

Abstract Submitted  
for the MAR11 Meeting of  
The American Physical Society

**Using Azimuthal Hysteresis for Determining the Anti-ferromagnet Moment Density at the Spin Glass Interface: The case of BFO** KHALID ASHRAF, SAYEEF SALAHUDDIN, UC Berkeley — We report a systematic procedure for extracting the anisotropies, exchange energies and the surface anti-ferromagnet (AFM) moment of AFM-ferromagnet (FM) systems that show spin glass (SG) behavior. In any SG system, the hysteresis characteristics at a critical angle combined with the azimuthal hysteresis properties give important information about the surface AFM moment density and the coupling energy. Using this scheme we report the interface magnetic energy parameters of the epitaxial BFO-FM system. We find a single value for the interface coupling energy that reproduces both the exchange bias and the enhancement. Our extracted surface AFM moment density is of the order of the FM moment density that is independent of the FM material used. The high moment density on the BFO surface indicates a significant magnetic property modification at the BFO-FM interface. The implication of the presence of this high AFM moment is discussed in the context of achieving deterministic electric field driven magnetic moment switching.

Khalid Ashraf  
UC Berkeley

Date submitted: 19 Nov 2010

Electronic form version 1.4