

MAR16-2015-007816

Abstract for an Invited Paper
for the MAR16 Meeting of
the American Physical Society

Theory of strongly driven cavity coupled quantum dots: from micromasers to BECs of light

MICHAEL GULLANS, NIST - Natl Inst of Stds Tech

Embedding a double quantum dot (DQD) in a low loss microwave resonator results in a large electric dipole interaction between the charge states of the DQD and single microwave photons in the resonator. In the regime of a few electrons and photons, this system is reminiscent of well-known models of cavity quantum electrodynamics from atomic physics; however, there are important deviations due to the strong coupling of the DQD to the electronic reservoirs in the leads, as well as phonons in the lattice. In this talk, we explore how external control and driving of this unique hybrid system can be used to induce non-equilibrium states of light in the resonator.