**NSF REU Program Seminar**

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**“High-Performance Computing (HPC) Software Framework Development for Electric Power Grid Modeling and Simulation”**

**Abstract:**  The electric power and energy system is undertaking a dramatic change with the extensive integration of smart grid technologies, intermittent renewable sources, and distributed generations. This rapid change results in an urgent need for high-performance computing (HPC) enabled fast power grid simulations to facilitate real-time decision support and operations. GridPACKTM is an open-source parallel computing framework designed at the Pacific Northwest National Laboratory under the grant from Department of Energy (DOE)’s Advanced Grid Modeling (AGM) program to specifically support the development of HPC based power grid simulations. As a key application developer of GridPACK, in this talk, I will introduce the ideas, challenges, approaches, and current & perspective power grid modeling and simulation development efforts on GridPACK, illustrate the schematic diagram of GridPACK software stack, and discuss how it may be leveraged to provide a feasible solution for practical HPC relevant scientific or engineering problems in other domain areas.

**Bio:** Dr. Shuangshuang Jin is an Associate Professor of School of Computing at Clemson University based in Charleston. Her research interests include distributed and cluster computing, parallel computing, GPGPU, big data, and machine learning, with a special focus on their applications to electric power and energy system domain problems, e.g., HPC-based power system modeling & simulations and advanced grid analytics. Prior to joining Clemson University, Dr. Jin was a senior research scientist at Pacific Northwest National Laboratory (PNNL) contributing to multiple DOE funded projects such as GridLAB-D, GridPACK, and CASSMT, etc. She has 10+ invention disclosure reports, copyrights, and patent applications with PNNL, and 40+ technical articles published in high-prestige journal or conferences such as IEEE Transactions on Smart Grid, IEEE Transactions on Power Systems, Electric Power Systems Research, International Journal of High Performance Computing Applications, and IEEE International Parallel & Distributed Processing Symposium (IPDPS).

**Speaker Name: Dr. Shuangshuang Jin**

**Title: Associate Professor**

**Affiliation: Clemson University**

**CAMP 194**

**June 10, 2019 (Monday)**

**8:30AM – 10:30AM** **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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