

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 fields¹ 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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