Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

**Testing of qubit materials and fabrication using superconducting resonators** SHWETANK KUMAR, MATTHIAS STEFFEN, DAVID DIVINCENZO, GEORGE KEEFE, MARY BETH ROTHWELL, MATTHEW FARINELLI, JIM ROZEN, FRANK MILLIKEN, MARK KETCHEN, IBM Research — We will present the results of measurements made on superconducting resonators fabricated using different substrates and superconducting metals. Specifically, the quality factor of these resonators will be shown to be closely related to not only the purity of the substrates and metals used in the process but also to the details of the fabrication. We will demonstrate the change in quality factor of a bare resonator when subjected to the qubit process. Based on our measurements we propose that superconducting resonators may form a test bed for troubleshooting the fabrication process for minimizing the materials related dissipation in the qubits.

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Date submitted: 20 Nov 2008 Electronic form version 1.4