

Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

rf-reflectometry measurements of a Josephson junction oscillator circuit at milliKelvin temperatures¹ R. M. LEWIS, B. K. COOPER, University of Maryland, B. PALMER, Laboratory for Physical Sciences, HANHEE PAIK, S. K. DUTTA, T. A. PALOMAKI, A. J. PRZYPYSZ, H. KWON, J. R. ANDERSON, A. J. DRAGT, C. J. LOBB, F. C. WELLSTOOD, University of Maryland — We report on rf-reflectometry measurements on a Nb/AlOx/Nb Josephson junction tank circuit. The junction has nominal critical current of $5 \mu\text{A}$ and is loaded with an on chip capacitance of 50 pF to suppress the plasma frequency to $f_p \approx 2 \text{ GHz}$. Measurements were performed at temperature $T \approx 100 \text{ mK}$ in a dilution refrigerator. Reflection data show a clear rf absorption resonance and concomitant phase change about the resonant frequency. We will discuss use of this circuit for state readout ² of a phase qubit and as a device for measuring critical current noise in Josephson junctions.

¹This work is funded by the NSA, NSF grant EIA 0323261, and the Center for Superconductivity Research

²I. Siddiqi *et al.*, Phys. Rev. Lett. **93** 207002 (2004).

Rupert M. Lewis
University of Maryland

Date submitted: 20 Nov 2006

Electronic form version 1.4