Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Frequency multiplexed dispersive readout of transmon qubits with the UCSB paramp DANIEL SANK, UCSB, R. BARENDS, J. BOCHMANN, B. CAMPBELL, Y. CHEN, B. CHIARO, E. JEFFREY, J. KELLY, M. MARIANTONI, A. MEGRANT, J. MUTUS, C. NEILL, P. O'MALLEY, S. OHYA, P. ROUSHAN, A. VAINSENCHER, J. WENNER, T. WHITE, A.N. CLELAND, J.M. MARTINIS, UC Santa Barbara — Our new Xmon qubit shows good coherence, controllability and simplified coupling to other circuit elements, making it a good candidate for a large scale quantum computer. Like all qubits, it requires high fidelity readout. To this end we have developed a new parametric amplifier circuit. Simplified input coupling of the amplifier allows straightforward interfacing with our frequency multiplexed dispersive readout circuitry. The amplifier features five different modes of pump power delivery, some of which allow us to reduce the microwave component count in our readout chain. We characterize our readout system using each of these modes of operation, as well as multi qubit readout.

Daniel Sank
UCSB

Date submitted: 09 Nov 2012 Electronic form version 1.4