

Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Cooper Pair Transistor Embedded in a dc-Biased High-Q Microwave Cavity¹ JULIANG LI, FEI CHEN, JOEL STETTENHEIM, Dartmouth College, A.J. SIROIS, University of Colorado, Boulder, R.W. SIMMONDS, National Institute of Standards and Technology, Boulder, M.P. BLENCOWE, A.J. RIMBERG, Dartmouth College — A high-Q microwave cavity design based on the circuit quantum electrodynamics architecture has been developed to introduce a dc bias to the center conductor of the cavity without significantly degrading the Q at high frequencies [1]. Here we directly couple Cooper pair transistors (CPTs) to such a cavity. In the subgap region of the CPT, the dc bias generates a tunable oscillating current through the CPT via the ac Josephson effect. Evidence of such self-oscillations has been observed as current peaks in our dc measurements, which are in good agreement with calculated cavity modes, and indicate the strong coupling between the CPT and the cavity. Recent experimental results will be discussed.

[1] F. Chen, A. J. Sirois, R. W. Simmonds and A. J. Rimberg, *Appl. Phys. Lett.*, 98, 132509 (2011).

¹This work is supported by the NSF, AFOSR and DARPA

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Date submitted: 12 Dec 2011

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