

Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Characterization of critical-current noise in Josephson junctions and its implications for qubit dephasing¹ CHRISTOPHER D. NUGROHO, VLADIMIR ORLYANCHIK, DALE J. VAN HARLINGEN, University of Illinois at Urbana-Champaign — Critical-current noise in Josephson junctions may ultimately limit the coherence of superconducting qubits. Presently qubit coherence times are limited by energy relaxation or other dephasing mechanisms, but recent qubit advances may put the coherence times in the regime where critical-current noise play an important role. We report on the measurement of I_c -noise in Josephson junctions and compare them to fluctuations in the normal state resistance when superconductivity is suppressed in a magnetic field. We measure the noise scaling with the junction area, normal state resistance, and temperature. We will then discuss the implication of this noise to qubit decoherence.

¹Work supported by IARPA grant Army UCB-00006692.

Christopher D. Nugroho
University of Illinois at Urbana-Champaign

Date submitted: 11 Nov 2011

Electronic form version 1.4