Abstract Submitted
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Electronic and Magnetic Reconstruction at Manganite Interfaces[1] KALPATARU PRADHAN, ARNO P. KAMPF, University of Augsburg, Germany — We investigate interfaces between ferromagnetic metallic (FM) and antiferromagnetic insulating (AFI) manganites using a two-orbital double-exchange model including superexchange interactions, Jahn-Teller lattice distortions, and long range Coulomb interactions. In FM/AFI heterostructures the magnetic and the transport properties critically depend on the thickness of the AFI layers. We focus on superlattices where the constituent parent FM and AFI manganites have the same electron density n. For n=0.6, the induced ferromagnetic moment in the AFI layers sandwiched between FM manganites decreases monotonically with increasing layer width. For n=0.5 instead, the induced ferromagnetic moment varies non-monotonously with the layer width. These differences for n=0.6 and n=0.5 originate from different charge-transfer profiles and magnetic reconstructions at the FM/AFI interfaces. The width of the AFI layers furthermore controls the magnitude of the magnetoresistance and the metal to insulator transition of the FM/AFI heterostructure. These results are discussed in the context of recent experiments on LSMO/PCMO [1] and LCMO/PCMO superlattices [2].

[1] D. Niebieskikwiat *et al.*, Phys. Rev. Lett. 99, 247207 (2007).
[2] H. Li *et al.* Appl. Phys. Lett. 80, 628 (2002).

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