

Investigation of phonons and magnons in [Ni₈₀Fe₂₀/Au/Co/Au]₁₀ multilayers

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The properties of surface acoustic waves (fig. 1a) and spin waves propagating in magnetic [Ni₈₀Fe₂₀/Au/Co/Au]₁₀ multilayers (fig. 1b) on silicon substrate have been investigated by high resolution Brillouin spectroscopy [1-2]. The behavior of spin waves was studied in two experimental geometries: Backward Volume (BV) geometry and Damon-Eshbach (DE) geometry [3]. The thickness of cobalt (Co) layer was different for each sample and the influence of the layer's thickness on the dispersion relation has been tested. The samples were decorated with non-magnetic aluminum (Al) periodic structures. The crossing of phonon and magnon dispersion relations has also been examined. Additionally, the theoretical dispersion dependences have been obtained from simulations performed with finite element method.

Summary

Topic

1. Phonons, plasmons, magnons and polaritons

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