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Unidirectional Damping in Exchange Biased Systems[1] MATTHEW BRADFORD, HWACHOL LEE, ERIC EDWARDS, ZEENATH TADISINA, CLAUDIA MEWES, SUBHADRA GUPTA, TIM MEWES, The University of Alabama —
We report on the investigation of the angular dependence of the damping parameter in thin film NiFe, exchange biased by a layer of FeMn. By using a broadband ferromagnetic resonance technique (shorted waveguide), the resonant field and linewidth were determined as a function of the in-plane angle and the microwave frequency. We find that the effective damping parameter, as extracted from the frequency dependent linewidth data, shows a unidirectional anisotropy, displaying a sinusoidal behavior with respect to the in-plane angle. The effective damping parameter is minimal when the field during FMR measurements is applied parallel to the exchange bias direction and maximal for antiparallel alignment. These experiments in conjunction with thickness dependent measurements suggest that uncompensated spins at the ferromagnet/antiferromagnet interface are responsible for the increased magnetization relaxation observed in these structures.

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