Abstract Submitted
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Field cooling dependence of the anisotropy in exchange biased FeF_2/Co films[1] A.K. ALSMADI, S.G.E. TE VELTHUIS, Argonne National Laboratory, Argonne, IL, HONGTAO SHI, DAVID LEDERMAN, West Virginia University, Morgantown, WV — Using polarized neutron reflectometry we have studied the magnetization reversal in exchange biased single-crystal FeF_2/Co films grown on MgF_2. A recent study showed that the anisotropy of the antiferromagnetic FeF_2 plays an important role in determining the magnitude and effective direction of the exchange bias field H_E[1]. After field cooling perpendicular to the c-axis (easy axis of FeF_2), the magnetization curve determined with the applied field parallel to the c-axis, shows a double loop, one with positive bias, and one with negative bias. This behavior suggests that the antiferromagnet is simply split into two types of domains, inducing opposite H_E along the c-axis. However, our observation of spin-flip reflectivity in the field regions separating the two loops indicates that some rotation of the Co magnetization also occurs during reversal, implying that H_E does not lie exclusively along the c-axis.

[1] Hongtao Shi, David Lederman, Phys. Rev. B 66, 094426 (2002).

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Abdel Khaleq M. Alsmadi
Argonne National Laboratory

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