

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Multiplexed dispersive readout of superconducting phase qubits¹

YU CHEN, RAMI BARENDS, RADOSLAW BIALCZAK, JULIAN KELLY, MICHEAL LENANDER, ERIK LUCERO, MATTEO MARIANTONI, MATTHEW NEELEY, AARON O'CONNELL, PETER O'MALLEY, Department of Physics, University of California-Santa Barbara, DANIEL SANK, AMIT VAINSENER, HAOHUA WANG, MARTIN WEIDES, JAMES WENNER, THEODORE WHITE, YI YIN, JIAN ZHAO, ANDREW CLELAND, JOHN MARTINIS, Department of Physics, University of California-Santa Barbara — A dispersive readout scheme is being developed for superconducting phase qubits. By inductively coupling to a LC resonator, the measured state of the qubit (left or right side of the potential well) can be read out as a shift of the resonance frequency. Compared to our current SQUID readout, this method eliminates the generation of quasiparticles, increases the reliability by reducing the junction count per qubit from 4 to 1, and reduces the chip wire count since the readout can be frequency multiplexed.

¹This work is supported by IARPA under ARO award W911NF-08-1-0336 and under ARO award W911NF-09-1-0375.

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Date submitted: 23 Dec 2010

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