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**Exchange coupling in multilayers with perpendicular magnetic anisotropy** JIAN ZHOU, RALPH SKOMSKI, STEVEN MICHALSKI, ROGER KIRBY, DAVID SELLMYER, Department of Physics and Astronomy and CMRA, University of Nebraska, Lincoln, NE 68588 — Recently much attention has been paid to the interlayer exchange coupling (IEC) through nonmagnetic layers, for especially certain applications. In this work we investigate the interlayer exchange coupling through Cu or Pt spacer layers between two magnetic phases with perpendicular or in-plane anisotropy. $(Pt5Å/Co3Å)_3$ layers with perpendicular magnetic anisotropy (PMA) are exchange-coupled to an in-plane anisotropic Sm-Co 30Å layer through a Pt spacer. The competing anisotropies and IEC in the system yield a spin-reorientation transition behavior with a varying Pt thickness. We also have studied $(Pt5Å/Co3Å)_3$ layers which are exchange-coupled to $(Co3Å/Pt5Å)_3$ through a Cu spacer. Transition from single phase hysteresis to two-phase behavior indicates a reducing IEC between the PMA layers with increasing Cu thickness. Both model calculations and micromagnetic simulations show that interlayer exchange coupling is essential in calculating the hysteresis, and indicate how the interlayer coupling can be tuned by changing the spacer thickness. * This research is supported by DOE, NSF-MRSEC, the W. M. Keck Foundation, and CMRA.

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