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Nota di contenuto	Preface -- Preface to the Second Edition -- 1 Introduction -- 2 Non-Interacting Electrons -- 3 Electron-Electron Interaction -- 4 Phonons -- 5 Transport Theory -- 6 Optical Properties -- 7 Phase Transitions -- 8 Low Dimensional Semiconductors -- 9 Extension of the solid-state Hamiltonian: Current-Current Interaction Terms of Order $1/c^2$ - 10 Field Theoretical Approach to Non-Relativistic Quantum Electrodynamics -- 11 Shortcuts of Theoretical Physics -- 12 Homework.
Sommario/riassunto	Designed to sit alongside more conventional established condensed matter physics textbooks, this compact volume offers a concise presentation of the principles of solid state theory, ideal for advanced students and researchers requiring an overview or a quick refresher on a specific topic. The book starts from the one-electron theory of solid state physics, moving through electron-electron interaction and many-body approximation schemes, to lattice oscillations and their interactions with electrons. Subsequent chapters discuss transport

theory and optical properties, phase transitions and some properties of low-dimensional semiconductors. This extensively expanded second edition includes new material on adiabatic perturbation theory, kinetic coefficients, the Nyquist theorem, Bose condensation, and the field-theoretical approach to non-relativistic quantum electrodynamics. Throughout the text, mathematical proofs are often only sketched, and the final chapter of the book reviews some of the key concepts and formulae used in theoretical physics. Aimed primarily at graduate and advanced undergraduate students taking courses on condensed matter theory, the book serves as a study guide to reinforce concepts learned through conventional solid state texts. Researchers and lecturers will also find it a useful resource as a concise set of notes on fundamental topics.

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