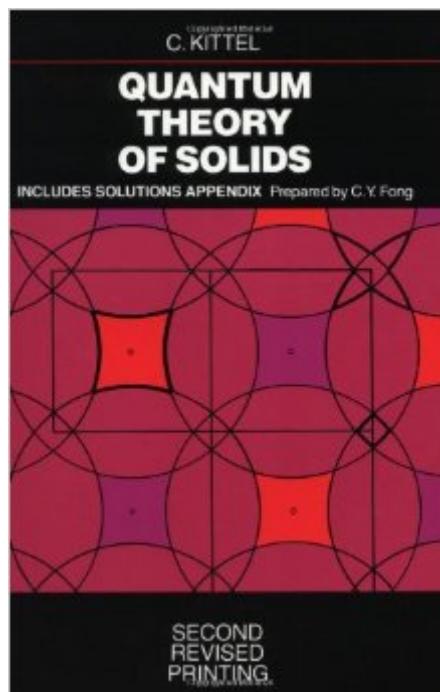


The book was found

Quantum Theory Of Solids



Synopsis

A modern presentation of theoretical solid state physics that builds directly upon Kittel's Introduction to Solid State Physics. Treats phonon, electron, and magnon fields, culminating in the BCS theory of superconductivity. Considers Fermi surfaces and electron wave functions and develops the group theoretical description of Brillouin zones. Applies correlation functions to time-dependent effects in solids, with an introduction to Green's functions. With 110 problems, the text is well-suited for the classroom or for self-instruction.

Book Information

Paperback: 528 pages

Publisher: Wiley; 2 edition (April 2, 1987)

Language: English

ISBN-10: 0471624128

ISBN-13: 978-0471624127

Product Dimensions: 6 x 0.9 x 9.1 inches

Shipping Weight: 1.8 pounds (View shipping rates and policies)

Average Customer Review: 4.6 out of 5 starsÂ See all reviewsÂ (5 customer reviews)

Best Sellers Rank: #449,065 in Books (See Top 100 in Books) #13 inÂ Books > Engineering & Transportation > Engineering > Electrical & Electronics > Electronics > Solid State #115 inÂ Books > Science & Math > Physics > Solid-State Physics #463 inÂ Books > Science & Math > Physics > Quantum Theory

Customer Reviews

It is too bad this book is out of print, for it gives a good introduction to the quantum theory as applied to condensed matter, despite the many advances that have taken place since the date of publication, such as high-temperature superconductivity, the fractional quantum Hall effect, and nanoscale physics. Therefore, if a copy can be found, it is still worth perusing and having on one's shelf. I only read the first 8 chapters of the book, so my review will be confined to them. After a brief introduction to the mathematics needed in the book, the author begins in chapter 2 with a treatment of acoustic phonons, which arise from the canonical quantization of the transverse motion of a continuous elastic line under tension. This object is handled using the Lagrangian formalism, and after finding the Hamiltonian density, employing a canonical transformation, the (bosonic) creation and annihilation operators are found: phonon excitations. Both longitudinal and transverse modes are shown to exist in general. Bogoliubov transformations are then used to show how phonons may

arise in a system of weakly interacting particles. The author then derives the expression for the velocity of "second sound" in a phonon gas. Experimental evidence for second sound in liquid helium was known at the time of publication, but since then evidence has accumulated in Bose gases and in certain types of crystals, such as KTaO and SrTiO . The phenomenon of second sound has also been of considerable interest in the study of nonlinear optical phenomena in smectic liquid crystals. The author also discusses the occurrence of van Hove singularities in the phonon frequency distribution function, and points to their connection with Morse theory.

[Download to continue reading...](#)

Introducing Solids & Making Your Own Organic Baby Food: A Step-by-Step Guide to Weaning Baby off Breast & Starting Solids. Delicious, Easy-to-Make, & Healthy Homemade Baby Food Recipes Included. Quantum Theory of Solids A Modern Course in the Quantum Theory of Solids Quantum Physics of Atoms, Molecules, Solids, Nuclei, and Particles Quantum Mechanics and Quantum Field Theory: A Mathematical Primer Principles of the Theory of Solids Towards Solid-State Quantum Repeaters: Ultrafast, Coherent Optical Control and Spin-Photon Entanglement in Charged InAs Quantum Dots (Springer Theses) Quantum Nanoelectronics: An introduction to electronic nanotechnology and quantum computing QUANTUM SELF HYPNOSIS STOP SMOKING NOW: Hypnosis Script & Inductions Included! (Quantum Self Hypnosis Singles Book 2) Quantum Runes: How to Create Your Perfect Reality Using Quantum Physics and Teutonic Rune Magic (Creating Magick with The Universal Laws of Attraction Book 1) Quantum Thermodynamics: Emergence of Thermodynamic Behavior Within Composite Quantum Systems (Lecture Notes in Physics) Quantum Computation and Quantum Information: 10th Anniversary Edition Programming 3D. Solids, Meshes & Surfaces. (AutoCAD expert's Visual LISP) The Electronic Structure and Chemistry of Solids (Oxford Science Publications) Mechanics of Solids and Structures Fracture of Brittle Solids (Cambridge Solid State Science Series) Engineering Mechanics of Solids (2nd Edition) Applied Mechanics of Solids Characterization of Porous Solids and Powders: Surface Area, Pore Size and Density (Particle Technology Series) The Friction and Lubrication of Solids (The International Series of Monographs on Physics) (v. 1)

[Dmca](#)