**COLLOQUIUM**

Department of Computer Science and Engineering

University of South Carolina

**Portable Parallel Programming in an Age of Architecture Diversity for High Performance**

**Yonghong Yan**

Date: **March 2, 2017**

Time: **3:00-4:15pm**

Place: **300 Main B101**

# Abstract

In this era of multicore, manycore and heterogeneous architectures with deep memory systems, portable parallel programming has become much more challenging than ever for both computation-intensive scientific and engineering applications, and applications that involve large-scale data processing such as computer vision or machine learning. It requires applications to expose significantly more concurrency at multiple levels including intra-node and inter-node, and to optimize local and shared data access with regard to the memory hierarchy of SRAM, DRAM, HBM, and storage. In this talk, the speaker will highlight the latest development of node-level parallel programming models for extreme scale performance, and discuss challenges and ongoing work in his research team for compiler and runtime systems to realize those models for many-/multi-core CPUs and GPUs. The talks will conclude with the discussion of memory-centric architecture and programming for future computer systems.

**Dr. Yonghong Yan** is an Assistant Professor from Oakland University, Rochester MI, and a member of OpenMP Architectural Review Board and OpenMP Language Committee. Dr. Yan is an expert in parallel computing, compiler technology and high performance computer architecture and systems. He is an NSF CAREER awardee. His research team develop intra-/inter-node programming models, compiler, runtime systems and performance tools based on OpenMP, MPI and LLVM compiler, explore conventional and advanced computer architectures including CPU, vector, GPU, MIC, FPGA, and dataflow system, and support applications ranging from classical HPC, to big data analysis and machine learning, and to computer imaging. The ongoing development can be found from https://github.com/passlab. Dr. Yan received his PhD degree in computer science from University of Houston, has a bachelor degree in mechanical engineering, and loves physics and electric engineering as well. Apart from all those, he enjoys playing sports, fishing, writing science fictions, and playing with kids.