

Abstract Submitted
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Oscillatory spin transport in spin Hall multilayers IGOR BAR-SUKOV, University of California, Irvine, A. M. GONALVES, P. SOLEDADE, C. A. C. PASSOS, M. COSTA, CBPF, Rio de Janeiro, Brazil, N. M. SOUZA-NETO, LNLS, Campinas, Brazil, F. GARCIA, CBPF, Rio de Janeiro, Brazil, H. K. LEE, A. SMITH, University of California, Irvine, O. TRETIAKOV, Tohoku University, Sendai, Japan, I. N. KRIVOROTOV, University of California, Irvine, L. C. SAMPAIO, CBPF, Rio de Janeiro, Brazil — We study multilayers of sputtered Pt/(d)Cu/Py as a function of the Cu thickness d using ferromagnetic resonance (FMR). The FMR linewidth reveals a linear dependence on the frequency with negligible inhomogeneous contribution. The Gilbert damping falls smoothly with increasing d , but presents a strong superimposed oscillation with a period of ~ 1.5 nm. We attribute this behavior to RKKY-like spin transport in the confinement of the Cu layer. The induced perpendicular anisotropy due to the proximity effect shows a similar behavior. We evaluate the induced magnetic moment on Pt using x-ray magnetic circular dichroism and find that it decreases with increasing Cu thickness smoothly. Again, we see oscillations of the magnetic moment and show that the oscillatory spin transport affects proximity induced magnetism in Pt. We extend our study to multilayer systems with increased oxidation levels and with out-of-plane crystal texture, in order to investigate the effects of disorder and electron's k -vectors that are responsible for the oscillatory spin transport.

Igor Barsukov
University of California, Irvine

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