Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Characterization of a Scalable Chip Mount Using a 5 Xmon Qubit Chain BROOKS CAMPBELL, Z. CHEN, B. CHIARO, A. DUNSWORTH, I.-C. HOI, J. KELLY, A. MEGRANT, C. NEILL, P. J. J. O'MALLEY, C. QUINTANA, A. VAINSENCHER, J. WENNER, T. WHITE, UC Santa Barbara, R. BARENDS, Y. CHEN, A. FOWLER, E. JEFFREY, J. MUTUS, P. ROUSHAN, D. SANK, Google, Santa Barbara, JOHN M. MARTINIS, UC Santa Barbara and Google, Santa Barbara — Superconducting quantum computing technology has progressed to the point that experiments involving the full control more than ten qubits will be realized in the next few years. As such, a scalable chip mount, able to accommodate dozens of microwave signal lines, will likely become necessary since current Xmon technology requires two control lines per qubit. Additionally, understanding parasitic coupling of Xmon qubits to control lines will aid in the proper design of both chips and chip mounts for even higher density circuits. I will present coherence, gate fidelity, and qubit cross-talk benchmark measurements from a high performance 5 Xmon chain in various chip mount designs and materials.

Brooks Campbell
UC Santa Barbara

Date submitted: 13 Nov 2014 Electronic form version 1.4