

Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

IR and dc magneto-transport and ARPES compared: n-type cuprates¹ H.D. DREW, G.S. JENKINS, D.C. SCHMADEL, P.L. BACH, R. GREENE, University of Maryland at College Park, CNAM, H. KONTANI, Nagoya University, X. BÉCHAMP-LAGANIÈRE, G. ROBERGE, P. FOURNIER, Université de Sherbrooke — IR Hall angle measurements were performed on under- and overdoped $Pr_{2-x}Ce_xCuO_4$ (PCCO) samples at sufficiently low optical excitation energies (below 10meV) to directly probe the Fermi-surface (FS) properties. In the underdoped samples, a rapid reduction of the Hall mass with decreasing doping indicating formation of FS pockets will be discussed in terms of ARPES measured arcs. In the overdoped samples, the low temperature finite-frequency Hall coefficient R_H is severely suppressed below the low temperature dc R_H as well as the value predicted by ARPES data analyzed within the relaxation time approximation. This suppression with frequency is similar to the dc suppression observed at temperature $T \sim \omega$. The addition of electronlike contributions to the ac σ_{xy} , even at $T=0$, directly implicates inelastic scattering as the causal mechanism of the anomalous Hall effect in PCCO. These results will be discussed in terms of Fermi liquid theories utilizing the ARPES measured Fermi surfaces.

¹We acknowledge the support of CNAM and NSF.

H.D. Drew
University of Maryland at College Park, CNAM

Date submitted: 29 Nov 2009

Electronic form version 1.4