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Evidence for Fermi surface reconstruction in h-doped cuprates: IR Hall measurements in underdoped $La_{2-x}Sr_xCuO_4$[1] H.D. DREW, G.S. JENKINS, D.C. SCHMADEL, R.L. GREENE, Center for Nanophysics and Advanced Materials, University of Maryland at College Park, ICHIRO TSUKADA, Central Research Institute of Electric Power Industry, Japan — We measure the IR Hall angle in $La_{2-x}Sr_xCuO_4$ as a function of doping ranging from 7% to 16.5%. The optimally doped sample is shown to be consistent with ARPES measurements. However, large deviations at low doping between the Hall mass and the IR Hall response predicted by the measured Fermi arcs in ARPES experiments is observed. The rapid decrease in Hall mass with underdoping is a hallmark signature of Fermi surface reconstruction exhibited in systems which are well known to fractionalize into Fermi pockets (underdoped PCCO). Comparisons with Fermi surface models will be discussed.

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