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**Manipulation of the magnetic nanostructure of a hole-doped manganite using an electric field** TARA DHAKAL, JACOB TOSADO, YUN SUNG-HEE, AMLAN BISWAS, Department of Physics, University of Florida — The observation of colossal magnetoresistance (CMR) and phase co-existence in hole-doped manganese oxides (manganites) have sustained the interest in these materials for over a decade. We have studied the phase co-existence in the manganite  $(\text{La}_{1-y}\text{Pr}_y)_{1-x}\text{Ca}_x\text{MnO}_3$  (where  $x = 0.34$  and  $y = 0.5$ ) using magnetotransport and scanning tunneling microscopy (STM) measurements. The temperature dependence of the resistivity of this sample while cooling and warming shows a hysteresis which is a signature of first order phase transition and phase coexistence. We will present our results showing the effect of an applied electric field in this hysteretic region. The voltage current (V-I) characteristics in this temperature range shows a hysteresis around a certain current range. This hysteresis is pushed towards higher current by the application of magnetic field. Our data suggest that the applied electric field reorients the metallic regions of the material. Using this electric field driven reorientation we will suggest methods to manipulate the magnetism of manganites using electric fields. We will also present preliminary STM images showing direct evidence of the effect of an electric field on the magnetic nanostructure of the material.

Amlan Biswas  
University of Florida

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