# Contents

Preface vii

Chapter 1. Self-Adjoint Operators 1
  1.1. Symmetric operators 1
  1.2. Spectral decomposition of self-adjoint operators 8

Chapter 2. Semi-Groups 15
  2.1. Semi-groups of self-adjoint operators 15
  2.2. Kolmogorov semi-groups 19

Chapter 3. Logarithmic Sobolev Inequalities 37
  3.1. The Poincaré and Gross inequalities 37
  3.2. An application to ergodicity 55

Chapter 4. Gibbs Measures 65
  4.1. Generalities 65
  4.2. An Ising model with real spin 73

Chapter 5. Stabilization of Glauber- Langevin Dynamics 89
  5.1. The Gross inequality and stabilization 89
  5.2. The case of weak interactions 95
  5.3. Perspectives 101

Appendix A. 105
  A.1. Markovian kernels 105
  A.2. Bounded real measures 109
  A.3. The topology of weak convergence 111

Bibliography 117