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| Autore                  | Pathria R. K                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
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| Nota di contenuto       | Front Cover; Statistical Mechanics; Copyright; Table of Contents; Preface to the Third Edition; Preface to the Second Edition; Preface to the First Edition; Historical Introduction; Chapter 1. The Statistical Basis of Thermodynamics; 1.1 The macroscopic and the microscopic states; 1.2 Contact between statistics and thermodynamics: physical significance of the number (N, V, E); 1.3 Further contact between statistics and thermodynamics; 1.4 The classical ideal gas; 1.5 The entropy of mixing and the Gibbs paradox; 1.6 The ""correct"" enumeration of the microstates; Problems<br>Chapter 2. Elements of Ensemble Theory2.1 Phase space of a classical system; 2.2 Liouville's theorem and its consequences; 2.3 The microcanonical ensemble; 2.4 Examples; 2.5 Quantum states and the phase space; Problems; Chapter 3. The Canonical Ensemble; 3.1 Equilibrium between a system and a heat reservoir; 3.2 A system in the canonical ensemble; 3.3 Physical significance of the various statistical quantities in the canonical ensemble; 3.4 Alternative expressions for the partition function; 3.5 The classical systems<br>3.6 Energy fluctuations in the canonical ensemble: correspondence with the microcanonical ensemble3.7 Two theorems - the ""equipartition"" and the ""virial""; 3.8 A system of harmonic oscillators; 3.9 The statistics of paramagnetism; 3.10 Thermodynamics of magnetic |

systems: negative temperatures; Problems; Chapter 4. The Grand Canonical Ensemble; 4.1 Equilibrium between a system and a particle-energy reservoir; 4.2 A system in the grand canonical ensemble; 4.3 Physical significance of the various statistical quantities; 4.4 Examples 4.5 Density and energy fluctuations in the grand canonical ensemble: correspondence with other ensembles 4.6 Thermodynamic phase diagrams; 4.7 Phase equilibrium and the Clausius-Clapeyron equation; Problems; Chapter 5. Formulation of Quantum Statistics; 5.1 Quantum-mechanical ensemble theory: the density matrix; 5.2 Statistics of the various ensembles; 5.3 Examples; 5.4 Systems composed of indistinguishable particles; 5.5 The density matrix and the partition function of a system of free particles; Problems; Chapter 6. The Theory of Simple Gases 6.1 An ideal gas in a quantum-mechanical microcanonical ensemble 6.2 An ideal gas in other quantum-mechanical ensembles; 6.3 Statistics of the occupation numbers; 6.4 Kinetic considerations; 6.5 Gaseous systems composed of molecules with internal motion; 6.6 Chemical equilibrium; Problems; Chapter 7. Ideal Bose Systems; 7.1 Thermodynamic behavior of an ideal Bose gas; 7.2 Bose-Einstein condensation in ultracold atomic gases; 7.3 Thermodynamics of the blackbody radiation; 7.4 The field of sound waves; 7.5 Inertial density of the sound field; 7.6 Elementary excitations in liquid helium II Problems

## Sommario/riassunto

This classic text, first published in 1972, is designed for graduate physics courses in statistical mechanics. The second edition, published in 1996, incorporated three comprehensive chapters on phase transitions and critical phenomena. This third edition includes new sections on Bose-Einstein condensation and degenerate Fermi behavior of ultracold atomic gases, and two new chapters on computer simulation methods and the thermodynamics of the early universe. We have also added new sections on chemical and phase equilibrium, and expanded our discussions of correlations and scattering, quant