

Goos-Hänchen effect for spin waves in thin films - micromagnetic simulations

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Goos-Hänchen shift (GHS) is an effect known from optics which can occur for a reflection of light falling on the interface between two dielectric medias at the angle of incidence close or bigger than the critical angle. The appearance of the lateral shift along interface between the incident light beam spot (point of incidence) and the reflected light beam spot (point of reflection) is called as a GHS. We show that for spin waves propagating in thin ferromagnetic film the GHS can also exist at the reflection from the edge of the film and reach measurable values. We prove this using micromagnetic simulations and analyse the properties of the GHS with the theoretical model. The nonuniformity of the internal magnetic field at the ferromagnetic film edge is shown to be a key parameter for the observation of a GHS.

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