Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

C-axis Resistivity and Magnetoresistance of the Electron-doped Cuprate $Pr_{1.85}Ce_{0.15}CuO_4$ WEIQIANG YU, B. LIANG, R. L. GREENE, Center for Superconductivity Research, Department of Physics, University of Maryland, College Park, MD 20742 — C-axis resistivity and magnetoresistance have been studied extensively in the hole-doped high temperature superconductors. Observations, such as a resistivity upturn and associated negative magnetoresistance (n-MR), were attributed to the pseudogap. Recently similar phenomena were reported in the electron-doped superconductor $Sm_{1.85}Ce_{0.15}CuO_4$ (SCCO), and a universal Zeeman splitting of a spin gap (pseudogap) state was proposed [1]. Here we report transport properties of $Pr_{1.85}Ce_{0.15}CuO_4$ (PCCO) ($T_C \approx 25K$) single crystals for comparison. Our c-axis n- MR can be explained by superconducting fluctuations due to the Aslamazov-Larkin (AL) process and the fluctuating electronic density of states (FDOS) above H_{C2}. We find that PCCO does not follow the Zeeman scaling behavior as reported for SCCO. This work is supported by NSF (Grant DMR 0352735).
[1] T. Kawakami et al., Phys. Rev. Lett. 95, 017001 (2005).

Weiqiang Yu

Date submitted: 29 Nov 2005 Electronic form version 1.4