Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Experimental State Tomography using Superconducting Quantum Bits M. STEFFEN, M. ANSMANN, R. BIALCZAK, N. KATZ, E. LUCERO, R. MCDERMOTT, M. NEELEY, E.M. WEIG, A.N. CLELAND, J.M. MARTINIS, UC Santa Barbara — The superconducting approach to building a scalable quantum computer has enjoyed tremendous successes in the past several years with coherence times now sufficiently long to implement quantum gates on a system with coupled qubits. In order to quantify the performance or fidelity of the gates, quantum state tomography is required. Successful state tomography relies on high measurement fidelities and the ability to perform arbitrary rotations in the transverse plane of the Bloch sphere. Here, we have made significant progress towards overcoming these challenges and present, for the first time, experimental data on single and two-qubit state tomography.

Matthias Steffen
UC Santa Barbara

Date submitted: 29 Nov 2005 Electronic form version 1.4