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Advanced Physics of Semiconductors: Electronic Properties and Transport: 2016

By Massimo Fischetti, William G. Vandenberghe, Shela Aboud

Springer International Publishing AG. Hardback. Book Condition: new. BRAND NEW, Advanced Physics of Semiconductors: Electronic Properties and Transport: 2016, Massimo Fischetti, William G. Vandenberghe, Shela Aboud, This textbook is aimed at second-year graduate students in Physics, Electrical Engineering or Materials Science. It presents a rigorous introduction to electronic transport in solids, especially at the nanometer scale. Understanding electronic transport in solids requires some basic knowledge of Hamiltonian Classical Mechanics, Quantum Mechanics, Condensed Matter Theory, and Statistical Mechanics. Hence this book discusses those sub-topics of these four disciplines which are required to deal with electronic transport in a single, self-contained course. This will be useful for students who intend to work in academia or the nano/micro-electronics industry. Further topics covered include: the theory of energy bands in crystals, of second quantization and elementary excitations in solids, of the dielectric properties of semiconductors with an emphasis on dielectric screening and coupled interfacial modes, on electron scattering with phonons, plasmons, electrons and photons, on the derivation of transport equations in semiconductors and semiconductor nanostructures also at the quantum level. but mainly at the semi-classical level. The text presents examples relevant to current research, thus not only about Si, but also III-V compound semiconductors,...

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