

The book was found

Theory Of Electron Transport In Semiconductors: A Pathway From Elementary Physics To Nonequilibrium Green Functions (Springer Series In Solid-State Sciences)





Synopsis

This book originated out of a desire to provide students with an instrument which might lead them from knowledge of elementary classical and guantum physics to moderntheoreticaltechniques for the analysis of electron transport in semiconductors. The book is basically a textbook for students of physics, material science, and electronics. Rather than a monograph on detailed advanced research in a speci?c area, it intends to introduce the reader to the fascinating ?eld of electron dynamics in semiconductors, a ?eld that, through its applications to electronics, greatly contributed to the transformation of all our lives in the second half of the twentieth century, and continues to provide surprises and new challenges. The ?eld is so extensive that it has been necessary to leave aside many subjects, while others could be dealt with only in terms of their basic principles. The book is divided into ?ve major parts. Part I moves from a survey of the fundamentals of classical and quantum physics to a brief review of basic semiconductor physics. Its purpose is to establish a common platform of language and symbols, and to make the entire treatment, as far as pos-ble, self-contained. Parts II and III, respectively, develop transport theory in bulk semiconductors in semiclassical and quantum frames. Part IV is devoted to semiconductor structures, including devices and mesoscopic coherent s- tems. Finally, Part V develops the basic theoretical tools of transport theory within the modern nonequilibrium Green-function formulation, starting from an introduction to second-quantization formalism.

Book Information

Series: Springer Series in Solid-State Sciences (Book 165) Hardcover: 590 pages Publisher: Springer; 2010 edition (September 7, 2010) Language: English ISBN-10: 3642105858 ISBN-13: 978-3642105852 Product Dimensions: 6.3 x 1.4 x 9.1 inches Shipping Weight: 2.6 pounds (View shipping rates and policies) Average Customer Review: Be the first to review this item Best Sellers Rank: #903,782 in Books (See Top 100 in Books) #155 in Books > Science & Math > Technology > Nanotechnology #155 in Books > Engineering & Transportation > Engineering > Electrical & Electronics > Electronics > Semiconductors #309 in Books > Science & Math > Physics > Solid-State Physics

Customer Reviews

This book describes in details the theory of the electron transport in the materials and structures at the basis of modern micro- and nano-electronics. It leads and accompanies the reader, through a step-by-step derivation of all calculations, from the basic laws of classical and quantum physics up to the most modern theoretical techniques, such as nonequilibrium Green functions, to study transport properties of both semiconductor materials and modern low-dimensional and mesoscopic structures.

PhD in Solid-state Physics at Purdue University (Indiana, USA) in 1969. Since then at the University of Modena with successive positions from research-assistant to Dean of the School of Sciences. Published 3 books and about 170 papers in the field of semiclassical and quantum theory of electron transport in semiconductors. His main contributions are related to the Monte Carlo simulation of electron transport in materials and devices, and to the application of the Wigner-function formalism to quantum transport.

Download to continue reading...

Theory of Electron Transport in Semiconductors: A Pathway from Elementary Physics to Nonequilibrium Green Functions (Springer Series in Solid-State Sciences) Conductors, Semiconductors, Superconductors: An Introduction to Solid State Physics (Undergraduate Lecture Notes in Physics) Site Symmetry in Crystals: Theory and Applications (Springer Series in Solid-State Sciences) Optical Processes in Semiconductors (Prentice-Hall electrical engineering series. Solid state physical electronics series) The Floridas: The Sunshine State * The Alligator State * The Everglade State * The Orange State * The Flower State * The Peninsula State * The Gulf State Transmission Electron Microscopy: Physics of Image Formation and Microanalysis (Springer Series in Optical Sciences,) Scanning Electron Microscopy: Physics of Image Formation and Microanalysis (Springer Series in Optical Sciences) Electron microscopy for beginners: Easy course for understanding and doing electron microscopy (Electron microscopy in Science) Computational Materials Science: From Ab Initio to Monte Carlo Methods (Springer Series in Solid-State Sciences) The Solid State: An Introduction to the Physics of Crystals for Students of Physics, Materials Science, and Engineering (Oxford Physics Series) Statistical Physics and Chaos in Fusion Plasmas (Nonequilibrium Problems in the Physical Sciences and Biology) Fundamental Aspects of Plasma Chemical Physics: Transport (Springer Series on Atomic, Optical, and Plasma Physics) Theory of Nonequilibrium Superconductivity (International Series of Monographs on

Physics) New Horizons of Applied Scanning Electron Microscopy (Springer Series in Surface Sciences) Introduction to Conventional Transmission Electron Microscopy (Cambridge Solid State Science Series) Quantum Entanglement in Electron Optics: Generation, Characterization, and Applications (Springer Series on Atomic, Optical, and Plasma Physics) Leadership Roles and Management Functions in Nursing: Theory and Application (Marquis, Leadership Roles and Management Functions in Nursing) Solid-State Physics: An Introduction to Principles of Materials Science (Advanced Texts in Physics (Paperback)) Quantum Confined Laser Devices: Optical gain and recombination in semiconductors (Oxford Master Series in Physics) Mathematical Theory of Nonequilibrium Steady States: On the Frontier of Probability and Dynamical Systems (Lecture Notes in Mathematics)

Contact Us

DMCA

Privacy

FAQ & Help