

# Low temperature properties of inhomogeneous magnetic multilayers

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In the last years the problem of magnetic excitations in multilayers has been considered in many papers. Theoretical and experimental approaches dedicated to such systems showed that it is necessary to take into account the anisotropic factors. We calculate spin wave resonance spectrum characteristics for multilayered system with spatial distribution of anisotropy across magnetic layers. Temperature dependence of anisotropy parameters is also taken into account. We assume the system in which the spin wave resonance modes are induced entirely by exchange interactions and therefore they strongly depend on magnetic inhomogeneities. Parameters of spin wave spectrum are calculated using the transfer matrix method. We take also into account the effects of damping by means of the relaxation equation. As a result the parameters describing spin wave spectrum have been obtained for several magnetic systems deposited on substrate characterised by parameters corresponding to GaAs. Moreover, the temperature dependence of magnetization of a multilayered system was calculated and the spin wave parameter  $B$  in the Bloch's law  $T^{3/2}$  was found and presented in dependence of parameters characterizing the system considered.