

## Contents

LIST OF CONTRIBUTORS . . . . .	vii
FOREWORD . . . . .	ix
PREFACE . . . . .	x
CONTENTS OF PREVIOUS VOLUMES . . . . .	xi

### Chapter 9 / Methods in Lattice Statistics

*N. W. Dalton*

I. Introduction . . . . .	566
II. Concepts in Graph Theory . . . . .	571
III. Evaluation of Lattice Constants . . . . .	579
IV. Exact Series Expansions . . . . .	592
V. The Dimer Problem . . . . .	605
VI. Pfaffian Solution of the Planar Ising Problem . . . . .	624
Appendix—Methods of Series Analysis . . . . .	637
References . . . . .	639

### Chapter 10 / Probability Theory and Stochastic Processes

*Donald A. McQuarrie*

I. Introduction . . . . .	644
II. Random Variables and Probability Distributions . . . . .	644
III. Functions of Random Variables . . . . .	661
IV. Stochastic Processes—General . . . . .	674
V. Stochastic Processes Discrete in Both Sample Space and Time . . . . .	685
VI. Stochastic Processes Discrete in Sample Space but Continuous in Time . . . . .	696
VII. Stochastic Processes Continuous in Both Sample Space and Time . . . . .	712
References . . . . .	725

## **Chapter 11 / Nonequilibrium Problems—Projection Operator Techniques**

*James T. Hynes and J. M. Deutch*

I.	Introduction . . . . .	730
II.	The Projection Operator Technique . . . . .	741
III.	Brownian Motion . . . . .	757
IV.	Further Applications—Lowest Order Results . . . . .	777
V.	Higher Order Results . . . . .	813
	References . . . . .	830

## **Chapter 12 / Scattering Theory**

*F. David Peat*

I.	Introduction . . . . .	838
II.	Simple Particle Scattering from a Fixed Center . . . . .	840
III.	The Green's Function and Solutions to an Inhomogeneous Differential Equation . . . . .	851
IV.	Elastic Scattering from Atoms . . . . .	856
V.	Inelastic Scattering . . . . .	862
VI.	The Multichannel Scattering Matrix . . . . .	864
VII.	Approximate Wave Functions . . . . .	874
VIII.	Autoionization . . . . .	880
IX.	The Optical Model . . . . .	884
X.	The R-Matrix Theory . . . . .	896
	References . . . . .	905

## **Chapter 13 /The Solution of Integral and Differential Equations**

*R. L. Somorjai*

I.	Introduction . . . . .	910
II.	Theory of Operator Equations—Fundamentals . . . . .	913
III.	Integral Equations: Linear and Nonlinear . . . . .	941
IV.	Differential Equations, Mainly Nonlinear . . . . .	967
V.	Methods of Solution . . . . .	1014
	References . . . . .	1109

**AUTHOR INDEX . . . . .** 1129

**SUBJECT INDEX . . . . .** 1138