

## Condensed Matter Seminar

**Dr. Greg Quiroz**

**(Johns Hopkins Applied Physics Lab)**

**“Deep Reinforcement Learning for Quantum  
Control: Learning to Optimally Navigate in Complex  
Noisy Environments”**

**Monday, October 28, 2019**

**4:00pm—5:00pm**

**304 Robeson Hall**

Quantum control seeks to establish control over a quantum system in such a way so that logical operations are implemented while simultaneously mitigating unwanted interactions between the system and its environment. From the point of view of quantum computation, quantum control can potentially provide significant improvements in computational accuracy when quantum logic operations are tailored for the particular noise plaguing the hardware. Specifically tailoring each controlled operation can be quite demanding if one wishes to perform this task for every instantiation of a quantum algorithm. Here, we examine how one can leverage reinforcement learning to learn and predict quantum gates in the presence of noise; thus, providing a streamlined method for gate design for generic quantum algorithms.

