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Functional Spintronic Nanomaterials for Radiation Detection and Energy Harvesting



Using Brillouin light scattering to characterize magnetic ultrathin films

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This talk will introduce the inelastic light scattering technique (also called Brillouin light scattering – BLS, or also Brillouin-Mandelstam light scattering) and its application to the measurement of nearly all micromagnetic parameters of ultrathin films (i.e., of the order of 1 nm thickness), which are the present material of choice of Spintronics. Indeed, even if BLS has witnessed a clear revival in the recent years as it a rather direct technique to measure the anti-symmetric exchange term (the Dzyaloshinskii-Moriya interaction, DMI) induced by interfaces [1], it also allows accessing other micromagnetic parameters that are difficult to measure otherwise, given the small thickness of such samples.

After describing the measurements theory, practical cases will be described, including investigating the dependence of interfacial DMI on the thickness of adjacent layers [2], the measurement of the micromagnetic parameters of intermetallic ferri-magnetic ultrathin films [3], as well as measuring the influence of irradiation on the properties of magnetic ultrathin films [4].

Reference list

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