

Ising model: secondary phase transition

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Lattice-spin phonons are considered, which make the heat capacity at the critical temperature satisfy experimental observations better. There is a BEC phase transition in an Ising model attributable to the lattice-spin phonons. We proved that the spin-wave theory only is available after BEC transition, and the magnons have the same characteristics as the lattice-spin phonons', resulting from quantum effect. Energy-level overlap effect at ultralow temperature is found. A prediction of BEC phase transition in a crystal is put forward as our theory generalization.

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