

Bose-Einstein condensation of the 2-magnon bound state in the spin-1 triangular supersolid state

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Purpose We study the spin-1 triangular Heisenberg model using numerical methods and search for the spin supersolid states with magnetic fields.

Outline We calculate the ground state properties such as order parameters, magnetizations and dynamical properties to characterize the spin supersolid states.

Results We have identified the spin supersolid phase by tuning magnetic fields and mapped out the magnetic phase diagram of the spin-1 Hamiltonian, which is related to the material $\text{Na}_2\text{BaNi}(\text{PO}_4)_2$.

Computing system: Octopus

Node-hour 5250 points

Memory used 256 GB

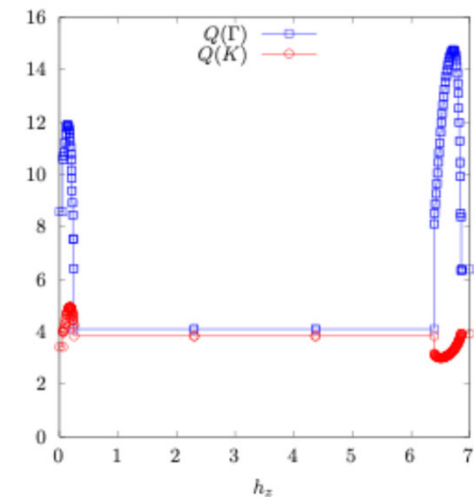


Figure of the quadrupolar orders for various magnetic fields.