaminated Material at Sellafield Ltd.<br>*Amy van der Vyver, Michael Hobson* | Optimization Algorithm for Criticality Experiment Design Using Whisper<br>*Cole Kostelac, Ayodeji Alajo, Nicholas Thompson* |
| Consistent Nuclear Data Evaluations for Criticality Safety<br>*I. Stetcu, T. Kawano, A. E. Lovell et al.* | The United States Perspective on Post-Closure Criticality Safety Assessments in the Final Disposal of High-Level Waste<br>*Laura Price, Kaushik Banerjee* | Burnup Credit Criticality Safety Case for AGR Spent Fuel Storage<br>*James Ryan, Albrecht Kyrieleis, Jennifer Bateman et al.* | Criticality Experiments to Reduce Compensating Errors in Plutonium Nuclear Data<br>*J. Hutchinson, J. Alwin, B. Bell et al.* |
| Nuclear Data for Neutron Criticality Applications at GELINA<br>*P. Schillebeeckx, C. Camouze, S. Kopecky et al.* | Refinement of the Loading Curve Determination Methodology and Modeling for Swiss PWR Spent Fuel Final Disposal Canisters<br>*M. Frankl, A. Vasiliev, D. Rochman et al.* | Criticality Safety of Orano La Hague Dissolver Rinsing Operations<br>*Y. Blin, C. Quenault, R. Vassieux et al.* | The EUCLID Experiment and Nuclear Data Library Comparisons<br>*Nicholas W. Thompson, Jesson Hutchinson, Jennifer Alwin et al.* |
| Inter- Codes and Nuclear Data Comparison under Collaboration Works between IRSN and JAEA<br>*Satoshi Gunji, Shouhei Araki, Tomoaki Watanabe et al.* | Criticality Safety for UK Spent Fuel Disposal in the Post-Closure Phase of a Geological Disposal Facility<br>*Robert Mason, Albrecht Kyrieleis, Lynn Grindrod et al.* | Lessons Learned From Ventilation and Glovebox Flooding Via Overfilling of the Wet Vacuum System in a Plutonium Facility<br>*Andrew Smiley, Amanda Bowles Tomaszewski, Michael Corum* | Reactivity Coefficient Measurements to Aid in Reducing Compensating Errors in Plutonium Nuclear Data<br>*T. Cutler, J. Alwin, M. Grosskopf et al.* |
| Dependence of the Average Total Kinetic Energy of Fission Fragments on Incident Neutron Energy Studied by a 4D Langevin Model<br>*Kazuya Shimada, Chikako Ishizuka, Satoshi Chiba* | Criticality Safety for UK Spent Fuel Disposal in the Pre-Closure Phase of a Geological Disposal Facility<br>*Liam Payne, Andrew Price, Steven Lonsdale et al.* | | |

## Track 1: CODES AND OTHER CALCULATION METHODS

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| P-01 | The Construction of a Quantitative Comparison of Upper Subcritical Methods for Novel Neutronic Systems | *Bobbi Riedel, Christopher Perfetti* |
| P-02 | Nuclear Criticality Safety Analogue "Tool" for Approximating Subcritical Equipment and Process Designs and Operations Limits | *Calvin M. Hopper, Megan Pritchard, Cecil V. Parks* |
| *P-03* | GRS Handbook on Criticality – Digital Version *HBcrit* | *Fabian Sommer* |
| *P-04* | A Burnup Calculation System Coupled with MCNP and SCALE/ORIGEN | *Kenichi Yoshioka, Satoshi Wada, Shunichiro Omika* |
| *P-05* | Temperature Reactivity Feedback Coefficient for the MYRRHA Critical Core – Design Revision 1.8 | *L. Fiorito, A. Peñalosa, M. Zanetti et al.* |
| P-06 | Stochastic Neutronics Simulations Using Deterministic Transport With N-Forked Fission Branching Approximations | *Philippe Humbert* |
| *P-07* | Cyclone – New Features for Criticality Safety Analyses | *Stewart Hay, Carl Hughes, Peter Taylor* |
| *P-08* | Solution to Random-Media Criticality Benchmarks with a Monte Carlo Solver Solomon | *Yasunobu Nagaya* |

## Track 2: NUCLEAR DATA

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| P-09 | Linearization of Thermal Neutron Scattering Cross Section to Optimize the Number of Energy Grid Points | *Kenichi Tada* |
| P-10 | The First Core Criticality Analysis of the RSG GAS Multipurpose Research Reactor using the Newly Released JENDL-5 Nuclear Data Library | *Peng Hong Liem, Donny Hartanto* |
| P-11 | Nuclear Data Sensitivity Analysis of Post-Irradiation Examination Data with Fuel Depletion Calculation Module CBZ/Burner | *Yuya Inagaki, Go Chiba, Keita Yoshikawa et al.* |

## Track 3: UNCERTAINTY AND SENSITIVITY ANALYSIS

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| P-12 | Adjustment of Uncertain Modeling Parameters through Analyses of Post-Irradiation Examination Data | *Keita Yoshikawa, Go Chiba, Yuya Inagaki et al.* |
| *P-13* | On the PSI Routine Criticality Safety Evaluation Methodology and its Validation Approach | *A. Vasiliev, H. Lee, M. Frankl et al.* |
| P-14 | A Method to Estimate Burnup Using Enrichment(IE), Cooling Time(CT) and TNSI(Total Neutron Source Intensity) in Spent Fuels : Apply to MCNP Neutron Detection | *Kwangheon Park, So hee Cha* |
| P-15 | Data Assimilation Using Prompt Neutron Decay Constant α for Water to Reduce Uncertainties due to Thermal Neutron Scattering Law | *Yoshinari Harada, Hibiki Yamaguchi, Tomohiro Endo et al.* |

## Track 4: MEASUREMENTS, EXPERIMENTS, AND BENCHMARKS

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| *P-16* | AFRRI TRIGA Reactor Neutron and Gamma Dose Characterization Preliminary Results | *Aaron Sun Tamashiro, Philip Angus, David Heinrichs et al.* |
| *P-17* | Analysis of the MUSiC $^{3}$He Multiplicity Data | *Alex McSpaden, Jesson Hutchinson, George McKenzie et al.* |
| P-18 | Canceled | |
| P-19 | Benchmark Analyses on Control Rod Worths of TRIGA Reactor Modeled in the ICSBEP Handbook Using Continuous-Energy Monte Carlo Code MVP Version 3 | *Hiroshi Yanagisawa, Miki Umeda, Yuiko Motome et al.* |
| P-20 | An Alternative to Solution Experiments for Nuclear Data Validation & Training: Reflection and Interaction of Juxtaposed Uranium (RAIJU) Experiment Design | *Kelsey Amundson, Nicholas Thompson* |

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| *P-21* | Pu Oxalate Slurries – A Potential Bounding Condition for Aqueous Chloride Processes | *Kimberly B. Muscarella, Kelly E. Aldrich, Dung M. Vu et al.* |
| *P-22* | Design of TEX-MOX Critical Experiments Varying Neutron Spectrum | *M. Brovchenko, J. Bez, M. Daury et al.* |
| *P-23* | Nano Second Pulsed Die-Away Experiments for Nuclear Data Validation | *Valeria Raffuzzi, Daniel Siefman, Lee Bernstein* |
| *P-24* | Design of a $UO_2$-BeO Critical Experiment at Sandia | *William M. Cook, Elijah C. Lutz, David E. Ames et al.* |

## Track 5: STANDARDS, ASSESSMENT METHODOLOGY, REGULATIONS

| | | |
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| *P-25* | Updates of the French Criticality Safety Analysis Guide And Event Database (LOGIC) | *Fabien Duret, Matthieu Duluc, Aurélie Bardelay* |
| *P-26* | LICORNE: A Useful Software for Criticality Safety Reference Values | *Wilfried Monange, Aurélie Bardelay* |

## Track 6: OPERATIONAL PRACTICES AND SAFETY CASES

| | | |
|---|---|---|
| *P-27* | Criticality Assessment of Borosilicate Raschig Rings Poisoned Tanks Dismantling | *Laurent Zambelli, Patrick Pin, Michaël Gal et al.* |

## Track 7: STORAGE, TRANSPORT, AND DISPOSAL ISSUES

| | | |
|---|---|---|
| P-28 | Investigation of the Specific $k_{eff}$ Behaviour in Simplified Corrosion Scenarios for a Potential PWR Final Disposal Canister Design | *M. Frankl, A. Vasiliev, L. Berry et al.* |
| *P-29* | Evaluation of the Fukushima Daini 2F2 8x8-4 Samples | *Pedro Ortego* |
| *P-30* | The Benefits of a Multiple Water Barrier Design Transport Package | *Michelle Nuttall, Charlotte Davis* |
| *P-31* | Effects of Low Temperature on Transport Criticality Safety | *Charlotte Davis, Michelle Nuttall* |
| *P-32* | Criticality Sensitivity Analysis for the Standard Waste Transport Container 255 (SWTC-255) | *Charlotte Davis, Michelle Nuttall, Michael Hobson et al.* |

## Track 8: CRITICALITY ACCIDENTS AND INCIDENTS

| | | |
|---|---|---|
| P-33 | Comparison of Computational and Experimental Results for Criticality Accident Alarm Placement | *Alan J. Yamanaka, Soon S. Kim, Shauntay Coleman* |
| *P-34* | The CAAS-3S Criticality Accident Alarm System Dose-Rate Feature | *Sasha Philips, Adrien Gallozzi Ulmann, Prosper Liu et al.* |

## Track 9: PROFESSIONAL DEVELOPMENT ISSUES AND TRAINING

| | | |
|---|---|---|
| *P-35* | Interface of Criticality Safety with Other Transport Disciplines | *Charlotte Davis, Michelle Nuttall* |
| *P-36* | Professional Development of NCS Staff: Benefits of Going beyond Technical and Regulations | *John A. Miller, Robert D. Busch, Ashley R. Raster et al.* |
| P-37 | Nuclear Criticality Safety through Training, Organizational and Human Factors Integration and Feedback, at Orano Recyclage Reprocessing Plant | *Patrick PIN, Bérengère MARTIN, Rémi VASSIEUX* |
| P-38 | Criticality Safety Evaluation Project Development for University of California Berkeley Nuclear Criticality Safety Pipeline Course | *Shauntay Coleman, Alan Yamanaka, William Zywiec* |
| P-39 | Problem-Based Learning Program of Reactor Physics Experiment to Measure Subcriticality for an Unknown System | *Shunya Teratani, Yoshinari Harada, Kaito Mori et al.* |

## Special Session 1: FUKUSHIMA DAI-ICHI NUCLEAR POWER PLANT

| | | |
|---|---|---|
| P-40 | Study on Criticality Safety Control of Fuel Debris for Validation of Methodology Applied to the Safety Regulation | *Kenya Suyama, Taro Ueki , Satoshi Gunji et al.* |
| P-41 | Progress of Modification Work of the Static Experiment Critical Facility (STACY) and Preparation for First Series of Critical Experiments under the New Regulatory Standards of Japan | *Kazuhiko Izawa, Junichi Ishii, Masakazu Seki et al.* |
| P-42 | Status on the Development of the Fabrication and Analysis Equipment of the Pseudo Fuel Debris | *Fuyumi Kobayashi, Hiroyuki Fukaya, Kazuhiko Izawa et al.* |
| *P-43* | Planning of the Debris-Simulated Critical Experiments on the New STACY | *Satoshi Gunji, Shouhei Araki, Yu* |

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| | | *Arakaki et al.* |
| *P-44* | Preliminary Analysis of Randomized Configuration Patterns in Modified STACY Core | *Shigeki Shiba, Daiki Iwahashi, Tsuyoshi Okawa et al.* |
| *P-45* | Preliminary Analyses of Modified STACY Core Configuration Using Serpent With JENDL-5 | *Maho Kawaguchi, Shigeki Shiba, Daiki Iwahashi et al.* |

## Special Session 2: Machine Learning, Deep Learning

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|---|---|---|
| P-46 | Missing Rods Pattern Optimization in LWR Fuel Assembly Using a Genetic Algorithm Coupled with Heterogeneous TRIPOLI-4® Monte Carlo Calculations | *J. Dupas, D. Noyelles, M. Prigniau* |

## *Session 7: WEDNESDAY, OCTOBER 4, 8:30 – 10:35*

| Room 1<br>Track 1<br>CODES AND OTHER CALCULATION METHODS<br>Chairs: Shane W. D. Hart (ORNL)<br>Shigeaki Aoki (MNF) | Room 2<br>Track 7<br>STORAGE, TRANSPORT, AND DISPOSAL ISSUES<br>Chairs: Jérémy Bez (IRSN)<br>Liam Payne (Nuclear Waste Services) | Room 3<br>Track 9<br>PROFESSIONAL DEVELOPMENT ISSUES AND TRAINING<br>Chairs: Cheol Ho Pyeon (Kyoto Univ.)<br>Dominic Winstanley (Sellafield) | Room 4<br>Track 4<br>MEASUREMENTS, EXPERIMENTS, AND BENCHMARKS<br>Chairs: Steven C. van der Marck (NRG)<br>Kenichi Tada (JAEA) |
|---|---|---|---|
| Application of an Empirical Density Law via Python for Aqueous Plutonium Chloride Systems in MCNP6<br>*Riley Bulso, Jennifer Alwin, Christopher Perfetti et al.* | GMIT: A Tool to Support Post-Closure Criticality Safety Assessments<br>*E. Adam Paxton, Jiejie Wu, Tim Hicks et al.* | Collaboration of Nuclear Criticality Safety and Accident Dosimetry in Planning and Exercise Development<br>*Matthew M. Conrady* | High Multiplication Neutron Noise Measurements Using the Seven Percent Critical Experiment 7uPCX<br>*Nicholas Whitman, Tanner Heatherly, Jesson Hutchinson et al.* |
| Application of a Density Law via Python for Aqueous Plutonium Nitrate Systems in MCNP6<br>*Tara Robertson, Jennifer Alwin, Christopher Perfetti et al.* | Revision of the Dounreay Low Level Waste Disposal Facilities Operational and Post-Closure Criticality Safety Assessment<br>*Tamara Baldwin, Tim Hicks, Emily Swain-Phipps et al.* | Development of Two Educational Calculation Codes Monte Carlo Calculation Code S-Monte and Diffusion Calculation Code S-Dif<br>*Tetsuo Matsumura, Takanori Kameyama* | Gamma-ray Measurements from Pulsed-Neutron Die-Away Experiments (PNDA)<br>*Ruby Araj, Daniel Siefman, Lee Bernstein et al.* |
| Criticality Calculations of Spent Fuel Storage Pool with Water Holes<br>*S. Duquenne, Y. Blin, B. Checiak et al.* | German Perspective on Post-Closure Criticality Safety Assessments in the Final Disposal of High-Level Waste<br>*Christian Herold, Florian Voigts, Sabine Unger* | Implementation of CARTA into Criticality Training Programmes<br>*Katrina Christaki, Stewart Hay, Toby Tyas* | Thermal Pulsed Neutron Die Away Experiments in Salt Water<br>*Valeria Raffuzzi, Daniel Siefman, Lee Bernstein* |
| Method and Code Development for the Nuclide Composition Evaluation of Commercial PWR Spent Fuel Assembly<br>*Liangzhi Cao, Senhan Yang, Yunzhao Li* | Initial Considerations on Potential Optimisation Options of Spent Fuel Disposal Canisters Taking into Account Post-Closure Criticality Safety<br>*Madalina Wittel, Valentyn Bykov, Maksym Chernykh et al.* | In Silico Versus in Situ the Challenging Landscape of Nuclear Criticality Safety Training<br>*David K. Hayes* | Inherently Safe Subcritical Assembly Lite<br>*Samuel T. Varghese, William Zywiec* |
| | Nagra's Approach to Post-Closure Criticality Safety Case Development within the High-Level Waste Repository Programme Roadmap<br>*Madalina Wittel, Susanne Pudollek* | Overview and Current Progress of the DOE/NNSA Nuclear Criticality Safety Program Training and Education Program<br>*Douglas G. Bowen* | Fast Spectrum Reactivity Worth Measurements in STEK<br>*Steven van der Marck, Arjan Koning* |

## *Session 8: WEDNESDAY, OCTOBER 4, 11:05 – 12:45*

| Room 1<br>Track 1<br>CODES AND OTHER CALCULATION METHODS<br><br>Chairs: TBD<br>Taro Ueki (JAEA) | Room 2<br>Track 7<br>STORAGE, TRANSPORT, AND DISPOSAL ISSUES<br><br>Chairs: Tamara Baldwin (Galson Sciences)<br>Pedro Ortego (SEA) | Room 3<br>Track 9<br>PROFESSIONAL DEVELOPMENT ISSUES AND TRAINING<br><br>Chairs: Shauntay Coleman (LLNL)<br>Hiroki Takezawa (Nagaoka Univ. of Tech) | Room 4<br>Track 4<br>MEASUREMENTS, EXPERIMENTS, AND BENCHMARKS<br>—A Memory of Gary Harms—<br>Chairs: Mariya Brovchenko (IRSN)<br>Akito Oizumi (JAEA) |
|---|---|---|---|
| Adapting CLUTCH Methodology to Multigroup TSUNAMI-3D for Eigenvalue Sensitivity Calculations<br>*K. B. Bekar, W. J. Marshall* | Exotic Fuels Transport Challenge<br>*Albrecht Kyrieleis, Andrew Thallon, Ahmed Aslam* | A Guide for Criticality Safety Training and Awareness of Personnel Working in Nuclear Installations<br>*Clement Lopez, Fleur Lespinasse, Laurent Cholvy et al.* | Molybdenum Sleeve Experiments in the Sandia Critical Experiments Facility<br>*Gary A. Harms, David E. Ames, Nicolas Leclaire et al.* |
| Verification and Performance Impact of the New Parallel MCNP6.3 Particle Track Output Capability for Subcritical Multiplication Simulations<br>*Michael E. Rising, Nicholas H. Whitman, Jesson D. Hutchinson* | Criticality Risk Associated with the Bulk Deployment of Powder Extinguishants<br>*Jennifer Bateman, Holly Pearson, Dan Johnson* | Development of Nuclear Criticality Staff at Pacific Northwest National Laboratory<br>*Krista I Kaiser* | Methods to Determine Burst Repeatability for Godiva IV<br>*Joetta Goda, Robert Allen Weldon Jr, Travis Grove et al.* |
| TRIPOLI-4® Neutron Multiplication Calculations for the Subcritical Experiments of the BeRP Ball Reflected by Tungsten<br>*Yi-Kang Lee, François-Xavier Hugot* | High Assay Low Enriched Uranium Transportation Packages Under 10 CFR Part 71 – U.S. NRC Research and Certification Activities<br>*Andrew B. Barto, Michel Call* | Ensuring the Sustainability of Criticality Safety Expertise<br>*Dominic Winstanley* | Quantifying Burst Repeatability for Godiva IV<br>*Robert Allen Weldon Jr, Joetta Goda, Travis Grove et al.* |
| Use of SCALE MAVRIC Radiation Transport Calculations for the Design of a Subcritical Assembly at Oak Ridge National Laboratory<br>*M. N. Dupont, A. Lang, D. Bowen* | Increased Flexibility for Reflectors Near Storage Arrays of Fissionable Items at Sandia<br>*William M. Cook, Elijah C. Lutz, Ashley R. Raster et al.* | A Look at a "Quid Pro Quo" NCS Assessment Culture<br>*John A. Miller, David P. Heinrichs, Mark N. Neeley et al.* | Experiment Design and Preparation for a Shielding Benchmark Utilizing Godiva-IV<br>*Garrett McMath, Tyler Borgwardt, Riley Cumberland et al.* |

## *Session 9: WEDNESDAY, OCTOBER 4, 14:00 – 15:40*

| Room 1<br>Track 3<br>UNCERTAINTY AND SENSITIVITY ANALYSIS<br>Chairs: Alexander Vasiliev (PSI)<br>Shuhei Maruyama (JAEA) | Room 2<br>Track 7<br>STORAGE, TRANSPORT, AND DISPOSAL ISSUES<br>Chairs: John Bess (JFoster & Associates)<br>William M. Cook (SNL) | Room 3<br>Track 10<br>FUTURE CHALLENGES<br>Chairs: Rei Kimura (Toshiba ESS)<br>Dominic Winstanley (Sellafield) | Room 4<br>Track 4<br>MEASUREMENTS, EXPERIMENTS, AND BENCHMARKS<br>Chairs: Rene G. Sanchez (LANL)<br>Masahiro Fukushima (JAEA) |
|---|---|---|---|
| Nuclear Data Sensitivity Analysis of a Sodium Shielding Experiment Based on Generalized Perturbation Theory for Data Assimilation<br>*Shuhei Maruyama, Tomohiro Endo, Akio Yamamoto* | Assessment of Validation for Burnup Credit Calculations for LEU+ and High Burnup Fuel<br>*M. N. Dupont, C. Celik, A. Lang et al.* | Preliminary Study of Burnup Measurement and Relative Power Distribution in the HTTR Using Gamma-Ray Measurement<br>*Irwan L. Simanullang, Shohei Kawaguchi, Nozomu Fujimoto et al.* | MUSiC: Critical Experiment with Bare Highly Enriched Uranium Shells Benchmark<br>*Rene Sanchez, George McKenzie, Alexander McSpaden* |
| Sensitivity and Uncertainty-Based Techniques to Extend the Database of Experimental Validation Benchmarks: Practical Example of "IEU" Slabs<br>*T. Albert, Q. Vuyet, C. Rechatin et al.* | Criticality Safety Recommendations for the Treatment of Extended Enrichment and High Burnup Fuel for Storage and Transportation Systems<br>*Alex Shaw, Nicholas Kucinski, Briana Hiscox* | Effect of Nuclear Data Library on Criticality and Transmutation Characteristics in Fluoride Molten Salt Reactor<br>*Koji Fujikura, Naoto Aizawa* | Future of the MUSiC Experiment Data<br>*George McKenzie, Flynn Darby, Jesson Hutchinson et al.* |
| Efficient Uncertainty Quantification Using Deterministic Sampling Method with Simplex Ensemble and Scaling Method<br>*Tomohiro Endo, Akio Yamamoto* | The Importance of Transport Criticality Safety<br>*Charlotte Davis, Michelle Nuttall* | MCNP-6 Criticality Comparison of Additive Manufacturing Techniques for the Fabrication of Metallic Nuclear Fuels<br>*Patrick J. Moo* | Towards an Era of Low Temperature Integral Critical Experiments: Surrogate Testing of Low-Temperature TEX Configurations<br>*Eric Aboud, Paul Yap-Chiongco, Jesse Norris et al.* |
| Uncertainty Quantification of a and g Emission Spectra<br>*S. Lahaye, T.D. Huynh, A. Tsilanizara* | Consideration of Agglomeration of Low Enriched Fissile Materials and the Detrimental Effect on Package Payloads/CSI<br>*Michelle Nuttall, Charlotte Davis* | | Neutronic Characteristics of the Low-Temperature TEX Design and Proposed Configurations<br>*Jesse Norris, Catherine Percher, Eric Aboud et al.* |

## *Session 10: WEDNESDAY, OCTOBER 4, 16:10 – 17:50*

| Room 1<br>Track 3<br>UNCERTAINTY AND SENSITIVITY ANALYSIS<br>Chairs: Axel Hoefer (Framatome)<br>Tangi Nicol (CEA) | Room 2<br>Track 7<br>STORAGE, TRANSPORT, AND DISPOSAL ISSUES<br>Chairs: Charlotte Davis (NTS)<br>Matthias Frankl (PSI) | Room 3<br>Track 10<br>FUTURE CHALLENGES<br>Chairs: Naoto Aizawa (Tohoku Univ.)<br>Irwan Liapto Simanullang (Kyusyu Univ.) | Room 4<br>Track 4<br>MEASUREMENTS, EXPERIMENTS, AND BENCHMARKS<br>Chairs: Jesse D. Norris (LLNL)<br>Kotaro Tonoike (JAEA) |
|---|---|---|---|
| Experimental Correlation Estimation and Their Role in Transposition Method<br>*Tangi NICOL, Alexandre DEPLORTE, Julien PIETRI* | Impact of Recent ENDF Nuclear Data on Burnup Credit Criticality Safety Analyses<br>*W. A. Metwally, M. N. Dupont, W. J. Marshall et al.* | IRSN Review of Experimental Needs for Nuclear Criticality Safety<br>*Aurélie Bardelay, Jean-Baptiste Clavel, Wilfried Monange et al.* | Experiments to Measure the Effect of Tantalum on Critical Systems<br>*David E. Ames, Gary A. Harms, Elijah Lutz et al.* |
| Validating Mixtures of $^{233}U$, $^{235}U$, and $^{239}Pu$ for the Sum-Offractions Method<br>*T. M. Greene, A. Lang, W. J. Marshall* | The Modelling of LEU Heterogeneous Systems as Tetrahedral Arrays in MONK®, SCALE and MCNP® and the Impact of Heterogeneity on Runtime<br>*Stuart Watson, Simon Richards, Monis Janjua* | Towards a Direct Comparison of Practical CSE with BUC Approaches: Benchmark Proposal for a Pseudo-application Case with User-defined NCS Criteria<br>*A. Vasiliev, M. Frankl, D. Rochman et al.* | TEX-HEU & TEX-Hf: Critical Assemblies with Highly Enriched Uranium, Polyethylene, and Hafnium<br>*Jesse Norris, Catherine Percher, David Heinrichs et al.* |
| Impact of Correlations Between Experiments on the Evaluation of Bias due to Nuclear Data by Assimilation Methodologies<br>*Frédéric Fernex, Nicolas Leclaire, Aurélie Bardelay et al.* | Evaluation of the ARIANE Samples Irradiated in Gösgen Reactor<br>*Pedro Ortego* | Criticality Analyses of the PWR Core with Accident Tolerant Fuel<br>*Agnieszka Boettcher, Zuzanna Marcinkowska* | Verification and Validation of Monte Carlo Simulations Using Swiss PWR HZP Data<br>*L. Berry, A. Vasiliev, M. Hursin et al.* |
| Bias and Correlated Data, Comparison of Methods<br>*A. Hoefer, M. Stuke, H. S. Abdel-Khalik et al.* | Impact of Low Temperatures on Criticality Safety Assessments for Fissile Material Transportation<br>*Jeremy Bez, Marcel Tardy, Aurélie Bardelay et al.* | | Plutonium Chloride Solution Characterization: Impacts on Density from Pu Oxidation States and Saturation Effects<br>*Kelly E. Aldrich, Kimberly B. Muscarella, Justin N. Cross et al.* |

## *Session 11: THURSDAY, OCTOBER 5, 8:30 – 10:35*

| Room 1<br>Track 3<br>UNCERTAINTY AND SENSITIVITY ANALYSIS<br>Chairs: Jun-Shuang FAN (Hokkaido Univ.)<br>Travis Greene (ORNL) | Room 2<br>Track 7<br>STORAGE, TRANSPORT, AND DISPOSAL ISSUES<br>Chairs: W. A. Metwally (ORNL)<br>Stuart Watson (3T Safety Consultant) | Room 3<br>Special Session 2<br>MACHINE LEARNING, DEEP LEARNING<br>Chairs: Justin Clarity (PNNL)<br>Arnau Albà Jacas (PSI) | Room 4 |
|---|---|---|---|
| Deterministic-Monte Carlo Hybrid Methods for Eigenvalue Sensitivity Coefficient Calculations<br>*T. M. Greene, K. Bekar, W. J. Marshall* | Micro-SMR LEU+ Once-through Fuel Cycle Spent Fuel Actinides Characteristics Verification<br>*John Bess, Gray Chang, Mie Hiruta et al.* | Uncertainty Quantification on Spent Nuclear Fuel with LMC<br>*Arnau Albà, Andreas Adelmann, Dimitri Rochman* | |
| Overview of Spent Nuclear Fuel Inventory Results for the ARIANE GU3 Sample<br>*C. Carmouze, R. Ichou, G. Ilas et al.* | Criticality of Poisoned Cells for Underwater Spent Fuel Storage<br>*B. Checiak, G. Caplin, Y. Blin et al.* | Applicability of Machine Learning to Criticality<br>*Charpentier-Süter Alexis, Gaudin Gérald, Arphant Nicolas et al.* | |
| A Study of Model Dependence in Burnup Credit Criticality Safety Analysis<br>*Axel Hoefer, Stefan Glaubrecht* | Decay Heat Calculation for Efficient Storage of Spent Nuclear Fuel<br>*Shunsuke Sato, Yasushi Nauchi* | Progress Toward the Development of an Artificial Neutral Network for Rapid Post-Closure Reactivity Analysis<br>*Justin Clarity, Harish Gadey, Peter Stefanovic et al.* | No presentations |
| Investigating Similarity Differences for Light-Water Moderated and Polyethylene-Moderated Systems<br>*T. M. Greene, W. J. Marshall* | Decay Heat of Irradiated Nuclear Fuels – A Status Report from the NEA WPNCS<br>*D. Rochman, A. Algora, Ø. Bremnes et al.* | Criticality Experiment Design for the Molten Chloride Reactor Experiment Facility<br>*Michael Branco-Katcher, Daniel Siefman, Todd S. Palmer et al.* | |
| Lost and Found Opportunities Around the Chlorine Worth Study<br>*W. J. Marshall* | Comparative Study of the Impact on the Nuclear Criticality Safety of the Boron and Burnup Credit in Pools of Spent Fuel Assemblies from PWR Nuclear Power Plants<br>*Alberto Ottonello, Marie-Pierre Fontaine, Nicolas Slosse* | The Prediction of the Critical Parameters of Post-Processing Non-uniform Conditions based on Improved BP Neural-Network<br>*Liang Song, Sun Ming-ze, Cheng Yu-ting et al.* | |