Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Progress towards a small-scale quantum annealer II: Device characterization and ultra-strong tunable coupling[1] CHRIS QUINTANA, UC Santa Barbara, YU CHEN, Google, Santa Barbara, DVIR KAFRI, Google, Venice, Z. CHEN, B. CHIARO, A. DUNSWORTH, B. FOXEN, C. NEILL, J. WENNER, UC Santa Barbara, A. SHABANI, H. NEVEN, Google, Venice, J. M. MARTINIS, Google, Santa Barbara UC Santa Barbara, GOOGLE QUANTUM HARDWARE TEAM TEAM — We discuss experimental progress with fluxmon qubits and tunable couplers for quantum annealing. We summarize measurements of ultra-strong tunable coupling, crosstalk, and coherence in the first few iterations of two-qubit coupled fluxmon devices, including both planar and 3D circuit architectures compatible with high connectivity. We explore the range of validity of the Born-Oppenheimer and two-level approximations, and also discuss techniques for automated device calibration and accurate, scalable device modeling.

[1]This work was supported by Google, Inc. and the NSF GRFP.

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Date submitted: 11 Nov 2016 Electronic form version 1.4