Statistical Mechanics

By Dr Donald Rapp

Createspace, United States, 2012. Paperback. Book Condition: New. 250 x 178 mm. Language: English . Brand New Book ***** Print on Demand *****. This text begins with a consideration of simple Boltzmann statistics, with particular application to the model of systems with two quantum states, and the Einstein and Debye treatments of the specific heats of a metal. After discussion of the Darwin-Fowler calculation of average distributions, the discussion moves on to the Bose-Einstein and Fermi-Dirac statistics of non-localized particles, and then to the classical limit approached by quantized systems in situations such as gas behavior and distributions of electric dipoles. This initial development occupies about the first third of the book. The text next takes up partition and thermodynamic functions of an ideal gas, with discussions of electronic, vibrational, and rotational (including internal rotation) contributions in atomic, diatomic, and polyatomic gases. A separate chapter is devoted to symmetry effects on wave functions and states, and the use of symmetry numbers in evaluating partition functions. This is a topic often glossed over, and frequently mystifying, to students. Chemical equilibrium is next considered, followed by chapters on the perfect quantum gas and imperfect gases where various intermolecular potentials are compared. The...

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