

Physics and Astronomy Colloquium
Jointly with Mathematics and Statistics Colloquium and
Quantum Computing Seminar

November 15, 2019
2:00 PM to 2:50 PM
Petroleum Engineering | Room 208

Toward End-to-End Quantum Applications, Xiaodi Wu

ABSTRACT

This is an exciting time for quantum computing. With the availability of prototypes of quantum machines, especially the recent establishment of quantum supremacy, it becomes possible and also important to investigate real-world end-to-end quantum applications. In this talk, I will discuss my efforts toward this goal, especially in the domain of optimization and machine learning, which are likely to be the foundation for many other quantum applications. Specifically, I will talk about provable quantum speedups in optimization and machine learning on fully-fledged quantum machines as well as proposals of quantum applications on near-term noisy-intermediate-size-quantum (NISQ) machines. Moreover, I will briefly talk about challenges in the actual implementation of these quantum applications from the perspective of software engineering and outline our solutions with the help of techniques from the study of formal methods and programming languages.

Biography

Xiaodi Wu is an Assistant Professor in the Dept. of Computer Science and the Institute for Advanced Computer Studies at the University of Maryland (UMD), College Park. He received his PhD in computer science from the University of Michigan, Ann Arbor, and his BSc in mathematics and physics from Academic Talent Program from Tsinghua University, in China. Previously to joining UMD, he was an Assistant Professor in the Computer and Information Science Department at the University of Oregon, and held postdoc and visiting positions at the MIT, Simons Institute (UC Berkeley), and the University of Waterloo, in Canada. His research interest is in quantum computation and information, including quantum computational complexity, quantum optimization, quantum machine learning, quantum cryptography, and quantum entanglement.

