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Absence of magnetic field ($B \leq 33$ T) induced effects in the mid-infrared properties of $La_{2-x}Sr_xCuO_4$ films with $0 \leq x \leq 0.16$ S.V. DORDEVIC, L.W. KOHLMAN, The University of Akron, A. GOZAR, G. LOGVENOV, I. BOZOVIC, Brookhaven National Lab, L.C. TUNG, Y.-J. WANG, National High Magnetic Field Lab — We have performed magneto-transmission measurements on a series of $La_{2-x}Sr_xCuO_4$ films with magnetic fields up to 18 Tesla. Studied samples include doping levels x= 0, 0.1, 0.3, 0.45, 0.6, 0.8, 0.10. In addition, an optimally doped film (x= 0.16) was studied in magnetic fields as high as 33 Tesla, both below and above its superconducting critical temperature T_c= 41 K. In neither of the studied samples we could detect any field-induced changes of transmission in the mid- infrared energy range (between about 1000 and 3500 cm^{-1}). We discuss how these observations can enhance our current understanding of medium energy range excitations in the cuprates, and their relation to high temperature superconductivity.

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