Model for the Surface Anisotropy Field Observed in Thin *(Ga,Mn)As* Film Spin-Wave Resonance

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The source of Spin-Wave Resonance (SWR) in thin films of the ferromagnetic semiconductor $(Ga, Mn)As$ is still under debate: does SWR stem from the surface anisotropy (in which case the surface inhomogeneity (SI) model would apply), or does it originate in the bulk inhomogeneity of the magnetic structure of the sample (and thus requires the use of the volume inhomogeneity (VI) model)? We will outline the ground on which this controversy arose and will show why in different configurations of the static magnetic field $\boldsymbol{H}$ with respect to the surface (with the angle θ_H between the surface normal and the external field) a resonance sample may meet the assumptions of either the SI or the VI model. The border between respective domains of applicability of both the VI and SI models in $(Ga, Mn)As$ thin films is related to the so-called critical angle θ_C, the particular configuration at which the multi-peak SWR spectrum reduces to a single-peak one. We anticipate that SWR fulfills the assumptions of the SI model in configurations $\theta_H > \theta_C$, whereas the VI model applies to $\theta_H < \theta_C$ - under the stipulation that both models to be modified in their touchiest point: the boundary conditions adopted (and expressed by the Surface Anisotropy Field).