
Superconductivity Elsevier Insights

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Insight
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Real Perspective of Fourier Transforms and Current Developments in Superconductivity
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Issues in Nuclear, High Energy, Plasma, Particle, and Condensed Matter Physics: 2011 Edition
Elements of Structures and Defects of Crystalline Materials

Superconductivity Elsevier Insights

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KELLEY HAROLD

Superconductivity Springer Science & Business Media

Presents a modern treatment of the physics of vortex matter, mainly applied to unconventional superconductors and superfluids but with extensions to other areas of physics.

High-Temperature Superconducting Materials Science and Engineering CRC Press

Superconductivity in Highly Correlated Fermion Systems

documents the proceedings of the Yamada Conference XVIII on Superconductivity in Highly Correlated Fermion Systems held in Sendai, Japan, from August 31 to September 3, 1987. This book compiles selected papers on the experimental and theoretical advances in the study of superconductivity. The topics include the superconductivity and magnetism in heavy-electron materials, magneto-resistance of heavy-fermion compounds, and magnetic fluctuations and order in exotic superconductors. The fabrication and properties of thin superconducting oxide films, bipolaron models of superconductors, superconducting properties of superlattices, and flux quantization on quasi-crystalline networks are also covered. This publication is recommended for physicists and students researching on the superconductivity in highly correlated fermion systems.

Long Wave Polar Modes in Semiconductor Heterostructures KIT Scientific Publishing

This book includes the fundamental science and applications of carbon-based materials, in particular fused polycyclic hydrocarbon, fullerene, diamond, carbides, graphite and graphene etc. During the past decade, these carbon-based materials have attracted much interest from many scientists and engineers because of their exciting physical properties and potential application toward electronic and energy devices. In this book, the fundamental theory referring to these materials, their syntheses and characterizations, the physical properties (physics), and the applications are fully described, which will contribute to an advancement of not only basic science in this

research field but also technology using these materials. The book's targets are researchers and engineers in the field and graduate school students who specialize in physics, chemistry, and materials science. Thus, this book addresses the physics and chemistry of the principal materials in the twenty-first century.

Functional Materials North Holland

The early development of the screw propeller. Propeller geometry. The propeller environment. The ship wake field, propeller performance characteristics.

Electronic Materials Pergamon

The discovery of the astonishing properties of helium three crystals has been one of the hottest topics in low temperature physics over the last two decades. This book provides the first complete account of those properties, including descriptions and interpretations of critical experimental measurements. Beginning with the phase diagram and thermal properties of this uniquely quantum crystal, the author skillfully introduces current theories of solid helium and compares their predictions with measurements of the ground state, elastic and thermal properties, and phonon spectra. The extraordinary magnetic properties are described and discussed in chapters devoted to the paramagnetism, antiferromagnetism, and ferromagnetism of the different phases of solid helium. The text concludes with chapters on crystal growth and defects, and sections on monolayers, bilayers, and multilayers grown on a variety of substrates. Students and researchers in condensed matter physics, physical chemistry, and applied mathematics will welcome this exceptional new book.

Insight Elsevier

Theory of Superconductivity is primarily intended to serve as a background for reading the literature in which detailed applications of the microscopic theory of superconductivity are made to specific problems.

Handbook of Superconductivity Springer Nature

Physics of High-Tc Superconductors highlights the important experiments that provide insights on the concept of high-temperature superconductors. Composed of 11 chapters, this book covers the theories and materials of these superconductors.

The opening chapters of this book deal with the concepts at the cutting edge of materials science and the technical details of electron-phonon interaction calculations and their application to high-Tc superconductors. The subsequent chapters describe the various features of the atomic and electronic structure of high-Tc superconductor materials, such as quaternary, metallic, and pseudoperovskite copper oxides. These topics are followed by descriptions of the isotope effect, lattice vibrations, and optical spectra of high-Tc superconductor materials. The discussion then shifts to tunneling, relaxation, and morphological studies of these materials. The concluding chapter focuses on the superconductivity potential of bismates and thallates. Undergraduate materials science students will find this book invaluable.

Mechanics and Physics of Structured Media Springer

Comprehensive Inorganic Chemistry II, Nine Volume Set reviews and examines topics of relevance to today's inorganic chemists. Covering more interdisciplinary and high impact areas, Comprehensive Inorganic Chemistry II includes biological inorganic chemistry, solid state chemistry, materials chemistry, and nanoscience. The work is designed to follow on, with a different viewpoint and format, from our 1973 work, Comprehensive Inorganic Chemistry, edited by Bailar, Emeléus, Nyholm, and Trotman-Dickenson, which has received over 2,000 citations. The new work will also complement other recent Elsevier works in this area, Comprehensive Coordination Chemistry and Comprehensive Organometallic Chemistry, to form a trio of works covering the whole of modern inorganic chemistry. Chapters are designed to provide a valuable, long-standing scientific resource for both advanced students new to an area and researchers who need further background or answers to a particular problem on the elements, their compounds, or applications. Chapters are written by teams of leading experts, under the guidance of the Volume Editors and the Editors-in-Chief. The articles are written at a level that allows undergraduate students to understand the material, while providing active researchers with a ready reference resource for information in the field. The chapters will not provide basic data on the elements,

which is available from many sources (and the original work), but instead concentrate on applications of the elements and their compounds. Provides a comprehensive review which serves to put many advances in perspective and allows the reader to make connections to related fields, such as: biological inorganic chemistry, materials chemistry, solid state chemistry and nanoscience Inorganic chemistry is rapidly developing, which brings about the need for a reference resource such as this that summarise recent developments and simultaneously provide background information Forms the new definitive source for researchers interested in elements and their applications; completely replacing the highly cited first edition, which published in 1973

The Vortex State Elsevier

Mechanics and Physics of Structured Media: Asymptotic and Integral Methods of Leonid Filshinsky provides unique information on the macroscopic properties of various composite materials and the mathematical techniques key to understanding their physical behaviors. The book is centered around the arguably monumental work of Leonid Filshinsky. His last works provide insight on fracture in electromagnetic-elastic systems alongside approaches for solving problems in mechanics of solid materials. Asymptotic methods, the method of complex potentials, wave mechanics, viscosity of suspensions, conductivity, vibration and buckling of functionally graded plates, and critical phenomena in various random systems are all covered at length. Other sections cover boundary value problems in fracture mechanics, two-phase model methods for heterogeneous nanomaterials, and the propagation of acoustic, electromagnetic, and elastic waves in a one-dimensional periodic two-component material. Covers key issues around the mechanics of structured media, including modeling techniques, fracture mechanics in various composite materials, the fundamentals of integral equations, wave mechanics, and more Discusses boundary value problems of materials, techniques for predicting elasticity of composites, and heterogeneous nanomaterials and their statistical description Includes insights on asymptotic methods, wave mechanics, the mechanics of piezomaterials, and more Applies homogenization concepts to various physical systems

Quantum Theory of the Solid State Elsevier

Long Wave Polar Modes in Semiconductor Heterostructures is concerned with the study of polar optical modes in semiconductor heterostructures from a phenomenological approach and aims to simplify the model of lattice dynamics calculations. The book provides useful tools for performing calculations relevant to anyone who might be interested in practical applications. The main focus of Long Wave Polar Modes in Semiconductor Heterostructures is planar heterostructures (quantum wells or barriers, superlattices, double barrier structures etc) but there is also discussion on the growing field of quantum wires and dots. Also to allow anyone reading the book to apply the techniques discussed for planar heterostructures, the scope has been widened to include cylindrical and spherical geometries. The book is intended as an introductory text which guides the reader through basic questions and expands to cover state-of-the-art professional topics. The book is relevant to experimentalists wanting an instructive presentation of a simple phenomenological model and theoretical tools to work with and also to young theoreticians by providing discussion of basic issues and the basis of advanced theoretical formulations. The book also provides a brief respite on the physics of piezoelectric waves as a coupling to polar optical modes.

Fundamentals of Renewable Energy Processes Elsevier

Aimed at first-year electrical engineering and physics courses at the graduate level, this book introduces theories useful for practical analysis, providing an understanding and the basis for a variety of applications.

Theory Of Superconductivity Academic Press

This book explores the fascinating field of high-temperature superconductivity. Basic concepts—including experimental techniques and theoretical issues—are discussed in a clear, systematic manner. In addition, the most recent research results in the measurements, materials synthesis and processing, and characterization of physical properties of high-temperature superconductors are presented. Researchers and students alike can use this book as a comprehensive introduction not only to superconductivity but also to materials-related research in electromagnetic ceramics. Special features of the book: presents recent developments in vortex-state properties, defects characterization, and phase equilibrium introduces basic concepts for experimental techniques at low temperatures and high

magnetic fields provides a valuable reference for materials-related research discusses potential industrial applications of high-temperature superconductivity includes novel processing technologies for thin film and bulk materials suggests areas of research and specific problems whose solution can make high-Tc superconductors a practical reality

Materials and Mechanisms of Superconductivity - High Temperature Superconductors Elsevier

The discovery of high temperature superconductivity has not only opened many possibilities for potential technical applications, but has also provided a unique, challenging research subject for condensed matter physics and material sciences. High temperature superconductivity appears in systems with strong electron correlation and constitutes one of the key issues in condensed matter physics. The understanding of its mechanism will therefore greatly promote the future developments of this branch of science. During the last ten years great progress has been made in both fundamental and application-oriented research. Expanding knowledge of the physical properties in the superconducting as well as the normal state in preparing the way to an understanding of the underlying mechanisms. The accumulated experience in materials processing enables technical applications. All these aspects of high-Tc superconductivity and recent work on "traditional" superconductors have been exposed at the Beijing conference. The present volume is a separate edition of part I of the extensive Proceedings of the Fifth International Conference on Materials and Mechanisms of Superconductivity - High Temperature Superconductors. It contains the plenary, tutorial and invited papers, and gives a comprehensive account of the state-of-the-art as of March 1997.

Type II Superconductivity Springer Science & Business Media

One of the most spectacular consequences of the description of the superfluid condensate in superfluid He or in superconductors as a single macroscopic quantum state is the quantization of circulation, resulting in quantized vortex lines. This book draws no distinction between superfluid He3 and He4 and superconductors. The reader will find the essential introductory chapters and the most recent theoretical and experimental progress in our understanding of the vortex state in both superconductors and superfluids, from lectures given by leading experts in the field,

both experimentalists and theoreticians, who gathered in Cargèse for a NATO ASI. The peculiar features related to short coherence lengths, 2D geometry, high temperatures, disorder, and pinning are thoroughly discussed.

Proceedings of the Yamada Conference XVIII on Superconductivity in Highly Correlated Fermion Systems Elsevier

This completely updated second edition of an Artech House classic covers industrial applications and space and biomedical applications of magnetic sensors and magnetometers. With the advancement of smart grids, renewable energy resources, and electric vehicles, the importance of electric current sensors increased, and the book has been updated to reflect these changes. Integrated fluxgate single-chip magnetometers are presented. GMR sensors in the automotive market, especially for end-of-shaft angular sensors, are included, as well as Linear TMR sensors. Vertical Hall sensors and sensors with integrated ferromagnetic concentrators are two competing technologies, which both brought 3-axial single-chip Hall ICs, are considered. Digital fluxgate magnetometers for both satellite and ground-based applications are discussed. All-optical resonant magnetometers, based on the Coherent Population Trapping effect, has reached approval in space, and is covered in this new edition of the book. Whether you're an expert or new to the field, this unique resource offers you a thorough overview of the principles and design of magnetic sensors and magnetometers, as well as guidance in applying specific devices in the real world. The book covers both multi-channel and gradiometric magnetometer systems, special problems such as cross-talk and crossfield sensitivity, and comparisons between different sensors and magnetometers with respect to various application areas. Miniaturization and the use of new materials in magnetic sensors are also discussed. A comprehensive list of references to journal articles, books, proceedings and webpages helps you find additional information quickly.

Uniform Trade List Annual Elsevier

This book provides the knowledge and understanding necessary to comprehend the operation of individual electronic devices that are found in modern micro-electronics. As a textbook, it is aimed at the third-year undergraduate curriculum in electrical engineering, in which the physical electronic properties are used to develop an introductory understanding to the semiconductor

devices used in modern micro-electronics. The emphasis of the book is on providing detailed physical insight into the microscopic mechanisms that form the cornerstone for these technologies. Mathematical treatments are therefore kept to the minimum level necessary to achieve suitable rigor. * Covers crystalline structure * Thorough introduction to the key principles of quantum mechanics * Semiconductor statistics, impurities, and controlled doping * Detailed analysis of the operation of semiconductor devices, including p-n junctions, field-effect transistors, metal-semiconductor junctions and bipolar junction transistors * Discussion of optoelectronic devices such as light-emitting diodes (LEDs) and lasers * Chapters on the device applications of dielectrics, magnetic materials, and superconductors

Introduction to Superconductivity Elsevier

This book presents a comprehensive overview of Fourier transforms and the treatment of superconductivity under the vision of the electromagnetic properties of superconductors. It begins with the latest applications and mathematical properties of Fourier transforms and the structure of quantum Fourier operators and fast summations of truncated Fourier series. Then, the book covers topics like tissue engineering, regenerative therapies, and medical imaging systems in medicine. In addition, the book addresses superconductivity subjects, the Lomb-Scargle periodogram on time series, biomedical signals, and two-dimensional Fourier series.

Photonic and Electronic Properties of Fluoride Materials Academic Press

Well known for its accessibility to graduate students and experimental physicists, this volume emphasizes physical arguments and minimizes theoretical formalism. The second edition of this classic text features revisions by the author that improve its user-friendly qualities, and an introductory survey of latter-day developments in classic superconductivity enhances the volume's value as a reference for researchers. Starting with a historical overview, the text proceeds with an introduction to the electrodynamics of superconductors and presents expositions of the Bardeen-Cooper-Schrieffer theory and the Ginzburg-Landau theory. Additional subjects include magnetic properties of classic type II superconductors; the Josephson effect (both in terms of basic phenomena and applications and of the phenomena unique to small junctions); fluctuation effects in classic superconductors;

the high-temperature superconductors; special topics (such as the Bogoliubov method, magnetic perturbations and gapless superconductivity, and time-dependent Ginzburg-Landau theory); and nonequilibrium superconductivity. 1996 edition.

Physics Of High-Tc Superconductors Butterworth-Heinemann

The field of superconductivity has tremendous potential for growth and further development in industrial applications. The subject continues to occupy physicists, chemists, and engineers interested in both the phenomena itself and possible financially viable industrial devices utilizing the physical concepts. For the past five years, within the publications of the American Physical Society, for example, 40%-60% of all articles submitted to major journals in the area of Solid State Physics have been on the subject of superconductivity, including the newer, extremely important subfield of high temperature superconductivity (high Tc). The present volume is the first handbook to address this field. It covers both "classic" superconductivity-related topics and high Tc. Numerous properties, including thermal, electrical, magnetic, mechanical, phase diagrams, and spectroscopic crystallographic structures are presented for many types of superconductors. Critical fields, critical currents, coherence lengths, penetration depths, and transition temperatures are tabulated. First handbook on Superconductivity Coherence lengths and depths are tabulated Crystallographic structures of over 100 superconductor types Main results of several theories are submitted Phase diagrams for synthesizing new superconductors are included

Solid Helium Three Elsevier

Mechanical and thermal properties are reviewed and electrical and magnetic properties are emphasized. Basics of symmetry and internal structure of crystals and the main properties of metals, dielectrics, semiconductors, and magnetic materials are discussed. The theory and modern experimental data are presented, as well as the specifications of materials that are necessary for practical application in electronics. The modern state of research in nanophysics of metals, magnetic materials, dielectrics and semiconductors is taken into account, with particular attention to the influence of structure on the physical properties of nano-materials. The book uses simplified mathematical treatment of theories, while emphasis is placed on the basic concepts of physical phenomena in electronic materials. Most chapters are devoted to the advanced scientific and

technological problems of electronic materials; in addition, some new insights into theoretical facts relevant to technical devices are presented. Electronic Materials is an essential reference for newcomers to the field of electronics, providing a fundamental understanding of important basic and advanced concepts in

electronic materials science. Provides important overview of the fundamentals of electronic materials properties significant for device applications along with advanced and applied concepts essential to those working in the field of electronics Takes a

simplified and mathematical approach to theories essential to the understanding of electronic materials and summarizes important takeaways at the end of each chapter Interweaves modern experimental data and research in topics such as nanophysics, nanomaterials and dielectrics