



PHYSICS AND ASTRONOMY COLLOQUIUM

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“Quantum Optics and Quantum Information Processing with Superconducting Circuits”

Abstract

Coupling of superconducting qubits to quantized microwave fields stored in electrical circuits has opened new possibilities for quantum optics and quantum information processing in solid-state devices. With the steady improvements of the coherence time of superconducting qubits and with the large qubit-field coupling that can be achieved, these on-chip realizations of cavity QED, also known as circuit QED, can reach new parameter regimes currently unexplored in atomic based quantum optics.

In this talk, I will present an overview of circuit QED explaining how the quantum nature of microwave fields can be preserved for long times in specially designed electrical circuits and how this field can be strongly coupled to artificial on-chip atoms. I will also discuss how single microwave photons can be generated and studied in this system.

Wednesday, January 18, 2012

3:30 p.m.

Bob Wright Centre

Room A104