High temperature series expansions for the susceptibility of Ising model on the Kagome lattice with nearest neighbor interactions

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Abstract
The Ising model is one of the simplest models describing the interacting particles. In this work, we calculate the high temperature series expansions of zero field susceptibility of ising model with ferromagnetic, antiferromagnetic and one antiferromagnetic interactions on two dimensional kagome lattice. Using the Pade’ approximation, we calculate the susceptibility of critical exponent of ferromagnetic ising model $\gamma = 1.75$, which is consistent with universality hypothesis. However, antiferromagnetic and one antiferromagnetic interaction ising model doesn’t show any transition at finite temperature because of the effect of magnetic frustration.

Keywords: Ising model, series expansion, Pade’ approximation, frustration

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