

Abstract Submitted
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Anisotropic Magnetoresistance in $(\text{La,Pr})_{0.67}\text{Ca}_{0.33}\text{MnO}_3$ Films.¹

MEGUMI YAMAMOTO, CHUHEE KWON, California State University Long Beach, ANTHONY DAVIDSON, SANJAY ADHIKARI, RAJESWARI KOLAGANI, Towson University — The out-of-plane anisotropic magnetoresistance (AMR) was measured in mixed phase manganite $(\text{La,Pr})_{0.67}\text{Ca}_{0.33}\text{MnO}_3$ (LPCMO) films. Two samples with different film thicknesses (~ 30 nm and ~ 150 nm) on LaAlO_3 substrate were compared for the effects of stress on AMR. The thicker sample exhibits an insulator-metal resistive transition with a hysteresis typical of LPCMO with the peak temperature of 175 K and 250 K at $H = 0$ T and 8 T, respectively. While the resistance of the thinner sample is too high for our system to measure (Quantum Design PPMS) below 140 K at $H = 0$ T, the peak temperature at 8 T is 105 K. AMR shows a sinusoidal angular dependence typical of a ferromagnet for both samples. In this talk, we will present systematic AMR measurements of the LPCMO samples. We found that the peak position of AMR depends both on film thickness and on temperature. In addition, we observed time-dependent changes in resistance at lower temperatures indicating a long relaxation time for spins.

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