

Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Electrical Transport Study of Fluctuations for the Superconducting Transition in the Electron Doped Cuprate $Pr_{2-x}Ce_xCuO_4$
JACQUES RENAUD, Département de physique, RQMP, Université de Sherbrooke, PATRICK FOURNIER, Département de physique, RQMP, Université de Sherbrooke, JACQUES BEAUVAIS, Département de génie électrique et informatique, RQMP, Université de Sherbrooke, CLAUDE BOURBONNAIS, Département de physique, RQMP, Université de Sherbrooke, MIKE DENHOFF, Institute for Microstructural Sciences, NRC, Canada — It is well known that due to their very short coherence length and high anisotropy, high-Tc superconductors have a region of fluctuations around Tc that is experimentally accessible. Electrical transport in the fluctuation region can be related to dimensionality and the two critical exponents, ν for the correlation length and z for the dynamics of the fluctuations. In this talk we report on the temperature dependence of the paraconductivity and the current-voltage measurement for thin films of the electron doped superconductor $Pr_{2-x}Ce_xCuO_4$. We use the Fisher, Fisher and Huse[1] dynamical scaling approach and the Lawrence-Doniach model to obtain a coherent picture of the superconducting phase transition in this material. The effect of disorder on our analysis will be addressed. [1] D. S. Fisher, M. P. A. Fisher and D. A. Huse, *Phys. Rev. B* **43**, 130 (1991).

Jacques Renaud
Département de physique, Université de Sherbrooke

Date submitted: 01 Dec 2004

Electronic form version 1.4