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Interfacial spin structure in *epitaxial ferromagnetic* oxide bilayers X. KE, V. LAUTER, Oak Ridge National Laboratory, C.B. EOM, M.S. RZCHOWSKI, University of Wisconsin-Madison — Interfaces between the individual layers in magnetic multilayer systems play a key role in determining the properties of the systems. In oxide heterostructures the interface can become even more important, sometimes dominating the physical properties of the materials and introducing unexpected behavior. In this paper, we report exchange-bias phenomena in a unique *epitaxial* exchange-biased *ferromagnetic* bilayer, $La_{0.67}Sr_{0.33}MnO_3$ / $SrRuO_3$, with an atomically sharp interface. Depending on the magnitude of the cooling fields, both negative and positive exchange-bias features are observed, in addition to a double hysteresis loop existing with intermediate cooling fields. Our previous work has shown that there is antiferromagnetic exchange coupling at the interface [1], despite both materials having ferromagnetic exchange coupling in bulk. Data of both bulk magnetometer and polarized neutron reflectometry (PNR) measurements will be presented, and the mechanism determining the interfacial spin structure of the bilayer will be discussed. Work supported by U.S. DOE.

[1]. X. Ke, M.S. Rzchowski, L.J. Belenky, and C.B. Eom, Appl. Phys. Lett. **84**, 5458 (2004).

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