

# 2022 MCNP® User Symposium

## Final Detailed Agenda

**Note that all sessions and all roundtables are open to all attendees (in-person and virtual)**

### Monday October 17

#### Morning Session 8:30 – 11:30 Mountain Daylight Time

##### Opening

- Laboratory Welcome; John Sarrao and Bob Webster; 8:30 – 8:45
- Logistics; 8:45 – 9:00
- MCNP6.3: A Year in Review; Mike Rising, Los Alamos National Laboratory; 9:00 – 9:45

##### Break 9:45 – 10:00

##### Reactor Applications

- Nuclear design analyses of Gen IV Sodium cooled Fast Reactor using MCNP; H. Tsige-Tamirat, European Commission, DG Joint Research Centre; 10:00 – 10:30
- Automation and optimization aspects of MCNP and Abaqus based Reactor Multiphysics (MARM) Simulations; Sara Newman, Los Alamos National Laboratory; 10:30 – 10:50
- MCNP6.3 Unstructured Mesh Verification: Godiva and CANDU Models; Esteban Gonzalez; Texas A&M and Los Alamos National Laboratory; 10:50 – 11:05
- Multigroup Cross-Section Generation with MCNP; Mike Rising, Los Alamos National Laboratory; 11:05 – 11:25

##### Lunch Break (11:30 – 1:00)

#### Afternoon Roundtable 1:00 – 4:00 Mountain Daylight Time

##### Roundtable - Results and Responses from the 2022 User Forum Survey

This roundtable will focus on the results of the 2022 User Forum Survey. This will include discussion on where the code falls short, and what we can do about it. The floor will be open for discussion for many of the topics. The RSICC Director will also participate in the roundtable.

- User Forum Survey Results and Responses; Colin Josey, Avery Grieve, and Mike Rising; Los Alamos National Laboratory
- Radiation Safety Information Computational Center (RSICC); Tim Valentine, Oak Ridge National Laboratory
- General discussion and Q&A

##### Welcome Reception (No Host) at Bathtub Row Brewing (4:30 – 6:00)

## Tuesday October 18

### Morning Session 8:30 – 11:30 Mountain Daylight Time

#### CAD / Unstructured Mesh

- Announcements; 8:30 – 8:40
- MCNP6.3 Unstructured Mesh Performance; Jerawan Armstrong, Los Alamos National Laboratory; 8:40 – 8:55
- The New Attila4MC Mesh Generator for the MCNP® Unstructured Mesh; Andrew Cooper, Silver Fir Software; 8:55 – 9:25

#### Transport Methods and Statistics

- Performance Analysis of the Expected Track Length Estimator; Lincoln Johnston, University of Michigan and Los Alamos National Laboratory; 9:25 – 9:50
- Break 9:50 – 10:00
- The Impact of Deterministic Solution Accuracy on MCNP® Weight Window Efficiency; Gregory Failla, Silver Fir Software; 10:00 – 10:30
- Adding Delta Tracking to the MCNP Code; Colin Josey, Los Alamos National Laboratory; 10:30 – 11:00
- Visualizing the Distribution of Converged MCNP Tally Means with a Quincunx Machine; Art Forster, Los Alamos National Laboratory; 11:00 – 11:30

### Lunch Break (11:30 – 1:00)

### Afternoon Roundtable 1:00 – 4:00 Mountain Daylight Time

#### Roundtable – CAD/UM

The CAD/UM roundtable consists of 3 mini-sessions: Meet MCNP UM users, LANL tools and V&V project, and other codes. In Meet MCNP UM users, two MCNP UM users will discuss their MCNP unstructured mesh (UM) calculation workflow and applications. Two LANL staff will then present LANL tools developed for MCNP UM simulation setup and a project on UM modelling for criticality benchmarks. Finally, speakers from other codes that are not developed by LANL will present their codes. Other codes include Abaqus/CAE, Attila4MC, Coreform Cubit, DAG-MC, GEOUNED CAD to MCNP conversion tool, and McCad.

- Meet MCNP UM users; 1:00 – 1:30
  - Vedant Mehta, Los Alamos National Laboratory
  - Darren Holland, Air Force Institute of Technology
- Creating unstructured mesh models for MCNP simulations; Jerawan Armstrong, Los Alamos National Laboratory; 1:30 – 1:40
- Critical Benchmarks Modeled with MCNP Unstructured Mesh; Jen Alwin, Los Alamos National Laboratory; 1:40 – 2:00

- Abaqus; Ian Stevenson, Dassault Systemes; 2:00–2:15
- Attlia4MC; Greg Failla, Silver Fir Software; 2:15 – 2:30
- Q&A 2:30– 2:40
- Break 2:40 – 2:50
- Coreform Cubit; Matt Sederberg, Coreform; 2:50– 3:05
- DAG-MC; Tim Bohm, University of Wisconsin-Madison; 3:05 – 3:20
- GEOUNED CAD to MCNP conversion tool; Patrick Sauvan, Universidad Nacional de Educacion a Distancia (UNED); 3:20– 3:35
- McCad; Andre Haeussler, Baker Hughes; 3:35– 3:50
- Q&A; 3:50 – 4:00

## Wednesday October 19

### Morning Session 8:30 – 11:30 Mountain Daylight Time

#### Laboratory Welcome; Mark Chadwick; 8:30 – 8:45

#### Data and Physics

- Utilization of a Nuclear Data Toolkit for Manual Perturbation of ACE Files; Noah Kleedtke, Los Alamos National Laboratory; 8:45 – 9:05
- Another NJOY update for MCNP users; Wim Haeck, Los Alamos National Laboratory; 9:05 – 9:25
- Verification and validation testing and tools: comparison between MCNP code versions and nuclear data libraries; Alex Clark, Los Alamos National Laboratory; 9:25 – 9:45
- DRiFT: Detector Response Function Toolkit; Madison Andrews, Los Alamos National Laboratory; 9:45 – 10:10

#### Break 10:10 – 10:25

#### Shielding Applications

- MCNP Estimates of Neutron Fluxes for Activation Analysis of PWR In-Vessel Structures; Herschel Smith, Independent Consultant and Dominic Napolitano, Independent Consultant; 10:25 – 10:45
- Improving Convergence Time for DT Source Skyshine Simulations; Andrew Hodgdon, RadSim, LLC; 10:45 – 11:05
- SPARCNX: The High-Performance Computing Enabled MCNP 6.2 Based R2S Workflow; Megan Wart, Commonwealth Fusion Systems, MIT, MPR Associates; 11:05 – 11:25

#### Lunch Break (11:30 – 1:00)

### Afternoon Roundtable 1:00 – 4:00 Mountain Daylight Time

#### Roundtable – Nuclear Data

This roundtable will focus on nuclear data and provide information to the user community about ENDF evaluation formats and processing these evaluations with NJOY into ACE format. Two tools that have been developed to easily query and manipulate both ENDF and ACE files will be described and demonstrated. There will also be a presentation about recent nuclear data evaluation working at Los Alamos. There will be ample time for questions and discussion.

- Introduction to ENDF format // Reading and Manipulating ENDF files with ENDFtk; 1:00 – 1:30
- Los Alamos Nuclear Data Evaluation Highlights; Ionel Stetcu, Los Alamos National Laboratory; 1:30 – 2:00
- Processing files with NJOY // Reading and Manipulating ACE files with ACETk; 2:00 – 3:00
- Q&A Session 3:00 – 4:00

## Thursday October 20

### Morning Session 8:30 – 11:00 Mountain Daylight Time

#### Fusion Applications (Part 1)

- Announcement; 8:30 – 8:40
- Cubit for MCNP Unstructured Mesh Analysis of Oktavian Benchmarks; Micky Dzur, Texas A&M University, Los Alamos National Laboratory; 8:40 – 9:00

#### Space and Earth Science Applications

- Using MCNP in the measurement of Neutron Lifetime using space-based Neutron Spectrometer; Akshatha Konakondula Vydula, Arizona State University and Los Alamos National Laboratory; 9:00 – 9:30
- An overview of MCNP modeling of nuclear measurements performed deep underground in the search for oil and gas; Grant Goodyear, Baker Hughes; 9:30 – 9:50
- Break 9:50 – 10:00
- Automated CAD-to-CSG conversion with McCad in nuclear well-logging applications; Andre Haeussler, Baker Hughes; 10:00 – 10:20

#### Fusion Applications (Part 2)

- Challenges in void space generation of highly complex CAD fusion models; Juan Garcia, University of Granada, Universidad Nacional de Educación a Distancia (UNED); 10:20 – 10:40
- Using DAG-MCNP for a CAD based approach to fusion neutronics; Tim Bohm, University of Wisconsin-Madison; 10:40 – 11:00

### Lunch Break (11:00 – 12:00)

### Afternoon Roundtable 12:00 – 1:45 Mountain Daylight Time

#### Roundtable – “I Have MCNP6.3. Now What?”

- MCNP6.3 Code and Nuclear Data Installation; Avery Grieve, Los Alamos National Laboratory
- QT plotter showcase; Avery Grieve, Los Alamos National Laboratory
- Wielding the MCNP6.3 Manual; Joel Kulesza, Los Alamos National Laboratory
- Information regarding Open Sourcing of MCNP Tools; Joel Kulesza, Los Alamos National Laboratory

### Historical Presentation, Tour, Museum, Dinner at Local Restaurant (2:00 – 7:00)

## Friday October 21

### Morning Session 8:30 – 11:30 Mountain Daylight Time

#### Accelerator Applications

- Announcements 8:30 – 8:40
- Design and performance of the shielded and compact beam-dump for the ESS DTL1 commissioning; Elena Donegani, European Spallation Source; 8:40 – 9:00
- Designing the Second Target Station with an advanced optimization workflow” Kristel Ghoos, Oak Ridge National Laboratory, and Lukas Zavorka, Oak Ridge National Laboratory; 9:00 – 9:40

### Break 9:40 – 10:00

#### Tools

- $\chi$ -MeRA: Application of Adaptive Mesh Refinement to FMESH Tallies; Kristin N. Stolte, Los Alamos National Laboratory, Texas A&M University; 10:00 – 10:20
- Developing Python Codes for Processing MCNP Elemental Edit Outputs; Divyanshu Sharma, Georgia Institute of Technology, Los Alamos National Laboratory; 10:20 – 10:35
- Easy\_PERT: a Python tool for writing PERT cards and parsing PERT card results; Alex Clark, Los Alamos National Laboratory; 10:35 – 10:55
- Fission Matrix Demonstration; Joel Kulesza, Los Alamos National Laboratory; 10:55 – 11:10
- Coincident Capture through Post-processing PTRAC; Simon Bolding, Los Alamos National Laboratory; 11:10 – 11:25

### Lunch Break (11:30 – 12:30)

### Symposium Closing (12:30 – 1:00)