

Physics Division Colloquium

23 October 2020

**Kater Murch, Washington University in St. Louis**

***Exploring Frontiers of Open Quantum Systems with Microwave Quantum Circuits***

Josephson junction based quantum circuits have enabled broad exploration into open quantum systems in the microwave frequency domain. The combination of coherent quantum bits, robust single qubit control, and quantum noise limited parametric amplifiers has yielded an unprecedented view into the physics of quantum measurement and quantum dissipation. My group's research focuses on topics that touch on fundamental questions including weak measurement and quantum trajectories, non-Markovian dynamics, effective non-Hermitian dynamics, quantum thermodynamics, and quantum sensing. In this talk, I will introduce the experimental architecture that forms the basis for this work, and then focus specifically on ongoing experiments where we study effective non-Hermitian dynamics of a dissipative qubit, showing how the topological structure of the complex energies enable new forms of quantum control.

To meet with the speaker (remotely), please contact the host [Kévin Fosse](#).