

Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Lift-Off Processing and Aluminum on Silicon Superconducting Circuit Coherence¹ ANDREW DUNSWORTH, ANTHONY MEGRANT, CHRIS QUINTANA, ZIJUN CHEN, RAMI BARENDS, YU CHEN, AUSTIN FOWLER, EVAN JEFFREY, JOSH MUTUS, PEDRAM ROUSHAN, DANIEL SANK, IOCHUN HOI, BROOKS CAMPBELL, BEN CHIARO, JULIAN KELLY, CHARELS NEIL, PETER O'MALLEY, AMIT VAINSENER, JIM WENNER, TED WHITE, ANDREW CLELAND, JOHN MARTINIS, Univ of California - Santa Barbara, MARTINIS GROUP TEAM — Dielectric loss from two level states (TLS's) are a limiting decoherence method in planar superconducting qubits. Previously we have shown that liftoff deposited metal has more loss than etched devices. Current fabrication techniques of Xmon qubit devices limit this loss by using liftoff metal on only a small area of the transmon including the Josephson junctions. However this method leads to excess loss when used on a silicon substrate. I have used quality factor measurements of coplanar waveguide resonator circuits as a tool to measure isolated steps in the liftoff processes. I will report on the effects of these steps and their added loss.

¹This research was funded by the Office of the Director of National Intelligence (ODNI), Intelligence Advanced Research Projects Activity (IARPA), through the Army Research Office grant JMAR-05.

Andrew Dunsworth
Univ of California - Santa Barbara

Date submitted: 06 Nov 2014

Electronic form version 1.4