

# **Using macroscopic discontinuities in magnetic susceptibility within a loop of type-II superconducting wire to measure global decoherence rate**

Stephen J. Minter<sup>1</sup>, Kirk Wegter-McNelly<sup>2</sup>, and Raymond Y. Chiao<sup>1</sup>

<sup>1</sup>*University of California, 5200 North Lake Road, Merced, USA*

<sup>2</sup>*Boston University, USA*

We have observed a phenomenon of a periodic “staircase” of macroscopic jumps in the admitted field, as the magnitude of an externally applied magnetic field is smoothly increased or decreased upon a superconducting loop of type II niobium-titanium wire which is coated with a non-superconducting layer of copper. Large temperature spikes were observed to occur simultaneously with the jumps, suggesting brief transitions to the normal state, assumed to be caused by en masse motions of Abrikosov vortices. An experiment that exploits this phenomenon to measure the speed of the global decoherence of a large superconducting system will be discussed, and preliminary data will be presented.