

<<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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