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**Parallel and anti-parallel coupling of CoPt/Ru/CoFe trilayers investigated with magnetometry and ferromagnetic resonance** MICHAEL PECHAN, CHENGTAO YU, Miami University, Oxford, OH, STEFAN MAAT, Hitachi Global Storage Technologies, San Jose, CA — Due to their low resistivity ($\sim$30 $\mu\Omega$-cm) and critical thickness $CoPt_x$ ($16 \leq x \leq 24$ at %) thin films are interesting pinning materials for current perpendicular to the plane (CPP) spin-valve sensors [1]. These properties help to minimize serial resistance and thus enhance the magneto-resistance. 4 nm thick CoPt films deposited on Cr were shown to exhibit coercivities up to 1.5 kOe. One requirement for using CoPt as a pinned layer in a CPP spin-valve is that anti-parallel (AP) coupling to a reference layer can be demonstrated to minimize magnetostatic coupling to the free layer to keep the free layer magnetically soft. Here we investigate the parallel (P) and AP coupling of $CoPt_{18}(50)/Ru(x)/CoFe_{16}(36)$ trilayers with $0 \leq x \leq 2.1$ nm with magnetometry and ferromagnetic resonance (FMR). We found the coupling to be oscillatory with peaks at $x = 0.7$ nm (AP) 1.4 nm (P) and 2.0 nm (AP), respectively. These peaks were also observed using 35 GHz FMR in saturation. From the FMR technique the coupling strengths were determined to be 1150 (AP), 250 (P) and 660 (AP) Oe respectively. Variable temperature magnetometry reveals the exchange, coercivity and saturation fields increase monotonically with decreasing temperature. Supported at Miami by U.S. Dept. of Energy [1] S. Maat et al. J. Appl. Phys. Dec. 1 issue (2005)

Michael Pechan
Miami University, Oxford, OH

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