

# ONE- AND TWO-DIMENSIONAL ISING MODEL

L.E.N. Baakman\*  
l.e.n.baakman@student.rug.nl

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## 1. INTRODUCTION

Describe the problem

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

### 1.1. ISING MODEL

Ising Model in general

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

## 3. EXPERIMENTS

What are we going to discuss?

### ONE-DIMENSIONAL MODEL

1D Ising Model

Wat gaan testen?

#### AVERAGE ENERGY

### TWO-DIMENSIONAL MODEL

2D Ising Model

Define average energy

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

### 1.2. METROPOLIS MONTE CARLO METHODS

Metropolis MC in general

What are we going to discuss in this paper?

#### SPECIFIC HEAT

Define specific Heat

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

## 2. METHOD

What are we going to discuss in this section?

### 3.2. TWO-DIMENSIONAL MODEL

Wat gaan we testen

#### AVERAGE ENERGY

Define average energy

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\*Master Profile: Computing Science  
Student Number: s1869140

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

Wat hebben we geleerd over de parameters.

## SPECIFIC HEAT

Define specific Heat

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

## AVERAGE MAGNETIZATION

Define specific Heat

Report specific heat 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?