Exact solution of a spin chain with binary and ternary interactions of Dzialoshinsky-Moriya type

Gottlieb, David

Rössler, Jaime

We analyze a one-dimensional spin system with two Dzialoshinsky-Moriya-like interactions which couple spins in pairs and triads, respectively. In spite of its intricate aspect, we obtain a very simple solution by means of a Wigner-Jordan transformation. In general, the eigenstates are superposition of spin helixes; they can be characterized as chiral spin states. © 1999 The American Physical Society.