

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Two junction effects in dc SQUID phase qubit¹ B.K. COOPER, H. KWON, A.J. PRZYBYSZ, R. BUDOYO, J.R. ANDERSON, C.J. LOBB, F.C. WELLSTOOD, JQI and CNAM, U. of Maryland — The dc SQUID phase qubit was designed to allow one isolation junction to filter bias current noise from a second junction operating as a single junction phase qubit. As junctions shrink to minimize dielectric loss, the Josephson inductances of each junction approach the coupling loop inductance and this single junction picture appears inadequate. We consider a two-junction model of the dc SQUID phase qubit, where the qubit now corresponds to one of the normal oscillatory modes of the full SQUID. We discuss applications of this model to sweet spots in various control parameters and unusual behavior in the tunneling state measurement.

¹Funded by DOD, CNAM and JQI

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Date submitted: 29 Dec 2010

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