

Abstract Submitted
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Magnetoelectric Dead Layer and Uncompensated Spins in Magnetic/Ferroelectric Heterostructures MIKEL HOLCOMB, CHIH-YEH HUANG, JINLING ZHOU, ROBBYN TRAPPEN, GUERAU CABRERA, West Virginia University, YING-HAO CHU, National Chiao Tung University, WEST VIRGINIA UNIVERSITY TEAM, NATIONAL CHIAO TUNG UNIVERSITY TEAM — Interfacial magnetoelectricity across a multilayer system is known to sometimes result in much larger coupling between electric and magnetism than in single phase systems. We compared the magnetic domains in LaSrMnO₃ thin films, ferroelectric domains in PbZrTiO₃ and observed uncompensated spin at the interface. Several techniques to quantify image contrast switching between left and right circularly polarized x-ray absorption spectra of magnetic domains and uncompensated spin were developed and gave similar results. Not surprisingly, the magnetic domain switching increased with magnetic film thickness, but the uncompensated spin did as well. This results suggests that there may be an effective magnetoelectric dead layer at the interface between coupled magnetic and ferroelectric layers, which is likely linked to at least the magnetic dead layer in the magnetic film. These measurements were taken by L-edge spectromicroscopy at the PEEM3 beamline of the Advanced Light Source.

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