

**Transverse field effect on thermodynamic properties of the spin-3/2
Blume-Capel model on rectangular lattice**

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Influence of transverse field on the spin-3/2 Blume-Capel model is studied within the mean field approximation. Phase diagrams in the (transverse field, temperature) plane are constructed for different values of single-ion anisotropy. Temperature dependences of thermodynamical functions for different values of the model parameters are obtained.

It is shown that at some sets of the model parameters the re-entrant and double re-entrant phase transitions between the antiferromagnetic and the paramagnetic phases take place. The same behaviour is found out inside the antiferromagnetic phase.