THE HIGH ENERGY PARAMAGNETIC SPIN FLUCTUATIONS IN NICKEL

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There are controversy concerning the nature of spin fluctuations in the paramagnetic phase of the ferromagnetic 3d metals. A particular focus of attention has been the possibility of the persistence of spin waves into the paramagnetic phase. The problem is complex since it concerns the *time* dependent,*large* spin fluctuations in *critical* region. We have studied the spin fluctuations with large wave vectors in paramagnetic nickel above T_c by means of computer calculations of the dynamical susceptibility of paramagnetic Ni. The calculations are based on a dynamical mean field like approximation where the meny body effects are accounted for via q and ω dependent effective interaction evaluated in the polarization potential approximation. The calculated spectral function and the cross section for neutron scattering have well defined peaks that indicate special character of the dynamics of 3d electron in Ni. The peak, however, is too wide for interpretation in terms of propagating spin excitations.

9.7 cm

13.4 cm

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