

Abstract Submitted
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Intrinsic Exchange Bias and Origin of Uncompensated Magnetization in FeF₂¹ IGOR V. ROSHCHIN, KARIE E. BADGLEY, Texas A&M University, K.D. BELASHCHENKO, University of Nebraska-Lincoln, M. ZHERNENKOV, M.R. FITZSIMMONS, LANL, IVAN K. SCHULLER, University of California - San Diego — After more than 50 years since the discovery of Exchange Bias, its microscopic mechanism remains unknown. Several experimental findings demonstrate and many models agree that uncompensated magnetization (UM) in the antiferromagnet (AF) plays an important role in exchange bias. However, the origin of the UM is unknown. Magnetometry and polarized neutron reflectometry (PNR) measurements indicate that the UM is present even in the AF-only, (110)-FeF₂ grown on MgF₂, samples, and the PNR reveals the spatial distribution of the UM. Exchange bias in the AF-only sample is reported. Coupling of the UM to the bulk antiferromagnetic order parameter is supported by several experimental results, including high value of exchange bias field, its temperature dependence and the absence of training effect. We will discuss the origin of the UM based on general symmetry arguments.

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