

# Contents

<i>Preface</i>	vii
<i>List of Symbols</i>	ix
<b>I Introduction</b>	
1. Introduction	1
2. Construction of Gaussian Processes	8
3. Some Fundamental Tools of Probability Theory	17
<b>II The Basic Processes</b>	
4. The Wiener Process, the Oscillator Process, and the Brownian Bridge	32
5. Regularity Properties—1	43
6. The Feynman–Kac Formula	48
7. Regularity and Recurrence Properties—2	60
<b>III Bound State Problems</b>	
8. The Birman–Schwinger Kernel and Lieb’s Formula	88
9. Phase Space Bounds	93
10. The Classical Limit	105
11. Recurrence and Weak Coupling	114
<b>IV Inequalities</b>	
12. Correlation Inequalities	119
13. Other Inequalities: Log Concavity, Symmetric Rearrangement, Conditioning, Hypercontractivity	136

<b>V</b>	<b>Magnetic Fields and Stochastic Integrals</b>	
14.	Itô's Integral	148
15.	Schrödinger Operators with Magnetic Fields	159
16.	Introduction to Stochastic Calculus	170
<b>VI</b>	<b>Asymptotics</b>	
17.	Donsker's Theorem	174
18.	Laplace's Method in Function Space	181
19.	Introduction to the Donsker–Varadhan Theory	198
<b>VII</b>	<b>Other Topics</b>	
20.	Perturbation Theory for the Ground State Energy	211
21.	Dirichlet Boundaries and Decoupling Singularities in Scattering Theory	224
22.	Crushed Ice and the Wiener Sausage	231
23.	The Statistical Mechanics of Charged Particles with Positive Definite Interactions	245
24.	An Introduction to Euclidean Quantum Field Theory	252
25.	Properties of Eigenfunctions, Wave Packets, and Green's Functions	258
26.	Inverse Problems and the Feynman–Kac Formula	272
	<b>References</b>	279
	<i>Index</i>	293