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Thickness effect on magnetic and electronic response in phase separated manganite thin films[1] HYOUNG JEEN JEEN[2], Department of Physics, Pusan National University, S. Korea, AMLAN BISWAS, Department of Physics, University of Florida — Thickness variation can be used to observe confinement effects and to control the strain state of thin films. Such confinement and strain state variation often creates unconventional physical properties in thin films of complex oxides such as phase separated (La$_{1-y}$Pr$_{y}$)$_{0.67}$Ca$_{0.33}$MnO$_{3}$ (LPCMO). Thin films of LPCMO show physical properties different from bulk samples such as, in-plane magnetic anisotropy and strain-driven anisotropic dynamic percolation. In this presentation, we will show the relation between lattice strain and the formation of an antiferromagnetic charge ordered insulating phase and the effect of strain relaxation on the magnetic anisotropy and single domain to multi-domain transition in electronically phase separated LPCMO thin films. We observed an increase in residual resistivity, a reduction of in-plane magnetic anisotropy, and an increase of the domain transition temperature as the thickness of the thin films is increased.

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