

Abstract Submitted  
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**Huge ac magnetoresistance of  $\text{La}_{0.7}\text{Sr}_{0.3}\text{MnO}_3$  in sub-kilogauss magnetic fields**<sup>1</sup> RAMANATHAN MAHENDIRAN, ALWYN REBELLO, National University of Singapore, VINAYAK B. NAIK, National University of Singapore, SUJIT KUMAR BARIK, National University of Singapore — We report radio frequency ( $f = 0.1$ – $5$  MHz) magnetotransport of  $\text{La}_{0.7}\text{Sr}_{0.3}\text{MnO}_3$  in sub kilogauss magnetic fields ( $H = 0$ – $1$  kG). We measured ac resistance ( $R$ ) and reactance ( $X$ ) simultaneously. In zero field,  $R$  decreases smoothly around the Curie temperature  $T_C$  when  $f = 100$  kHz, but it increases abruptly and shows a peak close to  $T_C$  for  $f = 0.5$ – $5$  MHz. The peak decreases in amplitude, broadens and shifts downward in temperature as the bias field increases. The peak is completely suppressed under  $H_{dc} = 1$  kOe when  $f = 0.5$  MHz. A huge low-field *ac* magnetoresistance ( $\Delta R/R = 40$  %) and magnetoinductance ( $\Delta X/X = 12$  %) are found in a field of  $H_{dc} = 700$  Oe and  $f = 2$  MHz. We suggest that the observed ac magnetoresistance arises from the suppression of ac permeability and enhanced magnetic skin depth under a magnetic field. The dynamical magnetotransport reported here will be interesting from view points of fundamental physics and applications.

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