

Abstract Submitted
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Determination of inhomogeneous magnetic profiles in an asymmetric Fe/Gd multilayer¹ EVGENY KRAVTSOV, DANIEL HASKEL, Advanced Photon Source, Argonne National Laboratory, SUZANNE G.E. TE VELTHUIS, YONGSEONG CHOI, J. SAMUEL JIANG, Materials Science Division, Argonne National Laboratory — We have studied the dependence of the detailed magnetization depth profile in a [Fe(35 Å)/Gd(50 Å)]₅ multilayer on the applied magnetic field and temperature. Utilizing the complementarity of x-ray resonant magnetic reflectivity (element-specificity and high spatial resolution) and polarized neutron reflectivity (large magnetic scattering cross sections), we applied a unified approach by simultaneous refinement and resolved the complex magnetization profiles. It was found that the small number of periods together with the asymmetric termination (Fe-top, Gd-bottom) lead to unique inhomogeneous magnetic phases, which are characterized by significant twisting of Fe and Gd magnetic moments and non-uniform distribution of magnetization density within the Gd layers.

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