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Introductory Statistical Mechanics

ROGER BOWLEY and
MARIANA SÁNCHEZ

Introductory
Statistical
Mechanics

SECOND EDITION

OXFORD SCIENCE PUBLICATIONS
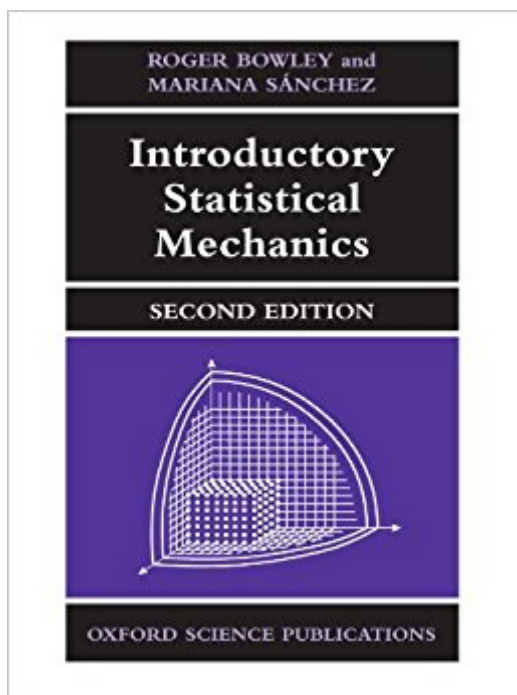
Synopsis

This book explains the ideas and techniques of statistical mechanics--the theory of condensed matter--in a simple and progressive way. The text begins with the laws of thermodynamics and the basic ideas of quantum mechanics. The conceptual ideas are then developed carefully, and the mathematical techniques are developed in parallel to give a coherent overall view. The text is illustrated with examples not just from solid state physics, but also from recent theories of radiation from black holes and recent data on the background radiation from the Cosmic Background Explorer. This second edition includes additional advanced material often found in undergraduate courses. It includes three new chapters on phase transitions at an appropriate level for an undergraduate student, and there are numerous exercises at the end of each chapter, along with brief model answers for the odd-numbered problems. It is a useful and practical textbook for undergraduates in physics and chemistry.

Book Information

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Customer Reviews

On the first edition: "Introductory Statistical Mechanics is clear and crisp and takes advantage of the best parts of the many approaches to the subject." --Physics Today

Roger Bowley is at University of Nottingham.

You cannot beat this book for help reviewing for prelims or comps. The problems are typical of what you would find on a stat mech prelim, and the answers are in the back of the book. Combine this

with Schoeder's An Introduction to Thermal Physics for a total Thermo + Stat Mech course.The book is also very helpful during grad-level Stat Mech courses. It makes a great companion to Pathria's Statistical Mechanics, Second Edition.

I recommend this book to anyone who is taking an undergraduate course in stat mech. I also recommend it to beginning GRADUATE students of stat mech. I used it for my own graduate coursework and I found it to be extremely helpful.This book provides a clean, uncluttered presentation of the principles of stat mech; does not lose sight of the physical reasons behind the mathematical manipulations; and most helpful of all, contains a good set of problems WITH SOLUTIONS! It has been more helpful to me in my graduate work than any graduate-level book!In a next edition, maybe the authors can include a gentle introduction to the new renormalization group theory of phase transitions, and also increase the number and depth of problems.If you plan on studying stat mech, get this book.

I found this book to be a great introduction to statistical mechanics. The thermodynamic chapters (which are mostly at the very beginning and very end of the book) left a lot to be desired. The authors did, however, relate stat mech ideas back to thermo topics, which helped motivate the subject. Finally, I would not recommend this book to be used as a self-study book. I read the chapters before the lectures and found that I repeatedly needed the lecture information (i.e. info not in the book) in order to the do the homework problems.

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