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Nota di contenuto	Intro -- Preface -- Introduction to the Parts -- Contents -- Part I Aspects of Electron Transport Modeling -- 1 Concepts of Device Modeling -- 1.1 About Microelectronics -- 1.2 The Role of Modeling -- 1.3 Modeling of Semiconductor Devices -- 1.3.1 Basic Modules -- 1.3.2 Transport Models -- 1.3.3 Device Modeling: Aspects -- 2 The Semiconductor Model: Fundamentals -- 2.1 Crystal Lattice Electrons -- 2.1.1 Band Structure -- 2.1.2 Carrier Dynamics -- 2.1.3 Charge Transport -- 2.2 Lattice Imperfections -- 2.2.1 Phonons -- 2.2.2 Phonon Scattering -- 3 Transport Theories in Phase Space -- 3.1 Classical Transport: Boltzmann Equation -- 3.1.1 Phenomenological Derivation -- 3.1.2 Parametrization -- 3.1.3 Classical Distribution Function -- 3.2 Quantum Transport: Wigner Equation -- 3.2.1 Operator Mechanics -- 3.2.2 Quantum Mechanics in Phase Space -- 3.2.3

Derivation of the Wigner Equation -- 3.2.4 Properties of the Wigner Equation -- 3.2.5 Classical Limit of the Wigner Equation -- 4 Monte Carlo Computing -- 4.1 The Monte Carlo Method for Solving Integrals -- 4.2 The Monte Carlo Method for Solving Integral Equations -- 4.3 Monte Carlo Integration and Variance Analysis -- Part II Stochastic Algorithms for Boltzmann Transport -- 5 Homogeneous Transport: Empirical Approach -- 5.1 Single-Particle Algorithm -- 5.1.1 Single-Particle Trajectory -- 5.1.2 Mean Values -- 5.1.3 Concept of Self-Scattering -- 5.1.4 Boundary Conditions -- 5.2 Ensemble Algorithm -- 5.3 Algorithms for Statistical Enhancement -- 6 Homogeneous Transport: Stochastic Approach -- 6.1 Trajectory Integral Algorithm -- 6.2 Backward Algorithm -- 6.3 Iteration Approach -- 6.3.1 Derivation of the Backward Algorithm -- 6.3.2 Derivation of Empirical Algorithms -- 6.3.3 Featured Applications -- 7 Small Signal Analysis -- 7.1 Empirical Approach -- 7.1.1 Stationary Algorithms.
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