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IR and dc magneto-transport and ARPES compared: p-type cuprates[1] GREGORY S. JENKINS, D.C. SCHMADEL, H.D. DREW, University of Maryland at College Park, I. TSUKADA, CRIEPI, G.D. GU, Brookhaven National Laboratory, H. KONTANI, Nagoya University — We report IR Hall Effect measurements in the terahertz (THz) spectral region on optimally doped $Bi_2Sr_2CaCu_2O_{8+x}$ (BSCCO) single crystals and in $La_{2-x}Sr_xCuO_4$ (LSCO) films as a function of doping ranging from 7% to 16.5%. Critical comparisons between the dc Hall coefficient R_H and Hall angle θ_H, the IR R_H and θ_H, and the values predicted by ARPES analyzed within the relaxation time approximation will be discussed. In optimally doped BSCCO, the temperature power law associated with the off-diagonal conductivity at frequencies up to 10 meV deviates strongly from that of the longitudinal conductivity, and the IR Hall response is significantly larger than that expected based upon ARPES results. Analysis of dc R_H measurements and ARPES results show a significant anomalous Hall effect ∼100K even in severely overdoped Tl-2201. In LSCO, a rapid decrease of the Hall mass with underdoping, a hallmark signature of Fermi surface reconstruction, is shown to strongly deviate from that predicted by the ARPES measured Fermi arcs. These results will be discussed in terms of Fermi surface models. [G. S. Jenkins *et al.*, arXiv:0901.1701.]

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