

Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Quantum Dot Coupled to a Mesoscopic Fabry-Perot Resonator.

MICHAEL GROBIS, Stanford University, ILEANA RAU, Stanford University, RONALD POTOK, Harvard University, DAVID GOLDHABER-GORDON, Stanford University — We will present our study of a quantum dot coupled to a Fabry-Perot resonator. The Fabry-Perot resonator is created by tunnel coupling a lithographically defined two-lead quantum dot to an additional finite reservoir of tunable length. Fabry-Perot oscillations are observed in transport through the quantum dot caused by interference between the direct tunneling path through the dot and the multi-step path that includes tunneling in and out of the finite reservoir. These oscillations are dependent on the phase shifts acquired during the transmission events and the nature of the electron path through the Fabry-Perot cavity. Tuning the quantum dot through a Kondo resonance allows us to extract information about the Kondo transmission phase shift and the nature of Kondo screening cloud in this system.

Michael Grobis
Stanford University

Date submitted: 30 Nov 2005

Electronic form version 1.4