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Magnetic Profiles at Engineered Perovskite LSMO Heterointerfaces J.J. KAVICH, J.W. FREELAND, Adv Photon Source, ANL, R.H. KODAMA, Dept of Phys, Univ of Ill at Chicago, M.P. WARUSAWITHANA, J.N. ECKSTEIN, Dept of Phys, Univ of Ill at Urbana-Champaign — One of the current challenges presented by manganites is the poor spin polarization of tunnel currents in spintronic devices due to degradation of the magnetic order at interfaces. The systems investigated are perovskite $La_{1-x}Sr_xMnO_3$(300Å) with a thin cap layer of STO(8Å) and a similar structure with a modified $LaMnO_3$(8Å) /STO(8Å) cap grown by ozone-assisted ALL-MBE. Detailed fitting of x-ray resonant magnetic scattering (XRMS) spectra allows direct characterization and comparison of the interface magnetic profiles. The XRMS indicates a smoothly varying profile of ∼40 Å depth with dramatically reduced surface magnetization and a reversible evolution as a function of temperature. Comparison of the magnetic profiles shows that changing the capping layer (equivalent to reducing the interface hole doping) has a negligible effect on the reduced magnetic order. Use of the Advanced Photon Source was supported by the U.S. Department of Energy, Office of Science, under Contract No. W-31-109-Eng-38.

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