

Simulations with an external magnetic field

$$E = -J \sum_{\langle i,j \rangle} \sigma_i \sigma_j - h \sum_i \sigma_i$$

here $J > 0$ for ferromagnet
- we added minus sign in front
- a matter of taste...

For $h > 0$, the average magnetization $\langle M \rangle > 0$

Simple change in the acceptance probability

$$P(S \rightarrow \tilde{S}_j) = \min \left[\frac{W(\tilde{S}_j)}{W(S)}, 1 \right]$$

$$\frac{W(\tilde{S}_j)}{W(S)} = \exp \left[-\frac{2J}{T} \sigma_j \left(\sum_{\delta(j)} \sigma_{\delta(j)} - h \right) \right]$$

Friday's discussion: We looked at the program `ising2d.jl`