

Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Remarkable doping dependence of the spin magnetoresistance in $\text{Pr}_{2-x}\text{Ce}_x\text{CuO}_4$ ¹ YORAM DAGAN, M.C. BARR, W.M. FISHER, R.L. GREENE, Center for Superconductivity Research, Department of Physics, University of Maryland, College Park, Maryland 20742, USA., T. DHAKAL, A. BISWAS, Department of Physics, University of Florida, Gainesville, Florida 32611. — The temperature, doping and field dependences of the magnetoresistance (MR) in $\text{Pr}_{2-x}\text{Ce}_x\text{CuO}_{4-\delta}$ films are reported. We distinguish between orbital MR, found when the magnetic field is applied perpendicular to the ab planes, and the nearly isotropic spin MR. The latter is the major MR effect in the superconducting samples. At low temperatures, the isotropic spin MR appears in the underdoped region, increases in magnitude at optimum doping and suddenly vanishes at $x=0.16$. This remarkable disappearance of the spin MR can be related to the Quantum critical point we have previously reported. [1] We also find a correlation between the spin MR and the upturn in resistivity ($d\rho/dT < 0$), which suggests that the upturn originates from spin scattering processes. (See also cond-mat/ 0408490) [1] Y. Dagan *et al.* Phys. Rev. Lett.**92**, 167001 (2004).

¹Supported by NSF grant DMR-0352735

Yoram Dagan
Center for Superconductivity Research, Department of Physics
University of Maryland, College Park, Maryland 20742, USA.

Date submitted: 23 Dec 2004

Electronic form version 1.4