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Interface Magnetization in Digitally Layered $(LaMnO_3)_{2n}/(SrMnO_3)_n$ Superlattices J.J. KAVICH, University of Illinois at Chicago, A. BHATTACHARYA, Materials Science Division, Argonne National Laboratory, J.W. FREELAND, Advanced Photon Source, Argonne National Laboratory, J.N. ECKSTEIN, University of Illinois at Urbana-Champaign — Interfaces in solids have been an enduring theme in materials physics due to the exciting new physics that can emerge in interface regions arising from a variety of competing interactions. Because of this, multilayer materials can provide a novel means to separate disorder physics from other competing interactions. The samples used in this experiment were grown using ozone-assisted atomic layer by layer molecular beam epitaxy (ALL-MBE) on (100) oriented $SrTiO_3$. Using X-ray Resonant Magnetic Scattering, we present a comparison of the magnetic properties at interfaces of a series of $(LaMnO_3)_{2n}/(SrMnO_3)_n$ superlattices as a function of n ranging from 1 to 5 unit cells. Combined with transport measurements, the magnetic properties appear to be correlated with a change in the electronic properties of the superlattice. Work at Argonne is supported by the U.S. Department of Energy, Office of Science, under Contract No. DE-AC02-06CH11357.

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