PHYSICS AND ASTRONOMY COLLOQUIUM

Dr. Allison MacDonald

D-wave

"Quantum annealing with the D-Wave processor"

Abstract

As current transistor-based computational technologies reach their fundamental limitations, quantum computing offers a new paradigm that could radically increase our capacity for solving difficult problems. This talk will present an overview of quantum annealing as a specific method of quantum computation and discuss D-Wave's implementation based on superconducting flux qubits. I'll present some recent work done using our processor, including materials simulations of topological phase transitions in frustrated magnetic systems. This work represents the first experimental demonstration of the Kosterlitz-Thouless phase transition (winner of the 2016 Nobel prize in physics) in a transverse-field Ising model, and brings to mind Richard Feynman's original vision for quantum computing.

Wednesday, November 20, 2019
3:30 p.m.
Bob Wright Centre A104