

Abstract Submitted  
for the MAR07 Meeting of  
The American Physical Society

**S-shaped Nonlinearities in the I(V) Characteristic of  $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$  Microstrips Due to the Presence of Phase Slip Lines.**<sup>1</sup>

P. MORALES, J.Y.T. WEI, Department of Physics, University of Toronto — Optimally doped high- $T_c$  superconducting  $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$  microstrips were fabricated using a chemical-free technique based on selective epitaxial growth. Pulsed I(V) measurements of the  $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$  microstrips exhibit steps under current biasing and an s-shaped nonlinearity under voltage biasing. Similar features have been seen in narrow superconductors, where  $w < \xi$ , and are explained by the formation of phase slip centers. The presence of these features in  $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$  microstrips are indicative of the formation of phase slip lines, 2D analogs of phase slip centers. The evolution of the s-shaped nonlinearity was studied as a function of temperature and applied magnetic field and will be discussed with respect to the stiffness of the phase and the amplitude of the superconducting order parameter in the high- $T_c$  cuprates.

<sup>1</sup>Work supported by NSERC, CFI/OIT, MMO/EMK, and Canadian Institute for Advanced Research.

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Date submitted: 20 Nov 2006

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