Abstract Submitted
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Influence of Interlayer Exchange Coupling and Exchange Bias on the Ferromagnetic Resonance Spectra[1] DIRK BACKES, New York University, BARTEK KARDASZ, Spin Transfer Technologies, JUERGEN LANGER, Singulus Technologies AG, ANDREW D. KENT, New York University — We present a study of the influence of exchange bias and exchange coupling on the shape and width of ferromagnetic resonance (FMR) spectra. Such interactions are employed in pinned synthetic antiferromagnets (SAF), layer stacks in which two ferromagnetic layers are antiferromagnetically coupled due to interlayer exchange coupling (IEC). One of the ferromagnetic layers shares an interface with an antiferromagnet, thus pinning its magnetization due to the exchange bias (EB) effect. It has been shown that quantitative values for the IEC and EB interactions can be determined from FMR dispersion relations [1]. In this work we study how these interactions manifest themselves in the peak intensities and line widths of FMR spectra. For this we adjust the strength of exchange bias and IEC by varying the thickness of PtMn and Ru in PtMn/ 2 CoFe/ Ru/ 2.3 CoFeB layer stacks (thicknesses in nm). We investigate various cases: i) presence or absence of an exchange bias field, combined with different kinds of IEC: ii) strong and weak antiferromagnetic, weak parallel, and no coupling. [1] D. Backes et al., JAP 111, 07C721 (2012).

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