Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Investigation of superconducting resonator designs for measuring the microwave response of vortices I. NSANZINEZA, H. CHEN, C. SONG, B.L.T PLOURDE, Syracuse University — The microwave response of superconductors can be influenced by the presence of vortices and the dynamics they exhibit at high frequencies. We present measurements of vortices trapped in superconducting resonators fabricated from thin aluminum films, a common material for superconducting qubit circuits. In particular, we are studying the dependence of the threshold magnetic field for trapping vortices on the resonator geometry. We perform field-cooled measurements of various configurations of coplanar waveguide resonators to study the magnetic field, frequency, and temperature dependence of the microwave vortex response. The addition of vortices results in a downward shift in resonant frequency and a reduction in the resonator quality factor. We discuss the optimization of the resonator layout for detecting the response from only a few vortices trapped in the superconducting film.

IBRAHIM NSANZINEZA
Syracuse University

Date submitted: 11 Nov 2011 Electronic form version 1.4