

Approximation for the Ising model

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An approximation for the Ising model is proposed. The method presented is based on endowing a small subsystem with the properties of an infinite system by modification of the subsystem's boundary. The analysis was made for a two-dimensional square lattice. When the correctness of the single spin correlation functions is conserved, the method gives results comparable with those obtained in the mean-field approximation. When the single and double spin correlations are taken into account, the results are similar to those obtained in the Kikuchi pseudo-ensemble method. The paper presents a discussion on the degree of improvement of the results resulting from taking into account the other spin correlations.

9.7 cm

13.4 cm

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