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The effect of phonon pumping on damping of antiferromagnet dynamics

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Abstract

The dynamics of an antiferromagnetic insulator attached to a nonmagnetic insulator is investigated. Pumping of phonons by magnetization dynamics from an antiferromagnet into an adjacent nonmagnetic insulator, which is accompanied by angular momentum transfer, leads to increased damping. Moreover, the results show that strong coupling between magnetization dynamics and elastic waves, where the coupling strength is much larger than the dissipation of both subsystems, is observable as a level repulsion in the antiferromagnetic absorption spectrum.

Keywords: magnetoelastic coupling, magnon-polaron, phonon pumping, damping of antiferromagnetic.

For full article, refer to the Persian section