ORDERED STATES AND NONLINEAR LARGE-SCALE EXCITATIONS IN A PLANAR MAGNET OF SPIN $s = 1$

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S u m m a r y

We study ordered states and topological excitations in a quasi-two-dimensional magnet modeled by a square lattice with spins $s = 1$ at all sites, and a Hamiltonian with the biquadratic exchange interaction between the nearest neighbor sites. We propose two effective Hamiltonians for the description of large-scale excitations in the strictly two-dimensional case. They describe excitations of the mean field in the nematic phase and the mixed ferromagnetic-nematic phase. It is shown that the effective Hamiltonians are minimized on configurations with fixed topological charge. These topological excitations can arise at low temperatures and cause the destruction of a long-range order in the strictly two-dimensional system.