Physics 514 – Ising Exercise

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Due 10:00 AM, Thursday October 26 2017

1 Ising Model

Simulate the Ising model,

$$H = -J \sum_{\langle i,j \rangle} S_i S_j \tag{1}$$

on a square lattice in two dimensions using Metropolis Monte Carlo with single spin flip updates.

Compute the expectation values of the absolute value of the magnetization, magnetic susceptibility, the energy, and the specific heat as a function of temperature.

Find the approximate location of the phase transition on small lattices.

Homework Submission

Summarize your results and plots into one PDF file and also submit your codes to Canvas.