One- and Two-Dimensional Ising Model

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1. Introduction

Describe the problem

1.1. Ising Model

Ising Model in general

Give interpretation of specific heat, average energy and magnetization in the model.

One-Dimensional Model

1D Ising Model

Two-Dimensional Model

2D Ising Model

1.2. Metropolis Monte Carlo Methods

Metropolis MC in general

What are we going to discuss in this paper?

2. Method

What are we going to discuss in this section?

beter structureren, splitsen in 1D en 2D?

how have we applied the MMC to the 1D and 2D ising model? Refer to appendix with actual implementation

3. Experiments

What are we going to discuss?

Discuss Average energy conceptually

Discuss specific heat conceptually

Discuss average magnetization conceptually

3.1. One-Dimensional Model

Wat gaan testen?

Average Energy

Define average energy for 1D

Report average energy for different values of T, N and NSAMPLES

Specific Heat

Define specific Heat for 1D

Report specific heat for different values of T, N and NSAMPLES

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3.2. Two-Dimensional Model

Wat gaan we testen

Average Energy

Define average energy for 1D

Report average energy for different values of T, N and NSAMPLES

Specific Heat

Define specific Heat for 1D

Report specific heat for different values of T, N and NSAMPLES

Average Magnetization

Define magnetization

Report average magnetization for different values of T, N and NSAMPLES

4. Discussion

What are we going to discuss?

Interpret results in terms of a phase transition from a state with magnetization zero to a state with definite magnetization (slide 31)

Invloed van de parameters, T, N, NSAMPLES

4.1. One-Dimensional Model

Present analytical solution i.e. prove whatever is one slide 28

Compare results with the analytical solution

4.2. Two-Dimensional Model

Compare Average magnetization with the exact result for the infinite system

5. Conclusion

Hoe goed sluit het model aan bij de het exacte resultaat?

Wat hebben we geleerd over de parameters.