Abstract Submitted
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Investigation of Spin Pumping in YIG/Cu/Py using Ferromagnetic Resonance[1] YU-MING HUNG, GEORG WOLF, ANDREW D. KENT, Department of Physics, New York University, HOUCHEN CHANG, YIYAN SUN, MINGZHONG WU, Department of Physics, Colorado State University — Spin pumping in YIG/Au/Fe structures has been demonstrated where the YIG film serves as a spin battery, while the Fe film functions as a spin sink [1]. In principle, the insulating YIG film can also absorb spin currents through interfacial *s-d* interactions and function as a spin sink for spin pumping. In this presentation we report on the coupling between the YIG and Permalloy (Py) films in YIG/Cu/Py systems from the viewpoint of the spin pumping effect, where both layers function as either a spin battery or a spin sink. We found an increased Gilbert damping for both the YIG and Py films by means of ferromagnetic resonance (FMR) measurements. We discuss the Gilbert damping constant (α) of YIG(40nm), Cu(5nm)/Py(3nm), and YIG(40nm)/Cu(5, 20nm)/Py(3nm) and apply these values to spin diffusion model for the calculation of spin mixing conductance. These results show the spin pumping effect at both the ferrimagnetic/NM and ferromagnetic/NM interfaces in YIG/Cu/Py structures and the dual function of the YIG and Py films in terms of the generation and absorption of spin currents.
[1] B. Heinrich et. al., Phys. Rev. Lett. **107**, 066604 (2011).

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