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**Thin-Film Magnetic Moment Measurements Using Anisotropic Magnetoresistance** FABIO DA SILVA, University of Colorado at Denver, SEAN HALLORAN, ANTHONY KOS, National Institute of Standards and Technology, WILLARD UHLIG, Army Research Laboratory - MD, JOHN UNGURIS, DAVID PAPPAS, National Institute of Standards and Technology — The Anisotropic Magnetoresistance (AMR) effect is used to estimate the magnetic moment of thin-film Permalloy samples. The method uses the angular dependence of the AMR to measure the shape anisotropy field of high aspect ratio rectangular bars. The measurement is directly proportional to the saturation magnetization and the thickness of the sample via the demagnetizing factor. Relative uncertainties of 0.1 % of magnetic moments less than  $10^{11}$  A·m<sup>2</sup> can be obtained. These uncertainties are mainly due to the sample geometry and its influence on the domain structure, and the magnetic field uncertainties. AMR results are supported by scanning electron microscopy with polarization analysis, conventional magnetometry measurements, and micromagnetic simulations.

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