

Ground-state behaviors of quantum compass model in an external field (LT26)

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The ground-state (GS) properties of two-dimensional (2D) quantum compass model in an external field on the infinite square lattice are investigated by using the exact diagonalization (ED) method. We obtain the GS energy and evaluate quantities such as the correlation functions, nearest-neighbor entanglement, local order parameter, and so forth. As the external field is presented, the first-order quantum phase transition will be absent and the system exhibits the behaviors of the second-order phase transition.