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**Examination of exchange fields at LaSrMnO**<sub>3</sub>/**BiFeO**<sub>3</sub> interfaces JASON T. HARALDSEN, Department of Physics and Astronomy, James Madison University, JIAN-XIN ZHU, ALEXANDER V. BALATSKY, Theoretical Division and Center for Integrated Nanotechnologies, Los Alamos National Laboratory — The complex oxide materials are providing a vast playground of interesting material properties that couples spin, orbital, and charge degrees of freedom. We examine the presence of significant magnetization within the antiferromagnetic layer of BiFeO<sub>3</sub> (BFO) between ferromagnetic (FM) LaSrMnO<sub>3</sub> layers. Using a classical exchange field to account for orbital reconstruction and possible inter-layer mixing, we quantify the energy scale for the interface exchange based from polarized neutron reflectivity measurements. Furthermore, we estimate the critical layer thickness in which the magnetization will be reduced to zero (or close to zero).

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