

<<统计力学>>

图书基本信息

书名：<<统计力学>>

13位ISBN编号：9789810244774

10位ISBN编号：9810244770

出版时间：2001-12

出版时间：Penguin

作者：Morandi, G.; Ercolessi, E.; Napoli, F.

页数：648

版权说明：本站所提供下载的PDF图书仅提供预览和简介，请支持正版图书。

更多资源请访问：<http://www.tushu007.com>

<<统计力学>>

内容概要

This book covers the foundations of classical thermodynamics, with emphasis on the use of differential forms of classical and quantum statistical mechanics, and also on the foundational aspects. In both contexts, a number of applications are considered in detail, such as the general theory of response, correlations and fluctuations, and classical and quantum spin systems. In the quantum case, a self-contained introduction to path integral methods is given. In addition, the book discusses phase transitions and critical phenomena, with applications to the Landau theory and to the Ginzburg-Landau theory of superconductivity, and also to the phenomenon of Bose condensation and of superfluidity. Finally, there is a careful discussion on the use of the renormalization group in the study of critical phenomena.

书籍目录

Preface Chapter 1 Thermodynamics 1.1 A Recollection of Basic Notions in Classical Thermodynamics 1.1.1 The Fundamental Equation of Thermodynamics 1.2 Thermodynamic Potentials, ...Stability Conditions 1.3 A Mathematical Digression: Integrating Factors and 1A An Exercise in the Use of the Gibbs-Duhem Relation: the Ideal Monoatomic Gas 1B Thermodynamics of Paramagnetic Bodies 1C Some Relations on Partial Derivatives & Jacobians 1D A Digression on: Integrability Conditions Problems Chapter 2 Equilibrium Classical Statistical Mechanics 2.1 Foundations of Classical Statistical Mechanics 2.1.1 A resume of Hamiltonian Dynamics 2.1.2 Canonical Transformations 2.1.3 The Heisenberg and Schrödinger Pictures in Classical Dynamics 2.1.4 Integrable Dynamical Systems and Perturbations 2.1.5 The Ergodic Hypothesis and the Foundations of Classical Statistical Mechanics 2.2 Statistical Ensembles in CSM: Micro-canonical Ensemble 2.2.1 The Entropy Function 2.3 Statistical Ensembles in CSM: Canonical and Grand-Canonical Ensembles 2.3.1 The Canonical Ensemble 2.3.2 The Grand-Canonical Ensemble 2.3.3 Some Applications 2.3.4 General Remarks 2.4 Response, Correlations and Fluctuations: I Classical 2.4.1 Symmetry Properties of Correlation Functions 2.4.2 Fourier Transforms of Correlation Functions 2.4.3 Generating Functionals and Static Generalized Susceptibilities 2.4.4 Linear Response Theory 2.4.5 The Classical Fluctuation-Dissipation Theorem 2A Harmonic Oscillators & Ergodicity 2B The Volume Phase Space for a Perfect Gas 2C Density-Density Correlation Function of a Perfect Gas Problems Chapter 3 Spin Hamiltonians : Classical 3.1 Spin Hamiltonians 3.2 Gaussian Identities for Spin Hamiltonians 3.3 Mean Field Theory and Phase Transitions 3.3.1 MFA for Ising Model 3.3.2 MFA for Heisenberg Model 3.4 Linearized Spin Dynamics: Spin Waves, Response and Correlations 3.5 SSB, Goldstone and Mermin-Wagner Theorems 3.5.1 The Goldstone Theorem 3.5.2 The Mermin-Wagner Theorem 3A Poisson Description of Spin Dynamics 3B Perturbation expansions and the Classical Analogue of Wick's Theorem 3C "Conventional" Mean Field Theory 3D Some Group-Theoretical Aspects Related to SSB Problems Chapter 4 Equilibrium Quantum Statistical Mechanics 4.1 Resume of Quantum Mechanics Chapter 5 Identical Particles in Quantum Statistical Mechanics Chapter 6 Spin Hamiltonians : Quantum Chapter 7 Phase Transitions and Critical Phenomena Chapter 8 Model Systems, Scaling Laws and Mean Field Theories Chapter 9 Superconductivity & Superfluidity Chapter 10 The Renormalization Group and Critical Phenomena Appendix A Mathematical Digression : Differentiable Manifolds and Exterior Calculus Appendix B Mathematical Digression : Some Mathematics of Hilbert Spaces. Appendix C Linear Stability Theory. Appendix D Eigenvalue and Eigenvector Problems for Non-Symmetric Matrices Bibliography Index

<<统计力学>>

版权说明

本站所提供下载的PDF图书仅提供预览和简介，请支持正版图书。

更多资源请访问:<http://www.tushu007.com>