

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Improved T2 in Josephson Phase Qubits DANIEL SANK, RAMI BARENDTS, RADOSLAW BIALCZAK, YU CHEN, JULIAN KELLY, MICHAEL LENANDER, ERIK LUCERO, MATTEO MARIANTONI, MATTHEW NEELEY, AARON O'CONNELL, PETER O'MALLEY, AMIT VAINSENER, HOAHUA WANG, MARTIN WEIDES, JAMES WENNER, THEODORE WHITE, YI YIN, JIAN ZHAO, ANDREW CLELAND, JOHN MARTINIS, UCSB — Phase qubit gate fidelities are limited by individual device dephasing times (T_2). Reduction of dephasing is therefore an important immediate goal for phase qubit experiments. A simple way to reduce dephasing is to increase the device loop inductance in order to lower the noise currents driven by magnetic flux noise; T_2 should scale linearly with loop inductance. Surface spin models for flux noise also predict that wider loop traces should reduce the noise. We present data on T_2 for phase qubits with varied loop inductance and trace width. We present data from experiments in which we find that doubling the loop inductance increases T_2 by 25%.

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Date submitted: 18 Nov 2010

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