

Colloquium Notice

Leonardo Ranzani

Raytheon BBN Technologies

Multimode programmable parametric devices

Parametric amplifiers increase the measurement fidelity of quantum circuits and are crucial to observe quantum phenomena at microwave as well as optical frequencies. The most common implementation of a lumped-element amplifier is a single nonlinear resonator driven on resonance by a strong electromagnetic pump. In this talk I am going to discuss a more general class of parametric devices consisting of multiple resonant modes coupled via parametric drives. By suitably controlling the amplitude and phases of different parametric processes we can effectively implement new system Hamiltonians, that provide different signal processing functions, such as nonreciprocal signal routing and directional amplification. I will also discuss an implementation of a superconducting multimode parametric circuit on a single chip that can be programmed in situ via a set of microwave drives.

Monday

February 25, 2019

Starts at 12:15 PM

Coffee at 12:00 PM

Physics Conference Room, SB B326