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Disciplina	537.622
Soggetti	Semiconductors Solid state physics Magnetism Condensed matter Physics Astronomy Electronic Devices Structure of Condensed Matter Condensed Matter Physics Physics and Astronomy
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Nota di contenuto	Localized Electron Waves -- Bonding in Solids -- Phonons in Solids -- Electrons in periodic Potential -- Electronic Devices -- Superconductivity -- Electrons in Magnetic Fields -- Magnetism -- Imaging Solids.
Sommario/riassunto	This book explores the intricate world of electron behavior within solids, revealing them to be waves—a fundamental insight crucial to grasping modern electronics, computing, and solid-state devices. This comprehensive examination elucidates the factors determining material conductivity, distinguishing between conductors, insulators, and semiconductors. Through detailed analysis, the text illuminates the thermal agitation of solids, manifesting as vibrations known as phonons, which impede electron flow and contribute to electrical

resistance. Readers gain insight into the production of electronic devices through semiconductor doping, exploring various device types and their functionalities. The book further investigates the temperature-dependent behavior of metal resistance, including the phenomenon of superconductivity, wherein resistance vanishes entirely at low temperatures—a phenomenon comprehensively elucidated within these pages. Moreover, the text unravels the mysteries of magnetism in solids, exploring how certain metals, such as iron, exhibit permanent magnetism. By probing into the underlying causes of magnetism, readers gain a deeper understanding of solid-state physics. Additionally, the book explores imaging techniques such as X-rays, offering insights into how scientists peer inside solids to decipher their internal structures and properties. Geared toward scientists and engineers, the book serves as an indispensable resource for mastering the foundational concepts of solid-state physics—a discipline indispensable to modern technology.
