THERMODYNAMICS OF THE SPIN-1/2 HEISENBERG CHAIN WITH NEXT-NEAREST NEIGHBOR INTERACTIONS

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9.7 cm

Linear chains of N spin-$\frac{1}{2}$ with nearest and next-nearest exchange interactions have been investigated by numerical diagonalization of the full energy matrix. The diagonalization has been performed for ferro- and antiferromagnetic coupling between next-nearest as well as nearest neighbors. The magnetic susceptibility and specific heat versus temperature have been calculated. The behavior of the thermal and magnetic properties of finite chain has been estimated by extrapolation ($N \longrightarrow \infty$). Various physical properties such as magnetic susceptibility and specific heat were compared with experimental data for $Pb[Cu(SO_4)(OH)_2]$ natural single crystal.

13.4 cm

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