

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Observation of photon blockade in circuit QED using second-order correlation function measurements C. LANG, D. BOZYIGIT, C. EICHLER, L. STEFFEN, J.M. FINK, A.A. ABDUMALIKOV JR., M. BAUR, S. FILIPP, A. WALLRAFF, ETH Zurich — Circuit quantum electrodynamics (QED) provides an attractive platform to effectively study photon-photon interactions mediated by their strong and resonant coupling to a superconducting qubit embedded into a transmission line resonator. Driving the coupled system with a coherent microwave frequency tone the anharmonicity of the Jaynes-Cummings ladder blocks the transmission of more than a single photon through the resonator at a time. Using on-chip microwave beam splitters, linear amplifiers, and quadrature amplitude detectors we observe fluorescence and Rayleigh scattering in Mollow-triplet-like spectra. We investigate the phenomenon of photon blockade in second-order correlation function measurements which show antibunching and signatures of Rabi oscillations induced by the continuous drive coupling the ground and first excited states of the Jaynes-Cummings ladder.

C. Lang

Date submitted: 23 Dec 2010

Electronic form version 1.4