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Spin Waves in a Spin-Pair System and in a System of Magnetic Ions with Large Anisotropy Energy*  

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Abstract

It has recently been shown, by using a molecular field theory, that in these systems a new type of spin ordering occurs under external magnetic fields. In the present paper, the physical properties of these systems at low temperatures are investigated on the basis of spin wave theory. In the ordered state, the spin wave frequency is proportional to the wave number when it is small, and the proportionality coefficient is strongly dependent on the intensity of external field. The field dependence of spin temperature in adiabatic magnetization process is modified from that obtained by the molecular field theory.