CALL FOR PAPERS

GUIDELINES
Submit full papers describing work that is of value to the reactor physics community and the nuclear industry in general. Papers are presented orally at the meeting, and presenters are expected to register for the meeting. All accepted papers will be published in the Proceedings of the Topical. Published papers become the property of ANS. Under no circumstances should a paper be published in any other publication prior to presentation at the PHYSOR 2022 meeting. An ANS copyright form is required for all papers and posters.

FORMAT
We are soliciting full papers with ten pages maximum. Word and LaTeX templates are available at https://www.ans.org/meetings/physor2022. Papers not formatted according to the template will be rejected. Papers exceeding 10 pages will be rejected. Accepted papers will be published in the Proceedings of the Topical.

POSTERS
Authors desiring a poster presentation must also submit a full paper in the proper format as described above. A poster template is available at https://www.ans.org/meetings/physor2022.

JOURNAL COLLABORATION
We will invite some authors to submit a full-length journal article for a special issue of Nuclear Science and Engineering.

SUBMIT A FULL PAPER
https://epsr.ans.org/meeting/?m=353

PROGRAM SPECIALIST
Janet Davis
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TOPICS OF INTEREST

**TRACK 1: DETERMINISTIC TRANSPORT METHODS**

**TRACK 2: MONTE CARLO METHODS**

**TRACK 3: MULTI-PHYSICS REACTOR SIMULATIONS & VALIDATION (W/ OECD)**

**TRACK 4: CORE ANALYSIS METHODS**

**TRACK 5: LIGHT-WATER REACTORS DESIGN & CORE ANALYSIS**

**TRACK 6: ADVANCED REACTORS DESIGN & CORE ANALYSIS**

**TRACK 7: TRANSIENT SYSTEMS & ANALYSIS**

**TRACK 8: DATA, METHODS, CODE VALIDATION**

**TRACK 9: FUEL MANAGEMENT AND OPTIMIZATION**

**TRACK 10: FUEL-CYCLE PHYSICS AND SCENARIOS**

**TRACK 11: CORE MONITORING SYSTEMS**

**TRACK 12: NUCLEAR CRITICALITY & SCENARIOS**

**TRACK 13: ISOTOPES PRODUCTION**

**TRACK 14: NONPROLIFERATION AND SAFEGUARDS**

**SPECIAL SESSIONS**

**Track 15S: In Memory of Massimo Salvatore (invited)**
A tribute to Massimo Salvatore with submissions from his colleagues and younger generation researchers, covering different reactor physics aspects, experimental techniques and integral experiments, methods, and analyses.

**Track 16S: PHYSOR 2020 Highlights (invited)**
Select papers representing best research trends in PHYSOR2020 and update on accomplishments/developments in 2022.

**Track 17S: Neutronics Benchmark of CEFR Start-up Tests (invited)**
Panel discussion on the use of research reactors for high-fidelity validation of computer codes, especially in the area of neutronics.

**Track 18S: Micro-reactors Design & Core Analysis**
Focus on multi-physics and higher order analyses along with challenges due to aggressive deployment plans of micro-reactor designs.

**Track 19S: Challenges and Improvements in Accident Dose Analysis; Regulatory and Industry Perspective**
Focus on recent regulatory changes along with continued evolution of analysis methodologies to address both evolving regulatory and operational requirements.

**Track 20S: Challenges and Improvements in Vendor Independent Nuclear Analysis and Regulatory Approaches**
Session to share regulatory experience for process and method development, benchmarking, and topical report development for NRC approval. The session invites participants from utilities and other organizations to present their experiences and challenges in this area.

**Track 21S: VERA Industry Applications**
Most recent applications for VERA to solve PWR and BWR challenge problems.

**Track 22S: Moose-Based Advanced Reactor Design & Technology**
Session to present up-to-date research and results from key participants in the IAEA effort on CEFR Start-up benchmarks.

**Track 23S: Trends in HPC/Exascale in Reactor Physics**
Most recent reactor physics analysis applications using HPC/Exascale Computing using advanced computer platforms (e.g., GPUS) for “ultimate” fidelity analyses (e.g., CFD coupled with Monte Carlo).

**Track 24S: Advances in UQ and Validation Methodologies**
Latest progress in uncertainty quantification with particular focus on advanced reactor concept deployment.

**Track 25S: Machine Learning and Artificial Intelligence for Reactor Physics**
Focus on applications of ML and AI in reactor physics analyses (e.g., loading pattern optimization, surrogate model development, etc).

**Track 26S: Designing Reactors for Integrated Energy Systems**
Focus on the analysis and design of advanced reactors to be operated as part of integrated energy systems on the path to deep decarbonization.

**Track 27S: Advances on open-source software for nuclear reactor analysis (invited)**
Focus on multi-physics and higher order analyses along with challenges due to aggressive deployment plans of micro-reactor designs.

**Track 28S: Space Nuclear Program**
Design and analysis of radioisotope systems and micro-reactors with heat pipes for propulsion and terrestrial power.

**Track 29S: Hybrid Methods in Reactor Physics Analyses**
Research and applications combining deterministic and stochastic methods for solving reactor physics problems.

**Track 30S: Neutronics for Fusion Reactors**
Deterministic or Monte Carlo neutronics simulations to support fusion reactor design and safety analyses, radioactive waste issues, neutron generator characterization, and other topics related to fusion reactor neutronics.

**Track 31S: Moose-Based Advanced Reactor Design & Technology (invited)**
Session hosted by Idaho National Laboratory to demonstrate capabilities implemented within MOOSE for design, analysis, and development of advanced nuclear technology. The session invites submissions from other organizations and industry partners to present their work completed using MOOSE-based tools.

**SPECIAL SESSIONS**

**Track 32P: Past, Present and Future Direction of Industry Core Simulators**
A forum to discuss new developments in core simulators used routinely for LWR core design analyses.

**Track 33P: Current Issues in LWR Core Development and Design**
A forum for the utilities to gather key stakeholders and discuss relevant industry issues in LWR core design development and operation.

**Track 34P: Application and Development of Digital Twins for Nuclear Reactors**
Panel on potential benefits of developing digital twins for nuclear reactors with focus on the most promising methodologies and challenges.

**PLANNED WORKSHOPS**

- OpenMC (half-day)
- McCARD uncertainty analysis workshop (half-day)
- Kraken: a Serpent-based multi-physics framework (half-day)
- URANIE open source platform for uncertainty propagation, surrogate models, optimizations, code calibration (full-day)
- VERA training (full-day)

- OpenFOAM for the analysis of advanced nuclear reactors (full-day)
- Multi-physics analysis and UQ of REA with STREAM/RAST-K (half-day)
- RAPID (half day)
- FRENDY nuclear data processing system (full day)
- New physics, new capabilities, what’s changing in ENDF/B (half day)
- NEAMS (Full Day)