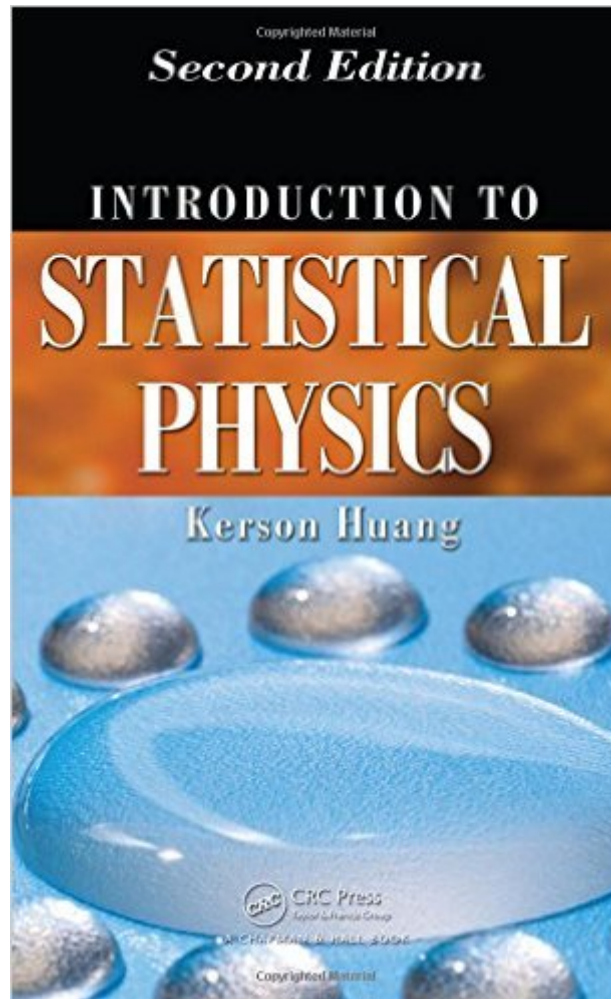


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# Introduction To Statistical Physics, Second Edition



## Synopsis

Written by a world-renowned theoretical physicist, *Introduction to Statistical Physics, Second Edition* clarifies the properties of matter collectively in terms of the physical laws governing atomic motion. This second edition expands upon the original to include many additional exercises and more pedagogically oriented discussions that fully explain the concepts and applications. The book first covers the classical ensembles of statistical mechanics and stochastic processes, including Brownian motion, probability theory, and the Fokker-Planck and Langevin equations. To illustrate the use of statistical methods beyond the theory of matter, the author discusses entropy in information theory, Brownian motion in the stock market, and the Monte Carlo method in computer simulations. The next several chapters emphasize the difference between quantum mechanics and classical mechanics—the quantum phase. Applications covered include Fermi statistics and semiconductors and Bose statistics and Bose-Einstein condensation. The book concludes with advanced topics, focusing on the Ginsburg-Landau theory of the order parameter and the special kind of quantum order found in superfluidity and superconductivity. Assuming some background knowledge of classical and quantum physics, this textbook thoroughly familiarizes advanced undergraduate students with the different aspects of statistical physics. This updated edition continues to provide the tools needed to understand and work with random processes.

## Book Information

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— suitable for advanced engineering study in an engineering or physics curriculum. — | The

problems at the end of each chapter and the discussion of applications will help students grasp many difficult concepts. It is very readable and should be considered for an undergraduate program or by people wanting to learn about statistical physics. IEEE Electrical Insulation Magazine, Vol. 27, No. 3, May/June 2011

Kerson Huang is Professor of Physics, Emeritus at MIT. Since retiring from active teaching, Dr. Huang has been engaged in biophysics research.

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