

Abstract Submitted  
for the MAR13 Meeting of  
The American Physical Society

**Non-Equilibrium Quantum Impurity Physics with Hybrid Light-Matter Systems** KARYN LE HUR, Centre de Physique Theorique, Ecole Polytechnique, CNRS, 91128, Palaiseau Cedex, France, MARCO SCHIRO, Princeton Center for Theoretical Science and Department of Physics, Joseph Henry Laboratories, Princeton University, Princeton, NJ 08544, USA — Recent advances in quantum electronics allowed to engineer hybrid nano devices made by coupling on chip a quantum dot to a microwave resonator as well as to electron reservoirs maintained at different bias voltages. These systems realize novel platforms to explore non equilibrium quantum impurity physics with light and matter. Focusing on a simple model of a biased quantum dot coupled to a photon mode we elucidate the signatures of the electronic correlations in the phase of the transmitted microwave signal. In addition we illustrate the effect of the electronic degrees of freedom on the photon field, giving rise to anharmonicity, damping and dissipation, and discuss how to control these effects by means of gate and bias voltages.

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Date submitted: 29 Nov 2012

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