SPIN WAVE DAMPING STIMULATED BY EXCHANGE INTERACTION AT SPIN-ORIENTATION PHASE TRANSITIONS IN HEXAGONAL FERROMAGNETS

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S u m m a r y

The types of phase transitions (PTs) and the conditions for them to occur in hexagonal ferromagnets (FMs) have been determined. The fundamental frequencies of the magnetization vector have been calculated for every ground state of a hexagonal FM. In order to take the dissipation processes in the system into account, a new form of the dissipation function proposed by Bar'yakhtar was used. The dispersion equation for oscillations of the magnetization vector in a hexagonal FM, taking the dissipation of the spin wave energy into account in the exchange approximation, has been derived, and the relevant fundamental frequencies have been calculated. The results obtained are in full agreement with those of the PT theory. The tensor of high-frequency magnetic susceptibility for a hexagonal FM has been calculated as well, which enables the crystal itself and the spin-orientation PTs in it to be described in detail.