

Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Measurements of a YBCO superconducting quantum interference filter with planar ion-damaged Josephson junctions¹ STEVEN M. ANTON, SHANE A. CYBART, STEPHEN M. WU, JOHN CLARKE, R.C. DYNES, University of California, Berkeley — We have fabricated a two dimensional series-parallel array of 565×28 YBa₂Cu₃O_{7- δ} thin film ion damage Josephson junctions. The loop areas were varied incommensurately from 28.5 to 90 μm^2 so that the response of the current-biased array to an applied magnetic field is a prominent peak in voltage centered at zero field. We measured voltage versus applied magnetic field characteristics for several static bias currents at different temperatures. Additionally, we measured current-voltage (I - V) characteristics of the array with no applied magnetic field at several temperatures. To fit the I - V characteristics, we assumed that each parallel section of the array could be modeled as a single resistively shunted junction with critical currents following a normal distribution. Fitting the summed voltage contributions of the parallel sections to measurements of the array, we computed the resistance and critical current mean and spread. The standard deviation of these critical currents was 15 percent at 74 K.

¹This work was supported by AFOSR, and by DOE through the LBNL Molecular Foundry.

Steven Anton
University of California, Berkeley

Date submitted: 21 Nov 2008

Electronic form version 1.4