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Glassy response to gate and magnetic fields in ultrathin manganite films M. EBLEN-ZAYAS, A. BHATTACHARYA, N.E. STALEY, A.L. KOBRINSKII, A.M. GOLDMAN, School of Physics and Astronomy, University of Minnesota — We have studied the low temperature behavior of thin films of $\text{La}_{0.8}\text{Ca}_{0.2}\text{MnO}_3$ in a field effect geometry. The films exhibit the usual insulator-metal transition near the Curie temperature, but below 30K there is a re-entrant insulating regime. In this regime, we observe glassy dynamics and a hierarchical response in the resistance to both electronic and magnetic perturbations. In addition, the magnetization of the film responds to electrostatic gating. We interpret these results in a framework where the system dynamics are governed by strain relaxation. This work was supported by the National Science Foundation under grant NSF/DMR-0138209 and the Univ. of Minnesota MRSEC (NSF/DMR-0212032).

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