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IJL –

Resonant absorption of surface acoustic waves in magnetic thin films

The well-established fabrication of compact surface acoustic wave (SAW) devices, together with well-defined resonance frequencies, places SAWs as an attractive route to manipulate the magnetization states in spintronics, all of which is made possible by the magnetostriction and magnetoelastic effects [1]. In this talk, I will introduce the basic principles of our SAW devices, and our res- onant coupling experiments of SAWs with magnetic films. For resonant coupling of SAWs with magnetic films, we interpret the interaction between SAWs and coherent excitations of magnetization precession or spin waves. More specific, I will present the SAW excitation of ferromagnetic resonance, and subsequent spin current generation [2, 3], the nonreciprocal absorption of SAW in thin CoFeB films [4], enhancement of acoustic spin pumping using acoustic cavities [5], and if time permits, our recent work on SAW resonant absorption in CrCl3 [6], and our efforts towards demonstrating strong magnon-phonon coupling [7].

References

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