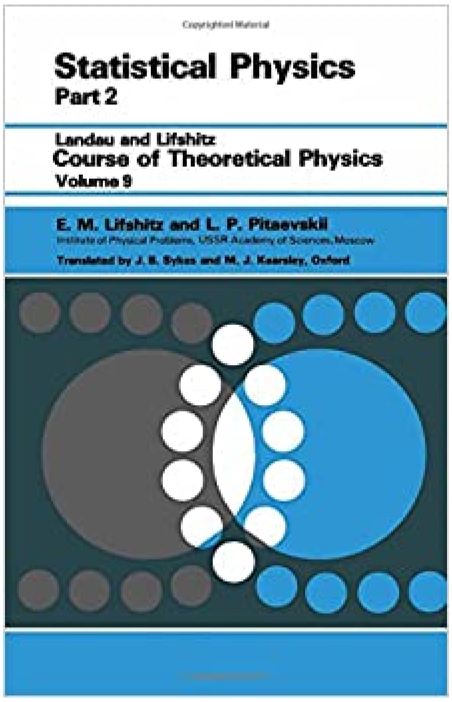
Statistical Physics: Theory Of The Condensed State (Course Of Theoretical Physics Vol. 9)



Synopsis

The second part of 'Statistical Physics' deals with the quantum theory of the condensed state of matter. This volume is essentially an entirely new book, based on the large amount of new material which has become available in statistical physics since' Part 1' was published.

Book Information

Series: Course of Theoretical Physics Vol. 9 (Book 2)

Paperback: 387 pages

Publisher: Butterworth-Heinemann (January 15, 1980)

Language: English

ISBN-10: 0750626364

ISBN-13: 978-0750626361

Product Dimensions: 6.2 x 0.9 x 9.8 inches

Shipping Weight: 1.7 pounds (View shipping rates and policies)

Average Customer Review: 5.0 out of 5 stars 4 customer reviews

Best Sellers Rank: #583,433 in Books (See Top 100 in Books) #97 inÂ Books > Science & Math > Physics > Applied #380 inÂ Books > Science & Math > Physics > Mathematical Physics #1813 inÂ Books > Textbooks > Science & Mathematics > Physics

Customer Reviews

thank you

A classic which should adorn the bookshelf of all practicing scientist in a pertinent field.

This is the Volume 9 of the famous Course of Theoretical Physics by L. D. Landau and E. M. Lifshitz. All serious students of theoretical physics must possess the ten volumes of this excellente Course, which cover in detail and rigour practically all the branches of theoretical physics. The Volume 9 treats important specialized topics of modern statistical physics. These topics include the theory of quantum liquids(Fermi and Bose types), the theory of superfluidity, created by Landau to account for the phenomena ocurring in liquid helium at approximately 2 kelvin, the microscopic theory of superconductivity, the general method of Green's functions, so important to modern statistical physics, and some other topics, such as the quantum mechanics of a electron in a crystal lattice. The book still contains the general theory of electromagnetic and hydrodynamic fluctuations, treated in the spirit of the Green's functions. These topics are treated with rigour, efficiency and c!

larity of language. For this reason, all readers with some aqquaintance with basic statistical physics can read and understand much of this book without major problems. Certainly there is not other book comparable with the Volume 9, a unique and valuable addition to the literature on modern statistical physics!

This review is for Volume 9 of the Landau Course of Theoretical Physics.The whole Course is clear and concise, so it makes sense for anyone who wants to do theoretical physics to go through all ten volumes.We start off with normal Fermi liquids and gases, including a nice discussion of Zero Sound (which is distinguished from normal sound mostly by a slight increase in the sound velocity as one gets colder than a transition temperature, and by increased absorption of sound near the transition temperature). Then we learn about Green's functions in a Fermi system at T = 0 and Feynman diagram representations of them.After that, we study Bose liquids and gases. That means the properties of superfluids, including quasi-particles (phonons and rotons) and quantized vortex filaments. And the book shows how to apply Green's functions to Bose liquids. There's an interesting section on the disintegration of quasi-particles. Next, we're introduced to Green's functions for T > 0, using the Matsubara operators to reduce the complexity of the diagrams.And then we're ready to learn about superconductors. That means learning about Cooper pairing and superfluid Fermi gases, and learning how to apply Green's functions to them. And, not surprisingly, we learn the Ginzburg-Landau equations, so that we can determine the behavior of superconductors in magnetic fields in temperature ranges near the transition point.There's also a chapter on electrons in the crystal lattice, including the de Hass-van Alphen effect (which refers to a metal's magnetic susceptibility oscillating as the strength of a strong magnetic field changes - due to the quantization of the energy levels of the electrons) and electron-phonon interactions. And there's a nice chapter on magnetism.In the preface, the authors state "we must again stress that this book is part of a course of theoretical physics and in no way attempts to be a textbook of solid state theory." Are they kidding? This course is an excellent way to learn solid state physics.

Chemical and Physical Systems: Proceedings of the 9th European Workshop on Quantum Systems in Chemistry and Physics ... in Theoretical Chemistry and Physics) Quantum Electrodynamics: Gribov Lectures on Theoretical Physics (Cambridge Monographs on Particle Physics, Nuclear Physics and Cosmology) Philosophical And Theoretical Perspectives For Advanced Nursing Practice (Cody, Philosophical and Theoretical Perspectives for Advances Nursing Practice) Group Theory: Application to the Physics of Condensed Matter Quantum Field Theory and Condensed Matter: An Introduction (Cambridge Monographs on Mathematical Physics) Many-Body Quantum Theory in Condensed Matter Physics: An Introduction (Oxford Graduate Texts) Methods of Quantum Field Theory in Statistical Physics (Dover Books on Physics) Mechanics, Third Edition: Volume 1 (Course of Theoretical Physics S) Electrodynamics of Continuous Media, Second Edition: Volume 8 (Course of Theoretical Physics S) Physical Kinetics: Volume 10 (Course of Theoretical Physics S) Theoretical Physics 4: Special Theory of Relativity Quantum Field Theory in Strongly Correlated Electronic Systems (Theoretical and Mathematical Physics) Analytics: Business Intelligence, Algorithms and Statistical Analysis (Predictive Analytics, Data Visualization, Data Analytics, Business Analytics, Decision Analysis, Big Data, Statistical Analysis) Condensed Matter Field Theory A Course in Large Sample Theory (Chapman & Hall/CRC Texts in Statistical Science)