

Abstract Submitted  
for the MAR08 Meeting of  
The American Physical Society

**Disorder and the Metal-Insulator Crossover in  $\text{Pr}_{2-x}\text{Ce}_x\text{CuO}_{4-y}$**

P. L. BACH, W. YU, J. S. HIGGINS, H. XU, R. L. GREENE, CNAM, Department of Physics, University of Maryland, B. WEAVER, Naval Research Laboratory — One of the outstanding issues in the electron doped cuprates is the role that oxygenation plays in the superconductivity and normal state properties. Oxygen addition can be considered both a doping and a disordering process. To disentangle these two effects, disorder can be introduced by irradiating the samples without altering doping. We report transport studies on optimal and underdoped  $\text{Pr}_{2-x}\text{Ce}_x\text{CuO}_{4-y}$  films subject to proton irradiation and oxygenation. We establish a correlation between the static AFM and the metal-insulator crossover. Our separation of the disorder and doping effects also shed light on oxygen reduction effects in electron-doped cuprates. Supported by NSF grant DMR-0653535.

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Date submitted: 27 Nov 2007

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