TRANSFER-MATRIX SIMULATIONS OF LINEAR MAGNETIC SYSTEMS

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9.7 cm

The quantum transfer-matrix method (QTM) has been applied to study the finite-temperature static properties of the spin $S = 1$ antiferromagnetic Heisenberg chains in a wide range of the single-ion anisotropy and temperatures. The high-resolution QTM simulation data are obtained for the zero-field susceptibility, specific heat as well as for the field-dependent magnetization. The microscopic parameters of a number of real quasi-one-dimensional compounds are found from fitting procedures, some theoretical approaches are numerically verified and low-temperature extensions of high-temperature series are given in terms of Chebyshev polynomials. An extension of the technique to a non-uniform bound alternating molecular magnets is also put forward.

13.4 cm

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