

M&C 2017
International Conference on Mathematics & Computational Methods
Applied to Nuclear Sciences & Engineering, April 16-20, 2017, Jeju, Korea

Special Session Description

Session Title: **Next Generation Parallelism for Monte Carlo Methods**

Subject Area: 2. Monte Carlo Methods and Applications

Organizer

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Description

Recent advances in computing hardware are providing a changing landscape for Monte Carlo (MC) radiation transport methods developers. In particular, the rise of heterogeneous computing may require modifications to existing parallel MC algorithms, or the development of entirely new algorithms to efficiently take advantage of current and future high performance computers (HPCs). This special session will cover topics related to theoretical development and implementation of parallel algorithms for MC radiation transport, including:

- Improvements in algorithms for massively parallel MC radiation transport using message passing and/or shared memory parallelism.
- Development and testing of new MC transport algorithms optimized for performance on general purpose graphical processing units (GP-GPUs) and/or Many Integrated Core (MIC) co-processors.
- Theoretical and empirical studies on parallel MC algorithm performance.
- Details of specific implementations of parallel MC algorithms and corresponding performance on heterogeneous computing clusters.
- Benchmark problems for assessment and verification of parallel MC performance on HPC systems.