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SPIN-WAVE SURFACE PARAMETER CHARACTERIZATION OF MAGNETIC THIN FILM INTERFACES

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Abstract - The rapid progress in spin-wave resonance (SWR) studies of magnetic thin films, initiated in 1958, has since abated. This report is aimed at showing how the method, presently applied to the properties of magnetic surfaces and interfaces, has undergone a revival. We shall give a review of recent experimental SWR work on monocrystalline magnetic thin films and its theoretical interpretation based on the "surface inhomogeneity" model involving the spin-wave pinning parameter. Special attention will be given to effects related with the presence, in SWR spectra, of resonance lines corresponding to surface magnons. In the analysis, the pinning parameters of both surfaces of the film are determined by having recourse to the relative intensities of bulk and surface resonance lines. This approach allows to achieve essential insight into the microscopic mechanisms which generate anisotropies on the magnetic surfaces and interfaces. The feasibility of novel applications of the method to the study of bulk and interface magnetic interactions will also be considered.
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