

Abstract Submitted  
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**Magnetoelectric**

**coupling at the interface of  $\text{BiFeO}_3/\text{La}_{0.7}\text{Sr}_{0.3}\text{MnO}_3$  multilayers** MARIA J. CALDERON, Inst. Ciencia de Materiales de Madrid-CSIC, R. YU, Rice University, S. LIANG, University of Tennessee, Oak Ridge National Lab, J. SALAFRANCA, Universidad Complutense de Madrid, S. DONG, Southeast University and Nanjing University, S. YUNOKI, RIKEN and Japan Science and Technology Agency, A. MOREO, E. DAGOTTO, University of Tennessee, Oak Ridge National Lab, L. BREY, Inst. Ciencia de Materiales de Madrid-CSIC — Magnetoelectric coupling has recently been demonstrated in a system composed of the ferromagnetic manganite  $\text{La}_{0.7}\text{Sr}_{0.3}\text{MnO}_3$  (LSMO) and the ferroelectric antiferromagnetic  $\text{BiFeO}_3$  (BFO) [1,2]. Using a realistic microscopic model we study the effects of the charge redistribution and orbital reconstruction on the LSMO/BFO interface ground state. We find that the BFO interface (ferro)magnetism is affected by the charge density at the interface which, in turn, can be modified by the ferroelectric polarization on BFO. This interface induced magnetoelectric coupling leads to the recently observed electric field controlled exchange bias.

[1] S. M. Wu et al, Nature Materials 9, 756 (2010).

[2] P. Yu et al, Phys. Rev. Lett. 105, 027201 (2010).

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