1. Record Nr. UNINA9910300541503321

Autore	Quinn John J.
Titolo	Solid State Physics : Principles and Modern Applications / / by John J. Quinn, Kyung-Soo Yi
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2018
ISBN	3-319-73999-9
Edizione	[2nd ed. 2018.]
Descrizione fisica	1 online resource (XIX, 594 p. 249 illus., 74 illus. in color.)
Collana	UNITEXT for Physics, , 2198-7882
Disciplina	530.41
Soggetti	Solid state physics Optical materials Electronics - Materials Optics Electrodynamics Quantum theory Solid State Physics Optical and Electronic Materials Classical Electrodynamics Quantum Physics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Part I -- Crystal Structures -- Lattice Vibrations -- Free Electron Theory of Metals -- Elements of Band Theory -- Use of Elementary Group Theory in Calculating Band Structure -- More Band Theory and the Semi-classical Approximation -- Semiconductors -- Dielectric Properties of Solids -- Magnetism in Solids -- Part II -- Magnetic Ordering and Spin Waves -- Many Body Interactions: Introduction -- Many Body Interactions: Green’s Function Method -- Semi-classical Theory of Electrons -- Electrodynamics of Metals -- Superconductivity -- The Fractional Quantum Hall Effect: The Paradigm for Strongly Interacting Systems -- Correlation Diagrams: An Intuitive Approach to Interactions in Quantum Hall Systems.
Sommario/riassunto	This book provides the basis for a two-semester graduate course on solid-state physics. The first half presents all the knowledge necessary

for a one-semester survey of solid-state physics, but in greater depth than most introductory solid state physics courses. The second half includes most of the important research over the past half-century, covering both the fundamental principles and most recent advances. This new edition includes the latest developments in the treatment of strongly interacting two-dimensional electrons and discusses the generalization from small to larger systems. The book provides explanations in a class-tested tutorial style, and each chapter includes problems reviewing key concepts and calculations. The updated exercises and solutions enable students to become familiar with contemporary research activities, such as the electronic properties of massless fermions in graphene and topological insulators.