

Abstract Submitted  
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**On the method of exchange bias measurement** ONDREJ HOVORKA (\*), ANDREAS BERGER, San Jose Research Center, Hitachi Global Storage Technologies, San Jose, CA 95120, GARY FRIEDMAN (\*), Electrical and Computer Engineering Department, Drexel University, Philadelphia, PA 19104 — Exchange bias is the observation of a hysteresis loop shift in ferromagnetic-antiferromagnetic compound structures [1]. Recently, such a shift was also observed in all ferromagnetic bilayer systems [2]. Conventionally, exchange bias fields are measured by determining the average coercive field of a hysteresis loop (two-point method). However, hysteresis loops in exchange biased systems can also change in shape and even exhibit asymmetrical reversal [3], which can affect the estimate of the exchange bias field significantly. A different method for measuring the exchange bias based on obtaining the “center of mass” for exchange biased hysteresis loops is proposed and analyzed in this work. The method is validated by numerical simulation, using a realistic model system composed of soft and hard ferromagnetic layers coupled antiferromagnetically. Our calculations allow us to determine the laterally averaged bias field  $\langle H_{\text{bias}} \rangle$  created by the hard layer grains. We find that  $\langle H_{\text{bias}} \rangle$  is in excellent quantitative agreement with the proposed “center of mass” measurement, but not with the conventional two-point method. [1] A. Berkowitz, K. Takano, J. Magn. Mater. 200,552 (1999) [2] A. Berger et. al., Appl. Phys. Lett. 85, 1571 (2004) [3] S. G. E. te Velthuis et. al., J. Appl. Phys. 87, 5046 (2001)

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