

Abstract Submitted
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Cantilever torque magnetometry study of multiply connected BSCCO arrays near T_c ¹ GRIGORIY POLSHYN, RAFFI BUDAKIAN, University of Illinois at Urbana-Champaign — The goal of this work is to study the superconducting coherence length in the fluctuation regime in cuprate superconductors. In this work we present cantilever torque magnetometry measurements of micron-size BSCCO flakes patterned with arrays of nanometer scale rings or holes. Using ultrasensitive dynamic torque magnetometry, oscillations in magnetization are observed near T_c as a function of the applied magnetic flux threading the array. Special effort was made to detect the oscillations in magnetization at temperatures above T_c , where the Nernst effect and magnetization measurements suggest the possibility of pairing. To constrain the magnitude of the coherence length in the fluctuation regime, we will present the dependence of the amplitude of the $h/2e$ period oscillations as a function of temperature and hole size.

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