

<<简易统计力学>>

图书基本信息

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内容概要

This book is an elaboration of the author's lecture notes in a graduate course in statistical physics and thermodynamics, augmented by some material suitable for self-teaching as well as for undergraduate study. The first 4 or 5 chapters are suitable for an undergraduate course for engineers and physicists in Thermodynamics and Statistical Physics and include detailed study of the various ensembles and their connections to applied thermodynamics. The Debye law of specific heats and reasons for deviations from the Debye formulas are covered, as are the Einstein theories of Brownian motion, black-body radiation and specific heat of solids. Van der Waals gases and the reason for the apparent failure of his Law of Corresponding States are discussed. The last 5 chapters treat topics of recent interest to researchers, including: the Ising and Potts models, spin waves in ferromagnetic and anti-ferromagnetic media, sound propagation in non-ideal gases and the decay of sound waves, introduction to the understanding of glasses and spin glasses, superfluidity and superconductivity. The selection of material is wide-ranging and the mathematics for handling it completely self-contained, ranging from counting (probability theory) to quantum field theory as used in the study of fermions, bosons and as an adjunct in the solutions of the equations of classical diffusion-reaction theory. In addition to the standard material found in most recent books on statistical physics the constellation of topics covered in this text includes numerous original items.

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书籍目录

Preface Introduction: Theories of Thermodynamics, Kinetic Theory and Statistical Mechanics Chapter 1 Elementary Concepts in Statistics and Probability 1.1. The Binomial Distribution 1.2. Length of a Winning Streak 1.3. Brownian Motion and the Random Walk 1.4. Poisson versus Normal (Gaussian) Distributions 1.5. Central Limit Theorem (CLT) 1.6. Multinomial Distributions, Statistical Thermodynamics... 1.7. The Barometer Equation 1.8. Other Distributions Chapter 2 The Ising Model and the Lattice Gas 2.1. Some Background and Motivation 2.2. First-Principles Statistical Theory of Paramagnetism 2.3. More on Entropy and Energy 2.4. Some Other Relevant Thermodynamic Functions 2.5. Mean-Field Theory, Stable and Metastable Solutions 2.6. The Lattice Gas 2.7. The Nearest-Neighbor Chain: Thermodynamics in 1D ... 2.8. The Disordered Ising Chain 2.9. Other Magnetic Systems in One Dimension Chapter 3 Elements of Thermodynamics 3.1. The Scope of Thermodynamics 3.2. Equations of State and Some Definitions 3.3. Maxwell Relations 3.4. Three Important Laws of Thermodynamics 3.5. The Second Derivatives of the Free Energy 3.6. Phase Diagrams for the van der Waals Gas 3.7. Clausius Clapeyron Equation 3.8. Phase Transitions 3.9. The Carnot Cycle 3.10. Superconductivity Chapter 4 Statistical Mechanics 4.1. The Formalism and a False Start 4.2. Gibbs' Paradox and Its Remedy 4.3. The Gibbs Factor 4.4 The Grand Ensemble 4.5. Non-Ideal Gas and the 2-Body Correlation Function 4.6. The Virial Equation of State 4.7. Weakly Non-Ideal Gas 4.8. Two-body Correlations 4.9. Configuration of a Gas in a Container 4.10. One Dimension versus Two 4.11. Two Dimensions versus Three: The Debye Waller Factors Chapter 5 The World of Bosons 5.1. Two Types of Bosons and Their Operators 5.2. Number Representation and the Many-Body Problem 5.3. The Adiabatic Process and Conservation of Entropy 5.4. Many-Body Perturbations 5.5. Photons 5.6. Phonons 5.7. Ferromagnons 5.8. Conserved Bosons and the Ideal Bose Gas 5.9. Nature of "Ideal" Bose Einstein Condensation 5.10. Ideal Bose-Einstein Condensation in Low Dimensions 5.11. Consequences of a Hard Core Repulsion in 1D 5.12. Bosons in 3D Subject to Weak Two-Body Forces 5.13. Superfluid Helium (He II) Chapter 6 All About Fermions: Theories of Metals, Superconductors, Semiconductors Chapter 7 Kinetic Theory Chapter 8 The Transfer Matrix Chapter 9 Some Uses of Quantum Field Theory in Statistical Physics Index

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