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Evolution and decay of a superconducting Josephson junction qubit due to partial measurement N. KATZ, M. ANSMANN, R. BIALCZEK, E. LUCERO, R. MCDERMOTT, M. NEELEY, M. STEFFEN, E. WEIG, A. CLELAND, J. M. MARTINIS, California NanoSystems Institute and Physics Dept., University of California, Santa Barbara, A. KOROTKOV, Electrical Engineering Dept., University of California, Riverside — Superconducting Josephson phase qubits have been shown to be a promising candidate for scalable quantum computing. In many such quantum computing algorithms, partial measurement of the quantum state is used to project the system into a required subspace. We experimentally study the effect of a partial measurement on our Josephson phase qubit using state tomography and high fidelity measurement capabilities. We also explore related multi-photon effects which appear naturally in such a system during state preparation, evolution and measurement.

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