



Quantum (nanoscale) probes of nanoscale (quantum) systems

Dr. Benjamin Lawrie

Senior Research Scientist and a Director for the Heterogeneous Quantum Systems Initiative at Oak Ridge National Laboratory

Friday, April 17th @ 12:00 pm in BRK 1001

Host: Prof. Hadiseh Alaeian Email: halaeian@purdue.edu

Abstract: I will highlight three complementary efforts in quantum and nanoscale probes of nanoscale and quantum systems. In particular, I will explore opportunities for nanoscale quantum noise spectroscopies with optically accessible spin defects. I will further explore opportunities for electron-beam manipulation and measurement of excitons and single spins at the nanoscale. Finally, I will describe the manipulation of the kinetic inductance of superconducting nanowire single photon detectors through local helium ion patterning and early efforts focused on understanding the correlation between nanoscale disorder and device function enabled by scanning tunneling microscopy of patterned devices.

Bio: Dr. Ben Lawrie is a senior research scientist and a Director for the Heterogeneous Quantum Systems Initiative at Oak Ridge National Laboratory. He received his PhD in Interdisciplinary Materials Science in 2011 from Vanderbilt University and joined the Quantum Information Science group in 2013 after two years working with the group as an Intelligence Community Postdoctoral Research Fellow. He now holds a primary appointment as a senior research scientist in the Quantum Heterostructures Group and an Affiliate Scientist position at the Center for Nanophase Materials Sciences. He also holds an appointment as a joint assistant professor in the Bredesen Center for Interdisciplinary Research and Graduate Education at the University of Tennessee. His research centers on the development of quantum optical sensors and quantum nanophotonic systems and in the characterization of quantum devices at cryogenic temperatures.