

# Contents

<b>1</b>	<b>Liquid interfaces</b>	<b>3</b>
1.1	xx . . . . .	3
1.2	Diffusion dynamic . . . . .	3
1.3	Shearing at interface . . . . .	3
1.4	Delville's experiment . . . . .	3
<b>2</b>	<b>SOS model</b>	<b>4</b>
2.1	Hamiltonian : from Ising to SOS . . . . .	4
2.2	Transfer Matrix method . . . . .	4
2.3	Discretization of the system with respect to continuous models	4
2.3.1	Correlation length and temperature . . . . .	4
2.4	Three magnetic fields . . . . .	4
2.4.1	A : fluctuation suppressing model -B . . . . .	4
2.4.2	B : fluctuation enhancing model +B . . . . .	4
2.4.3	C : symetric model $ B $ . . . . .	4
<b>3</b>	<b>Strip geometry</b>	<b>5</b>
3.1	Interface probability distribution, David's Airy computation .	5
3.2	Other stuff . . . . .	5
<b>4</b>	<b>Simulations</b>	<b>6</b>
4.1	Monte Carlo method . . . . .	6
4.1.1	Metropolis algorithm . . . . .	6
4.1.2	Technicalities about parallelisation and pRNG . . . . .	6
4.1.3	Equilibrium and Autocorrelation time . . . . .	6
4.2	Glauber dynamics . . . . .	6
4.2.1	The pinning problem on a Glauber dynamics. How model B answers that . . . . .	6
4.3	Kawasaki dynamics . . . . .	6
4.4	Differences between the two dynamics . . . . .	6
<b>5</b>	<b>Semiinfinite geometry</b>	<b>7</b>
5.1	No magnetic field case, analytical computations . . . . .	7
5.2	? . . . .	7

<b>6</b>	<b>Kawasaki SOS + shear</b>	<b>8</b>
6.1	Corresponding experiment . . . . .	8
6.2	Results with respect to the drive . . . . .	8
6.2.1	Interpretation . . . . .	8
6.2.2	Abraham's paper on shearing suppressing fluctuations .	8
<b>7</b>	<b>Finite size effects</b>	<b>9</b>
7.1	Casimir force on a strip . . . . .	9
7.1.1	Free energy and integration of observables . . . . .	9
7.1.2	Coupling parameter approach (Lopes) . . . . .	9
7.2	Adaptation with semiinfinite plane . . . . .	9
<b>8</b>	<b>Kawasaki+Glauber SOS</b>	<b>10</b>
8.1	Corresponding experiment with mixing %ages of Glauber . .	10
8.1.1	Fluctuation of height . . . . .	10
8.2	Results . . . . .	10
<b>9</b>	<b>Wrap-up and perspectives</b>	<b>11</b>

## Chapter 1

# Liquid interfaces

1.1 xx

1.2 Diffusion dynamic

1.3 Shearing at interface

1.4 Delville's experiment

## Chapter 2

# SOS model

2.1 Hamiltonian : from Ising to SOS

2.2 Transfer Matrix method

2.3 Discretization of the system with respect to continuous models

2.3.1 Correlation length and temperature

2.4 Three magnetic fields

2.4.1 A : fluctuation suppressing model -B

2.4.2 B : fluctuation enhancing model +B

2.4.3 C : symmetric model  $|B|$

## Chapter 3

# Strip geometry

3.1 Interface probability distribution, David's Airy computation

3.2 Other stuff

## Chapter 4

# Simulations

### 4.1 Monte Carlo method

#### 4.1.1 Metropolis algorithm

#### 4.1.2 Technicalities about parallelisation and pRNG

#### 4.1.3 Equilibrium and Autocorrelation time

### 4.2 Glauber dynamics

#### 4.2.1 The pinning problem on a Glauber dynamics. How model B answers that

### 4.3 Kawasaki dynamics

### 4.4 Differences between the two dynamics

## Chapter 5

# Semiinfinite geometry

5.1 No magnetic field case, analytical computations

5.2 ?

## Chapter 6

# Kawasaki SOS + shear

### 6.1 Corresponding experiment

### 6.2 Results with respect to the drive

#### 6.2.1 Interpretation

#### 6.2.2 Abraham's paper on shearing suppressing fluctuations



## Chapter 7

# Finite size effects

### 7.1 Casimir force on a strip

#### 7.1.1 Free energy and integration of observables

#### 7.1.2 Coupling parameter approach (Lopes)

### 7.2 Adaptation with semiinfinite plane

## Chapter 8

# Kawasaki+Glauber SOS

### 8.1 Corresponding experiment with mixing %ages of Glauber

#### 8.1.1 Fluctuation of height

### 8.2 Results

## Chapter 9

# Wrap-up and perspectives