Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Cooper Pair Box Qubit in the Ultrastrong Coupling Regime MARKUS BRINK, MICHAEL METCALFE, LUIGI FRUNZIO, VLADIMIR E. MANUCHARYAN, JENS KOCH, TERRI M. YU, STEVEN M. GIRVIN, ROBERT J. SCHOELKOPF, MICHEL H. DEVORET, Yale University — We propose a new superconducting qubit design, where a small Josephson junction is inserted in the central conductor of a coplanar waveguide resonator. In this distributed element design, the resonator provides a negative reactance for the junction, which modifies the charging energy E_C of the junction and places the qubit far in the "Transmon regime", $E_J \gg E_C$, where E_J is the Josephson energy of the junction. We will discuss design details and show preliminary fabrication and measurement results.

Markus Brink
Yale University

Date submitted: 27 Nov 2007 Electronic form version 1.4