Abstract Submitted
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Resistance and Scattering Anisotropy of Al Interfaces with Co, Fe, and Co(91)Fe(9).[1] NIKOLETA THEODOROPOULOU, THIBAULT HAILLARD, AMIT SHARMA, REZA LOLOEE, WILLIAM PRATT JR., JACK BASS, Dept. of Physics and Astronomy, Michigan State University — The properties of normal/ferromagnetic metal interfaces, described by the interface specific resistance, AR* (A = area, R = resistance) and spin scattering anisotropy, γ, are of both fundamental interest and practical interest for optimizing current-perpendicular-to-plane (CPP) magnetoresistance (MR) and current-induced magnetization-switching (CIMS) in nanopillars. From measurements of the CPP resistances and MRs of sputtered [Al/F]xN (F= Fe, Co, Co(91)Fe(9)) multilayers with N-bilayers, and Al/F-based exchange-biased spin-valves, we are able to estimate 2AR* and γ for each metal pair at 4.2K. In each case, 2AR* is large and γ is small, comparable to values of 2AR* $\sim$ 9 fΩm^2 and γ $\sim$0.03 for Permalloy (Py)/Al interfaces [1], and each differing by an order of magnitude from the parameters for well-studied Co/Cu and Py/Cu interfaces (2AR* $\sim$ 1 fΩm^2, γ $\sim$ 0.8). The values of AR* with Al are too large to be explained by the resistivities of alloyed Al/F interfaces. The similarity of results for Py, Fe, Co, and Co(91)Fe(9) strongly suggests that spin dependent scattering at Al/F interfaces is determined mainly by the properties of Al. [1] N. Theodoropoulou et al., J. Appl. Phys. (In Press, 2006).

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