Monte Carlo simulation of a two-dimensional magnetic foam

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Abstract

A two-dimensional Ising-like model with spin 1 and long-range interactions is studied numerically through a Monte Carlo simulation. The goal of the simulation is to describe pattern formations and critical temperature of two-dimensional magnetic structures. Three sets of parameters are considered, that give rise to stripes, labyrinths or cellular domain structures. We determine for each configuration the transition ordering temperatures, the relaxation of the energy, the hysteresis cycle, and the average size of the domains.