

Abstract Submitted
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Spin Transport in Ferromagnetic and Antiferromagnetic Insulators¹ SHANSHAN SU, GEN YIN, YIZHOU LIU, Department of Electrical and Computer Engineering, University of California, Riverside, JIADONG ZANG, Department of Physics, University of New Hampshire, YAFIS BARLAS, Department of Physics and Astronomy, University of California, Riverside, ROGER LAKE, Department of Electrical and Computer Engineering, University of California, Riverside — Recently, experiments of spin pumping have been done for system with antiferromagnetic oxides (AFMOs) as a spacer between YIG and Pt [1-3]. Observation of spin transport through the AFMO and the enhancement of spin pumping signal in the system due to the insertion of AFMO have been reported [1,2]. In this research, we model the spin transport in Pt/YIG/Pt and Pt/YIG/AFMO/Pt heterostructures using the Landau–Lifshitz–Gilbert equations coupled with the non-equilibrium Green’s function equations. We show that a pure spin current generated at the first Rashba SOC electrode is carried by magnon through YIG, which can be converted back to spin pumping signal at the second electrode. The spin dynamical details at the heterostructure can determine the transport efficiency. The effect of different magnetization orientations and finite temperatures will be addressed. [1]C. Hahn et al., EPL 108, 57005 (2014) [2]H. Wang et al., Phys. Rev. Lett. 113, 097202 (2014) [3]H. Wang et al., Phys. Rev. B 91, 220419 (2015)

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