

Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Upper critical field in electron-doped $\text{Pr}_{2-x}\text{Ce}_x\text{CuO}_{4-\delta}$ in parallel magnetic fields¹ PENGCHENG LI, Center for Superconductivity Research and Department of Physics, University of Maryland, College Park, MD 20742, F.F. BALAKIREV, NHMFL-LANL, Los Alamos, NM 87545, R.L. GREENE, Center for Superconductivity Research and Department of Physics, University of Maryland, College Park, MD 20742 — We report a comprehensive study of the resistive superconducting transition in the electron-doped $\text{Pr}_{2-x}\text{Ce}_x\text{CuO}_{4-\delta}$ films down to 1.5K for magnetic field up to 58T applied parallel to the conducting ab-planes. We find that the parallel critical field ($H_{c2//ab}$) exceeds 58T for underdoped and optimally doped films. For the overdoped films, 58T is sufficient to suppress the superconductivity. An $H_{c2//ab}$ -T phase diagram is established. A comparison between our experimental results and theories for orbital and spin pairbreaking effects will be presented.

¹This work was supported by NSF Grant DMR-0352735. The work at NHMFL was supported by the NSF and DOE.

Pengcheng Li
Center for Superconductivity Research and Department of Physics
University of Maryland, College Park, MD

Date submitted: 24 Nov 2006

Electronic form version 1.4