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Molecular-field theory method for evaluating critical points of Ising model[1] KIRILL K. ZHURAVLEV, Los Alamos National Laboratory — The molecular-field theory is one of the most common approximations used to calculate properties of materials with Ising model. A generalization, improving the previous results of molecular-field theory, is proposed. This method distinguishes between two lattices with different geometries but equal number of nearest neighbors, such as square and diamond, and triangular and simple cubic lattices, a result, which is missing from most other mean-field approaches. Spontaneous magnetization as a function of temperature shows remarkable deviations from mean-field type of behavior and is in good agreement with exact results.

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