

Agenda

MONDAY, APRIL 9

5:00 – 7:00pm Registration - *Empire Room foyer*

TUESDAY, APRIL 10

7:00 – 8:15am Registration and Continental Breakfast - *Empire Room foyer*

Technical Program - *Empire Room*

8:15 – 8:30am **Opening Remarks**

Conference Co-Chairs:

Alan Laub (University of California, Los Angeles)

Richard Martineau (Idaho National Laboratory)

8:30 – 9:15am **Keynote Talks**

Session Chair: **Richard Martineau** (Idaho National Laboratory)

Nuclear Reactor Simulation within GNEP

Speaker: **Kathryn McCarthy** (Idaho National Laboratory)

The Role of Modeling and Simulation in the Global Nuclear Energy Partnership

9:15 – 10:00am **Nuclear Reactor Simulation Technical Barriers**

Speaker: **Marvin Adams** (Texas A&M University)

Technical Barriers to High-Fidelity Reactor Simulations

10:00 – 10:30am Break

10:30 – Noon **Neutronics**

Session Chair: **Robert Hill** (Argonne National Laboratory)

Speakers: **Jim Morel** (Texas A&M University)

Deterministic Neutronic Barriers

Temitope A. Taiwo (Argonne National Laboratory)

Fast Reactor Applications

William R. Martin (University of Michigan)

Monte Carlo Methods

12:00 – 1:30pm Lunch (provided) - *Diplomat Room*

Speaker: **Kord S. Smith** (Studs vik Scandpower, Inc.)

Obstacles and Challenges for High End Computing in Nuclear Reactor Simulation – A Practical Perspective

1:30 – 3:00pm **Uncertainty Analysis**

Session Chair: **Paul Turinsky** (North Carolina State University)

Speakers: **Giuseppe Palmiotti** (Argonne National Laboratory)

Sensitivity and Uncertainty Analysis

William J. Rider (Sandia National Laboratories - Albuquerque)

What Can the Computational Modeling for GNEP Learn from the DOE ASC Program?

Dan G. Cacuci (Commissariat à l'Énergie Atomique)

Open Issues in Sensitivity and Uncertainty Analysis: A European Perspective

3:00 – 3:30pm Break

3:30 – 5:00pm **Structural Mechanics**

Session Chair: **Gil Weigand** (Oak Ridge National Laboratory)

Speakers: **Ted Belytschko** (Northwestern University)

Challenges in Computation of the Failure of Solids and Structures

Srdjan Šimunović (Oak Ridge National Laboratory)

Algorithmic/Simulation Opportunities in Modeling of Thermo-Mechanics of Nuclear Fuels

Paul Maudlin (Los Alamos National Laboratory)

Thermodynamically Consistent Material Modeling Involving Elastoplasticity, Damage and Thermal Effects

5:00 – 7:00pm Poster Session and Reception - *Diplomat Room*

Session Chair: **Kimberlyn Mousseau** (Idaho National Laboratory)

Agenda (cont'd)

WEDNESDAY, APRIL 11

7:00 – 8:30am Continental Breakfast - *Empire Room foyer*

Technical Program - *Empire Room*

8:30 – 10:00am **CFD/Heat Transfer**

Session Chair: Ray Berry (Idaho National Laboratory)

Speakers: Richard Saurel (Polytech Marseille and Institut Universitaire de France, France)

The Importance of Physically, Mathematically and Numerically Well-Designed Multiphase Flow Models

Simon Lo (CD-adapco, UK)

Requirements and Challenges in CFD and Multi-Physics Modeling for the Next Generation of Advanced Nuclear Reactors

Rainald Löhner (George Mason University, USA)

High-End Multi-Disciplinary Computing: Barriers, Challenges and Opportunities

10:00 – 10:30am Break

10:30 – Noon **Applied Mathematics and Algorithms**

Session Chair: David Keyes (Columbia University and Lawrence Livermore National Laboratory)

Speakers: John Shadid (Sandia National Laboratory)

Solution Methods for Multi-Time-Scale Multiphysics Systems

Phil Colella (Lawrence Berkeley National Laboratory)

Structured-Grid Adaptive Methods for Partial Differential Equations in Complex Geometries

Barry Smith (Argonne National Laboratory)

Multigrid/Multilevel Solvers

12:00 – 1:30pm Lunch (on your own)

1:30 – 3:00pm **Mesh Generation and Visualization**

Session Chair: Gary Miller (Carnegie Mellon University)

Speakers: Jonathan R. Shewchuk (University of California at Berkeley)

Why Mesh Generators with Correctness Proofs Will Win Out

Glen A. Hansen (Idaho National Laboratory)

Mesh Generation for Nuclear Reactor Simulation

Henry (Hank) Childs (Lawrence Livermore National Laboratory)

On the Importance of a Flexible Integrated Visualization and Analysis Environment

3:00 – 3:30pm Break

3:30 – 5:30pm **Policy Maker session – Federal Agency and Administration Perspective**

Session Chair: Alan Laub (University of California, Los Angeles)

Speakers: Peter B. Lyons (United States Nuclear Regulatory Commission)

Victor H. Reis (Office of the Secretary, United States Department of Energy)

Christopher King (Committee on Science and Technology, U.S. House of Representatives)

Kathryn Clay (Committee on Energy and Natural Resources, U.S. Senate)

5:30 – 7:00pm Reception - *Diplomat Room*

Agenda (cont'd)

THURSDAY, APRIL 12

7:00 – 8:00am Continental Breakfast - *Empire Room foyer*

Technical Program - *Empire Room*

8:30 – 10:00am **HPC Systems and Nuclear Energy**

Session Chair: Doug Kothe (Oak Ridge National Laboratory)

Speakers: David Nowak (Argonne National Laboratory)

National Security Applications of Massively Parallel Computing from Defense to Energy

John Turner (Los Alamos National Laboratory)

Many-Core Heterogeneous Architectures: The Next Phase in Computing is Here

Ricky Kendall (Oak Ridge National Laboratory)

How Will I Get My Code to Scale on the Cray XT System?

10:00 – 10:30am Break

10:30 – Noon **Fuels Performance**

Session Chair: Kemal Pasamehmetoglu (Idaho National Laboratory)

Speakers: Marius Stan (Los Alamos National Laboratory)

Models of Materials Properties for Advanced Fuel Performance Codes

Tom Arsenlis (Lawrence Livermore National Laboratory)

Extension of Department of Energy Advanced Simulation and Computing Program in Support of Nuclear Fuel Development

Simon Phillpot (University of Florida)

Microscopic Processes in Nuclear Fuels: Insights from Simulation

12:00pm Concluding Remarks



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