

Abstract Submitted
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PNR studies of spin-flop and spin-flip processes in magnetic multilayer, NiFe/Ir system¹ HAILE AMBAYE, Oak Ridge National Lab, Oak Ridge, TN, GARY MANKEY, The University of Alabama, Tascaloosa, Al, VALERIA LAUTER, Oak Ridge National Lab, Oak Ridge, TN, JIMMY HWANG, Lane College, Jackson, TN — Early GMR devices relied on antiferromagnetic interlayer coupling to work and it was shown that the interlayer coupling is in fact oscillatory, with both ferromagnetic and antiferromagnetic interlayer exchange depending on the thickness of the nonmagnetic layer [1,2]. Different competing interactions such as magnetic anisotropy and interlayer afm coupling occur in multilayer systems. Distinguishing the individual contributions is one of the major challenges in the study of multilayered systems. We used polarized neutron reflectivity (PNR) with full polarization analysis to understand how the magnetization is distributed through the system and how deep the flipping process of the magnetization goes into the system. Depending on the range of the external field applied parallel to the easy axis we studied the occurrence of spin-flop and spin-flip events in the system.

[1] S. S. P. Parkin, Phys. Rev. Lett. **71**, 1641 (1993).

[2] D. Elefant, et al., Phys. Rev. B **77**, 014426 (2008).

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