Numerical Study of φ^4 Model by Potential Importance Sampling Method

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Abstract: We investigate the phenomena of spontaneous symmetry breaking for φ^4 model on a square lattice in the parameter space by using the potential importance sampling method, which was proposed by Milchev, Heermann, and Binder [J. Stat. Phys. 44 (1986) 749]. The critical values of the parameters allow us to determine the phase diagram of the model. At the same time, some relevant quantities such as susceptibility and specific heat are also obtained.

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