Absence of magnetic field ($B \leq 33 \, \text{T}$) induced effects in the mid-infrared properties of $\text{La}_{2-x} \text{Sr}_x \text{CuO}_4$ films with $0 \leq x \leq 0.16$. S.V. DORDEVIC, L.W. KOHLMAN, The University of Akron, A. GOZAR, G. LOGVENOV, I. BOZOVIĆ, Brookhaven National Lab, L.C. TUNG, Y.-J. WANG, National High Magnetic Field Lab — We have performed magneto-transmission measurements on a series of $\text{La}_{2-x} \text{Sr}_x \text{CuO}_4$ 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 $T_c= 41 \, \text{K}$. 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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