M&C 2019

INTERNATIONAL CONFERENCE ON MATHEMATICS AND COMPUTATIONAL METHODS APPLIED TO NUCLEAR SCIENCE AND ENGINEERING

August 25-29, 2019 | Portland, Oregon, USA

CALL FOR PAPERS

EXECUTIVE CHAIRS

Honorary Cochairs
Edward Larsen, University of Michigan
William Martin, University of Michigan

General Cochairs
John Wagner, Idaho National Laboratory
Jim Rathkopf, Lawrence Livermore National Laboratory (Ret.)

Technical Program Cochairs
Todd Palmer, Oregon State Univ.
Jean Ragusa, Texas A&M Univ.
Mark DeHart, INL

American Nuclear Society
Mathematics and Computation Division

American Nuclear Society
Idaho Section

American Nuclear Society
Reactor Physics Division

EXTENDED SUMMARY DEADLINE: TUESDAY, JANUARY 15, 2019

JANUARY → SUBMISSION OF EXTENDED SUMMARIES: **Tuesday, January 15, 2019**

FEBRUARY → REVIEW NOTIFICATION: **Monday, February 18, 2019**

APRIL → FULL PAPERS DEADLINE: **Tuesday, April 2, 2019**

The ANS M&C 2019 Topical Meeting will take place in Portland, Oregon, USA. Portland (The Rose City and Stumptown) is the largest city in Oregon and is located at the confluence of the Willamette and Columbia rivers. Approximately 2.4 million people live in the surrounding metropolitan area. Portland is known for its craft beer and foodie scene, provides exceptional access to outdoor activities, and has a vibrant arts culture. From Portland, the Oregon Coast is a short one-hour drive to the west, and the majestic Columbia River Gorge is about one hour to the east. August in Portland is warm and sunny, with an average of less than two days of rain during the month. **Early Registration for the meeting begins on March 4, 2019**.

The conference technical program spans not only the traditional transport and reactor physics analysis methods, but also uncertainty quantification methods, non-proliferation and safeguards methods, computational thermal-hydraulics, materials science, and fusion science in order to reflect the remarkable advances in various fields of nuclear science and engineering. **Four-page** extended summaries are solicited in the subject areas on the next page.

All the classical topics in each subject area are considered within the scope of the conference. After the conference, selected papers are planned to be published in a special issue of the *ANS Journal Nuclear Science and Engineering*. The conference will be held at the Portland Marriott Downtown Waterfront, featuring a serene location on the Willamette River near over 60 breweries. Please join us to present your work to the worldwide nuclear engineering mathematics and computation community, meet friends and colleagues in the field, and enjoy Portland's beautiful downtown. The template of the extended summaries can be found at mc2019.org. Please limit the summary to 4 pages and submit your summary by **January 15, 2019.**

PAGE CHARGE

All full papers are limited to 10 pages. Any paper exceeding the 10-page limit will be charged $100 per page.

SUBMIT A SUMMARY

ans.org/meetings

CONTACT

mc2019@meetings.ans.org

M&C 2019

INTERNATIONAL CONFERENCE ON MATHEMATICS AND COMPUTATIONAL METHODS APPLIED TO NUCLEAR SCIENCE AND ENGINEERING

August 25-29, 2019 | Portland, Oregon, USA

SUBJECT AREAS

1. DETERMINISTIC TRANSPORT METHODS
   a. Advanced Discretization Techniques for Deterministic Transport
   b. Transport Methods for Stochastic Media
   c. Charged Particle Transport
   d. Massively Parallel Transport Solution Algorithms

2. MONTE CARLO METHODS AND APPLICATIONS
   a. Monte Carlo Variance Reduction and Hybrid Methods
   b. Next Generation Parallelism for Monte Carlo Simulation
   c. Charged Particle Transport and Applications
   d. Monte Carlo Simulation with Thermal Feedback
   e. Hybrid Monte Carlo/Deterministic Methods

3. GENERAL RADIATION TRANSPORT
   a. Transport Theory
   b. Computational Medical Physics
   c. Shielding Methods

4. COMPUTATIONAL FLUID DYNAMICS AND APPLICATIONS TO NUCLEAR THERMAL-HYDRAULICS
   a. Novel Approaches for Single and Multiphase Fluid Dynamics
   b. Multiscale Methodologies and Applications in Thermal Hydraulics
   c. Massive Computational Fluid Dynamics Nuclear Applications
   d. Advances in System Scale Computational Fluid Dynamics
   e. Advances in Computational Methods for Nuclear Thermal Hydraulics

5. MULTIPHYSICS SIMULATIONS IN NUCLEAR SCIENCE AND ENGINEERING
   a. Multiphysics Coupling Methods and Approaches
   b. Validation and Regulatory Acceptance of Multiphysics Simulations
   c. Radiative Transfer and Radiation-Hydrodynamic Simulations and Methods

6. NUCLEAR DATA EVALUATION AND ASSIMILATION OF INTEGRAL EXPERIMENTS
   a. Nuclear Theories, Models and Data Evaluation
   b. Validation and Assimilation of Nuclear Data
   c. Advances in Self Shielding Methods
   d. Next Generation Cross-Section Homogenization Methods

7. UNCERTAINTY QUANTIFICATION AND SENSITIVITY ANALYSIS
   a. Deterministic and Stochastic Methods for Sensitivity Analysis
   b. Reduced-order Modeling in Nuclear Science and Engineering Applications
   c. Uncertainty Quantification in Multiphysics Simulations

8. GENERAL REACTOR PHYSICS ANALYSIS METHODS AND APPLICATIONS
   a. Advances in Reactor Analyses Methods
   b. Whole Core Modeling and Simulation
   c. Spent Fuel Cask/Storage Analyses
   d. Reactor Physics Validation with Realistic Core Benchmarks

9. MATHEMATICAL METHODS IN NUCLEAR NONPROLIFERATION AND SAFEGUARDS
   a. Inverse Methods in Nondestructive Assay
   b. Methods in Material Control and Accountability
   c. Methods in Nonproliferation and Arms Controls
   d. Methods in Nuclear Security and Physical Protection

10. COMPUTATIONAL MATERIALS SCIENCE
   a. Multiscale Modeling of Structural Materials and Nuclear Fuels
   b. Advanced Methods for Simulating Primary Radiation Damage and its Evolution in Materials

11. MODELING AND SIMULATION FOR FUSION ENERGY SYSTEMS
   a. Theory and Simulation of Fusion Plasma Confinement, Stability and Heating
   b. Simulation and Integrated Modeling of Burning Plasma and Fusion Energy Systems

12. ADVANCES IN PARALLEL ALGORITHMS AND HIGH PERFORMANCE COMPUTING FOR NUCLEAR APPLICATIONS
   a. Advanced Methods to Exploit the Potential of Next-Generation Architectures
   b. Application of Leadership-class Computing to Nuclear Applications

Paper Template and Authors Instructions: www.mc2019.org/paper-formatting-instructions