Balance Equation Approach To Electron Transport In Semiconductors Frontiers Of Research With The Ch

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Soviet Journal of Plasma Physics - 1993

Proceedings - 1997

Government Reports Announcements & Index - 1989

International Aerospace Abstracts - 1999

A Simple Monte Carlo

Simulation of Bulk Gallium Arsenide with Implications for Modulation-doped Field Effect Transistors - Alan Forest Acker 1996

Principles and Technology of MODFETs - Hadis Morkoç 1991

Since the invention of the transistor, there has been a great deal of activity and progress in semiconductor technology and understanding, particularly in new heterostructures and superlattices as well as devices based on them. With the development of high quality SiO2 on Si having low interface state densities, MOSFET devices relying on the high mobility two dimensional electron became available in the 1960s and represent the workhorse of integrated circuits today.

Electron Transport in Quantum Dots - Jonathan P. Bird 2013-11-27

When I was contacted by Kluwer Academic Publishers in the Fall of 200 I, inviting me to edit a volume of papers on the issue of electron transport in quantum dots, I was excited by what I saw as an ideal opportunity to provide an overview of a field of research that has made significant contributions in recent years, both to our understanding of fundamental physics, and to the development of novel nanoelectronic technologies. The need for such a volume seemed to be made more pressing by the fact that few comprehensive reviews of this topic have appeared in the literature, in spite of the vast activity in this area over the course of the last decade or so. With this motivation, I set out to try to compile a volume that would fairly reflect the wide range of opinions that has emerged in the study of electron transport in quantum dots. Indeed, there has been no effort on my part to ensure any consistency between the different chapters, since I would prefer that this volume instead serve as a useful forum for the debate of critical issues in this still developing field. In this matter, I have been

assisted greatly by the excellent series of articles provided by the different authors, who are widely recognized as some of the leaders in this vital area of research.

Chemical Abstracts - 2002

Physics Briefs - 1990

Basic Properties of Semiconductors - Peter Theodore Landsberg 1992

Since Volume 1 was published in 1982, the centres of interest in the basic physics of semiconductors have shifted. Volume 1 was called Band Theory and Transport Properties in the first edition, but the subject has broadened to such an extent that Basic Properties is now a more suitable title. Seven chapters have been rewritten by the original authors. However, twelve chapters are essentially new, with the bulk of this work being devoted to important current topics which give this volume an almost encyclopaedic form. The first three chapters discuss various aspects of modern band theory and the next two analyze impurities in semiconductors. Then follow chapters on semiconductor statistics and on surfaces, interfaces and band offsets as they occur in heterojunctions. Chapters 8 to 19 report on newer topics (though a survey of transport properties of carriers is also included). Among these are transport of hot electrons, and thermoelectric effects including here and elsewhere properties of low-dimensional and mesoscopic structures. The electron-hole liquid, the quantum Hall effect, localisation, ballistic transport, coherence in superlattices, current ideas on tunnelling and on quantum confinement and scattering processes are also covered.

Romanian Journal of Physics - 2005

Plasma Properties, Deposition and Etching - John J. Pouch 1993

Containing 42 invited papers, this book covers a broad range of subjects on plasma and its

applications. It summarizes results obtained to date, and is felt to provide a basis for further development in the area.

Fourth Brazilian School of Semiconductor Physics - A. S. Chaves 1990

Semiconductor Devices - Jasprit Singh 1994

The basic semiconductor devices are explored at two levels: (1) a mathematically rigorous but simple model for each device is developed and then; (2) the motivations of modern devices which are more complex are provided. By discussing silicon, gallium arsenide and other semiconductor based devices, the text provides a state-of-the-art discussion of modern electronic devices. Most subsections end with a solved example so that the reader develops a feel of real numbers and the importance of device design.

Science Abstracts - 1985

Progress in Natural Science - 1995

Physics of Semiconductor Devices - S. Radhakrishna 1985

Acta Physica Sinica - 1999

JJAP - 2005

III-V Nitrides - Fernando A. Ponce 1997

Japanese Journal of Applied Physics - 2005

Hot Electron Transport in Nanometer Scale Graded Ternary III-V Semiconductor Devices - Abdul-Azeez Sulaiman Al-Omar 1988

Numerical Simulations of Glow Discharges - Maheswaran Surendra 1991

Hot Carriers in Semiconductors, Proceedings of the 7th INT Conference on Hot Carriers in Semiconductors (HCIS-7) 1-5 July 1991, Nara, Japan - Chihiro Hamaguchi 1992-04-23

The proceedings of the 7th International Conference on [title] held in Nara, Japan, July 1992, comprise three plenary,

25 invited, and 148 contributed papers in the areas of: electron-phonon interaction, confined phonon modes, optical study of ultrafast processes, heterostructures/low dimensional transport, hot carrier scattering and relaxation, tr.

Hot Carriers in Semiconductors - J. Shah 2013-10-22

A comprehensive account of the latest developments in the rapidly expanding area of Semiconductor Technology. Main topics covered include real space transfer/heterostructures, ultrafast studies, optical studies, transport theory, devices, ballistic transport, scattering processes and hot phonons, tunnelling, far infrared and magnetic field studies and impact ionization/noise/chaos. Other aspects include the use of femtosecond lasers in investigating transient hot carrier effects on femtosecond timescales, magnetotransport and carrier-carrier interactions.

Characterization, Modeling and Fabrication of Aluminum Gallium Arsenide/gallium Arsenide Heterojunction Bipolar Transistors - Melih Özaydin 1995

Experience of Designing and Application of CAD Systems in Microelectronics - 2001

Balance Equation Approach to Electron Transport In Semiconductors - Xiaolin Lei 2008

This book presents a systematic, comprehensive and up-to-date description of the physical basis of the balance equation transport theory and its applications in bulk and low-dimensional semiconductors. The different aspects of the balance equation method, originally proposed by C S Ting and the author of the present book, were reviewed in the volume entitled Physics of Hot Electron Transport in Semiconductors (edited by C S Ting, World Scientific, 1992). Since then, this method has been extensively developed and applied to various new fields,

such as transport in nonparabolic systems, spatially nonuniform systems and semiconductor devices, miniband conduction of superlattices, hot-electron magnetotransport, effects of impact ionization in transport, microwave-induced magnetoresistance oscillation, radiation-driven transport and electron cooling, etc. Due to its simplicity and effectiveness, the balance equation approach has become a useful tool to tackle the many transport phenomena in semiconductors, and provides a reliable basis for developing theories, modeling devices and explaining experiments.The book may be used as a textbook by graduate students. It will also benefit researchers in the field by helping them grasp the basic principles and techniques of the method, without having to spend a lot of time digging out the information from widespread literature covering a period of 30 years.

RLE Progress Report - Massachusetts Institute of Technology. Research Laboratory of Electronics 1993

The Effect of a High Energy Electron Injection Cathode on the Performance of the Gunn Oscillator - Zipora Greenwald 1986

Physica B + C. - 1985
Part B has subtitle: Low temperature and solid state physics and part C has subtitle: Atomic, molecular and plasma physics; optics

Proceedings of the ASME Heat Transfer Division - 2002

Physics of Hot Electron Transport in Semiconductors - Chin Sen Ting 1992
This review volume is based primarily on the balance equation approach developed since 1984. It provides a simple and analytical description about hot electron transport, particularly, in semiconductors with higher carrier density where the carrier-carrier collision is much stronger than the single particle scattering. The steady state and time-

dependent hot electron transport, thermal noise, hot phonon effect, the memory effect, and other related subjects of charge carriers under strong electric fields are reviewed. The application of Zubarev's nonequilibrium statistical operator to hot electron transport and its equivalence to the balance equation method are also presented. For semiconductors with very low carrier density, the problem can be regarded as a single carrier transport which will be treated non-perturbatively by the nonequilibrium Green's function technique and the path integral theory. The last part of this book consists of a chapter on the dynamic conductivity and the shot noise suppression of a double-carrier resonant tunneling system.

Physics of Semiconductors and Their Heterostructures - Jasprit Singh 1993

This graduate-level textbook offers a comprehensive treatment of the underlying physics behind modern semiconductor devices, with applications to specific modern solid-state devices throughout. Modular in organization, it should be suitable for a range of courses in solid state physics and devices in both physics and electrical engineering departments.

Transport Equations for Semiconductors - Ansgar Jüngel 2009-03-17

This volume presents a systematic and mathematically accurate description and derivation of transport equations in solid state physics, in particular semiconductor devices.

Sino-Japan Bilateral Workshop on Statistical Physics and Condensed Matter Theory, 8-12 April 1986, Fudan University, Shanghai - Xide Xie 1986

Theory of Electron Transport in Semiconductors - Carlo Jacoboni 2010-09-05

This book originated out of a desire to provide students with an instrument which might lead them from knowledge of elementary classical and quantum physics to

moderntheoreticaltechniques for the analysisof electrontransport 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 transformationof 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.

The Journal of the Korean Physical Society - 2005

Physics letters : [part A]. - 1996

Balance Equation Approach to Electron Transport In Semiconductors - Xiaolin Lei 2008