



Quantum Transport: Modelling, Analysis and Asymptotics - Lectures Given at the C.I.M.E. Summer School Held in Cetraro, Italy, September 11-16, 2006

By Thomas Y. Hou

Springer. Paperback. Condition: New. 260 pages. Dimensions: 9.2in. x 6.1in. x 0.6in. Downscaling of semiconductor devices, which is now reaching the nanometer scale, makes it mandatory for us to understand the quantum phenomena - involved in charge transport. Indeed, for nanoscale devices, the quantum nature of electrons cannot be neglected. In fact, it underlies the operation of an increasing number of devices. Unlike classical transport, the intuition of the physicist and the engineer is becoming insufficient for predicting the natural operation in the quantum context. The need for sufficiently accurate and numerically tractable models represents an outstanding challenge in which applied mathematics can play an important role.

The CIME Session Quantum Transport: Modelling, Analysis and Asymptotics, which took place in Cetraro (Cosenza), Italy, from September 11 to September 16, 2006, was intended both to present an overview of up-to-date mathematical problems in this field and to provide the audience with techniques borrowed from other fields of application. It was attended by about 50 scientists and researchers, coming from different countries. The list of participants is included at the end of this book. The school was structured into four courses: Grégoire Allaire (Ecole Polytechnique, Palaiseau, France) Periodic Homogenization and Effective Mass Theorems for the Schrödinger Equation. Anton Arnold (Technische Universität, Vienna) Mathematical Properties of Quantum Evolution Equations. Pierre Degond (Université Paul Sabatier and...



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