

Abstract Submitted  
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**Evidence of Fermi surface reconstruction and the formation of small hole pockets in underdoped  $\text{La}_{2-x}\text{Sr}_x\text{CuO}_4$ : Far Infrared Hall measurements**<sup>1</sup> D.C. SCHMADEL, G.S. JENKINS, H.D. DREW, CNAM, University of Maryland at College park, I. TSUKADA, T. ANDO, Materials Science Research Laboratory, CRIEPI, Tokyo, Japan — The Hall Effect in  $\text{La}_{2-x}\text{Sr}_x\text{CuO}_4$  films is measured from 3 to 100 meV as a function of temperature from 5K to 300K and carrier doping ranging from severely underdoped ( $x = 0.03$ ) to optimal doped ( $x = 0.15$ ). The behavior of the infrared Hall angle with temperature and frequency is found to be consistent with a simple extended Drude model at all dopings. A significant reduction of the Hall mass is observed when the hole doping level is reduced from optimal doping, which is consistent with a drastic reduction of the Fermi surface volume. These results are similar to earlier mid-IR Hall measurements obtained in underdoped YBCO, [1] and related to the recent observations of quantum oscillations reported in YBCO. [2]

[1] L. B. Rigal, et al., Phys. Rev. Lett. 93, 137002 (2004).

[2] N. Doiron-Leyraud, et al., Nature, 447 565 (2007); A. F. Bangura, et al., Cond-mat/07074461 and E. A. Yelland, et al., Cond mat/07070057

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