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Magnetic Memory in Field Cooled Exchange Biased Thin Films MATTHEW RYTTING, KARINE CHESNEL, BRIAN WILCKEN, JOSEPH NEL-SON, ANDREW WESTOVER, Brigham Young University, ERIC FULLERTON, STEVE KEVAN, DAVID VINE, IAN MCNULTY, Argonne National Lab — We have fabricated samples of alternating ferromagnetic multilayers of Co/Pd, with antiferromagnetic layers of an IrMn alloy. This system exhibits exchange bias, i.e. the magnetization loop is shifted - or "biased" - toward a preferred direction. This effect occurs when the sample has been cooled in the presence of a magnetic field. It has been found that such samples exhibit a high degree of magnetic domain memory when cooled below the blocking temperature in absence of a magnetic field (Zero Field Cooled state). We are interested in studying the behavior of memory when cooling the sample in the presence of a magnetic field (Field Cooled state). To quantify the amount of memory, we collect X-ray Resonant Magnetic Scattering (XRMS) images at synchrotron facilities. Using a cross- correlation technique, we can determine the degree of memory exhibited by the sample. We are also complementing the XRMS study with MFM images measured with an in-situ magnetic field.

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