Advanced Simulations: A Critical Tool for Future Nuclear Fuel Cycles

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Workshop Co-chairs:
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Lawrence Livermore National Laboratory
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Three Parallel Keynote Presentations

Overview and Assessment of Critical Needs for Fuel Cycle

- Full System
  - Mike Corradini, U Wisconsin
  - Kemal Pasamehmetaglu, INL
- Thermal and Fast Reactors
  - Per Peterson, UC Berkeley
  - Philip Finck, ANL
- Repository Performance and Design
  - Bob Budnitz, LLNL
  - John Anderson, U Nevada Reno

Plenary Talk and Demonstation: ASCI Experience and Recent Work on BG/L

- Dmitri Kusnezov, NNSA
  - NNSA's ASCI Program
- PowerWall and Visualization
  - 100+ TFLOPS: Solidification Simulations on BlueGene/L, Fred Streitz, LLNL
  - Origins of Strength from Dislocation Dynamics, Tom Arsenlis, LLNL

Concurrent Disciplinary Working Groups

- Computational Science/Frameworks, David Keyes, Columbia U
- Neutronics, Forrest Brown, LANL
- T/H and CFD, Tom Downar, Purdue
- Structural Mechanics, Tinsley Oden, U Texas
- Materials Science, Steve Zinkle, ORNL
- Fuel Development, Kemal Paramehmetaglu, INL
- PRA/Uncertainty Analysis, Paul Turinsky, NC State U

Concurrent Fuel Cycle Working Groups

- Overview and assessment of critical technical needs in each component of the fuel cycle
  - Data
  - Experiments and Facilities
  - Software
  - Algorithms
  - Platforms
  - Other …..
- Set the stage for discipline-specific working groups tomorrow

Keep in mind ….

- Nothing is “off the table” (yet)
- Keep an open mind on the critical needs and how they can be addressed.
- Not everything can be of critical importance.
- By the same token, we don’t want to be surprised well down the path by a technical issue that was discarded prematurely

Requests

- The discussion leaders today and tomorrow should choose a “rapporteur” to take notes during the sessions.
- The reactor session is packed. Please consider attending other sessions in the interests of “cross fertilization”
- All – it is important that some application domain experts attend the Computational Science/Frameworks session. Please consider this alternative, especially if your session is well-covered.

Let’s go to work !!