

Solid State Physics Journal

The Physics and Engineering of Solid State Lasers Foundations of Solid State Physics Impurities in Semiconductors Computational Solid State Physics Electronic Expectations Solid State Insurrection Electronic Structure of Organic Semiconductors Theoretical Solid State Physics Solid State Physics Solid State Physics Advances in Solid State Physics Making Sense of Journals in the Physical Sciences Supersymmetric Methods in Quantum, Statistical and Solid State Physics Solid-State Physics Comments on Solid State Physics Solid-State Physics The Beginnings of Solid State Physics Multidimensional Journal Evaluation Solid-State Physics for Electronics Problems In Solid State Physics With Solutions Simulations for Solid State Physics Paperback Without CD-ROM Some Aspects of Vacuum Ultraviolet Radiation Physics Soviet Physics, Solid State Advanced Solid State Physics Syncope Cases Solid State Physics Comprehensive Nanoscience and Technology INIS Supersymmetric Methods in Quantum and Statistical Physics Solid State Physics Solid-State Physics Papers from [the] Conference on Solid State Physics, Melbourne, August 1959 The Physics of Interacting Electrons in Disordered Systems Characterisation Methods in Solid State and Materials Science Recent Advances in Topological Ferroics and their Dynamics Solid State Physics Metastable, Spintronics Materials and Mechanics of Deformable Bodies Advances in Research and Applications An Introduction to Solid State Physics and Its Applications Recent Advances in Magnetic Insulators - From Spintronics to Microwave

ApplicationsJournal of Physics

The Physics and Engineering of Solid State Lasers

Solid state physics, the study of the physical properties of solid matter, was the most populous subfield of Cold War American physics. Despite prolific contributions to consumer and medical technology, such as the transistor and magnetic resonance imaging, it garnered less professional prestige and public attention than nuclear and particle physics. Solid State Insurrection argues that solid state physics was essential to securing the vast social, political, and financial capital Cold War physics enjoyed in the twentieth century. Solid state's technological bent, and its challenge to the "pure science" ideal many physicists cherished, helped physics as a whole respond more readily to Cold War social, political, and economic pressures. Its research kept physics economically and technologically relevant, sustaining its cultural standing and policy influence long after the sheen of the Manhattan Project had faded. With this book, Joseph D. Martin brings a new perspective to some of the most enduring questions about the role of physics in American history.

Foundations of Solid State Physics

Although there is a good deal of research concerning semiconductor impurities available, most publications on the subject are very specialized and very theoretical. Until now, the field lacked a text that described the current experimental data, applications, and theory concerning impurities in semiconductor physics. Impurities in Semicondu

Impurities in Semiconductors

This book presents a unique collection of clinical cases to help combat the difficulty of diagnosis and treatment of Syncope. Medical professionals using this book are provided with a reference to a large array of succinctly described and illustrated clinical scenarios. Each case is presented with the results of appropriate tests and critical comments about the evaluation, diagnosis and treatment according to guidelines. Syncope is considered a difficult diagnostic and treatment problem for all who work in the field. Regardless of your prior knowledge, you will find the case studies easy to digest, enlightening, and immediately pertinent to improving the care patients – giving you confidence in your diagnosis and your advice. The editors have developed a lively and easy-to-read book with a focused expert editorial commentary, offering the reader a broader and easily understood context for each case, as well as key citations from the literature. Syncope Cases is a valuable contribution to your collection; edited by seven prominent authorities on the management of syncope from four countries, with more than 130 contributors,

this book provides a unique additional step in the fostering of a better understanding of the many factors that can cause syncope, with the ultimate goal of facilitating the delivery of more precise and cost-effective care for syncope patients. It is a contribution that should be widely read, and one that offers the possibility of distinctly enhancing medical care of the syncope patient.

Computational Solid State Physics

This book provides a practical approach to consolidate one's acquired knowledge or to learn new concepts in solid state physics through solving problems. It contains 300 problems on various subjects of solid state physics. The problems in this book can be used as homework assignments in an introductory or advanced course on solid state physics for undergraduate or graduate students. It can also serve as a desirable reference book to solve typical problems and grasp mathematical techniques in solid state physics. In practice, it is more fascinating and rewarding to learn a new idea or technique through solving challenging problems rather than through reading only. In this aspect, this book is not a plain collection of problems but it presents a large number of problem-solving ideas and procedures, some of which are valuable to practitioners in condensed matter physics.

Electronic Expectations

During the past 20 years, solid state physics has become one of the major branches of physics. 1-2 Today over one-third of all scientific articles published in physics deal with solid state 3 topics. During the last two decades, there has also been rapid growth of scientific computation in a wide variety of fields. -5 The combination of solid state physics and computation may be termed computational solid state physics. This emerging field is distinguished from theoretical solid state physics only to the extent that electronic computers rather than slide rules or backs of envelopes are used to solve numerical or logical problems, test scientific hypotheses, and discover the essential physical content of formal mathematical theories. Papers in computational solid state physics are widely scattered in the literature. They can be found in the traditional physics journals and review series, such as The Physical Review and Solid State Physics; in more specialized publications, such as Journal of Computational Physics, Computer Physics Communications, and Methods in Computational Physics; and in the proceedings of a number of recent conferences and seminar courses. - Plans for holding an International Symposium on Computational Solid State Physics in early October 1971 were formulated by Dr.

Solid State Insurrection

An excellent resource for students studying solid state science, as well as researchers and industry specialists, this book provides a deeper understanding of the benefits, drawbacks and overlap within different characterisation techniques, and it bridges the gap between theory and implementation by including informative exercises for readers and presenting a comprehensive overview of various characterisation techniques involved in solid state research.

Electronic Structure of Organic Semiconductors

Theoretical Solid State Physics

Some Aspects of Vacuum Ultraviolet Radiation Physics presents some data on the state of research in vacuum ultraviolet radiation in association with areas of physics. Organized into four parts, this book begins by elucidating the optical properties of solids in the vacuum ultraviolet region (v.u.v.), particularly the specific methods of determination of optical constants in v.u.v., the properties of metals, and those of ionic insulators. Part II deals with molecular spectroscopy, with emphasis on the spectra of diatomic and simple polyatomic molecules, paraffins, and condensed phases. Part III focuses on some aspects of emission spectroscopy in the v.u.v. in relation to laboratory plasmas. The last part describes

the image formation by concave gratings, spectrophotometry, and diffusion by surfaces. This book will be very valuable to physicist and graduate students inclined to this field of interest.

Solid State Physics

This book, first published in 1999, analyses the convergence of financial, technical, and public policy considerations that turned what seemed like science fiction twenty years ago into a library fact of life today. It shows that while electronic publication greatly speeds issuance of important scientific results of enduring value, it also has the potential to lower the economic threshold at which crank papers and marginal publications can gain a wide, if sadly misled audience, in the short run. It demonstrates that while scientists invented the web, they no longer control it, and that even the very largest research organizations, libraries, publishers, and journal aggregators, will, to a substantial degree, be at the technological and economic mercy of commercial users of the web.

Solid State Physics

This book surveys recent advances in research into the electronic properties of disordered systems in two parts. The first half treats impurity bands in three

dimensions; the second half deals with outstanding features of two-dimensional electron systems.

Advances in Solid State Physics

This volume of Solid State Physics provides a broad review on recent advances in the field of magnetic insulators, ranging from new spin effects to thin film growth and high-frequency applications. It covers both theoretical and experimental progress. The topics include the use of magnetic insulators to produce and transfer spin currents, the excitation of spin waves in magnetic insulators by spin transfer torque, interplay between the spin and heat transports in magnetic insulator/normal metal heterostructures, nonlinear spin waves in thin films, development of high-quality nanometer thick films, and applications of magnetic insulators in rf, microwave, and terahertz devices, among others. The volume not only presents introductions and tutorials for those just entering the field, but also provides comprehensive yet timely summaries to specialists in the field. Solid-state physics is the branch of physics primarily devoted to the study of matter in its solid phase, especially at the atomic level. This prestigious series presents timely and state-of-the-art reviews pertaining to all aspects of solid-state physics. Contributions from leading authorities Informs and updates on all the latest developments in the field

Making Sense of Journals in the Physical Sciences

This text explains the mutual influences between the physical and dynamic processes in solids and their lasing properties. It provides insight into the physics and engineering of solid state lasers by integrating information from several disciplines, including solid state physics, materials science, photophysics, and dynamic processes in solids. The text discusses approaches to developing new laser materials and includes data tables of basic parameters that can be applied to laser design. Novel materials and techniques used in recent developments are also covered.

Supersymmetric Methods in Quantum, Statistical and Solid State Physics

While the standard solid state topics are covered, the basic ones often have more detailed derivations than is customary (with an emphasis on crystalline solids). Several recent topics are introduced, as are some subjects normally included only in condensed matter physics. Lattice vibrations, electrons, interactions, and spin effects (mostly in magnetism) are discussed the most comprehensively. Many problems are included whose level is from "fill in the steps" to long and challenging, and the text is equipped with references and several comments about

experiments with figures and tables.

Solid-State Physics

This Volume 44 of Advances in Solid State Physics contains the written versions of most of the invited lectures of the Spring Meeting of the Condensed Matter Physics section of the Deutsche Physikalische Gesellschaft held from March 8 to 12, 2004 in Regensburg, Germany. Many of the topical talks given at the numerous and very lively symposia are also included. They have covered extremely interesting and timely subjects. Thus the book truly reflects the status of the field of solid state physics in 2004, and indicates its importance, not only in Germany but also internationally.

Comments on Solid State Physics

Solid-State Physics

The Beginnings of Solid State Physics

Multidimensional Journal Evaluation

Solid-State Physics for Electronics

The author lays out the patterns of subject specialization within chemistry and physics in non-technical language, emphasizing the often colourful people and events that influenced the founding of new areas of research and their journals.

Problems In Solid State Physics With Solutions

Interactive resource centering around fourteen high quality computer simulations covering essential topics in solid state physics. Copyright © Libri GmbH. All rights reserved.

Simulations for Solid State Physics Paperback Without CD-ROM

From the Introduction: Nanotechnology and its underpinning sciences are progressing with unprecedented rapidity. With technical advances in a variety of nanoscale fabrication and manipulation technologies, the whole topical area is maturing into a vibrant field that is generating new scientific research and a

burgeoning range of commercial applications, with an annual market already at the trillion dollar threshold. The means of fabricating and controlling matter on the nanoscale afford striking and unprecedented opportunities to exploit a variety of exotic phenomena such as quantum, nanophotonic and nanoelectromechanical effects. Moreover, researchers are elucidating new perspectives on the electronic and optical properties of matter because of the way that nanoscale materials bridge the disparate theories describing molecules and bulk matter. Surface phenomena also gain a greatly increased significance; even the well-known link between chemical reactivity and surface-to-volume ratio becomes a major determinant of physical properties, when it operates over nanoscale dimensions. Against this background, this comprehensive work is designed to address the need for a dynamic, authoritative and readily accessible source of information, capturing the full breadth of the subject. Its six volumes, covering a broad spectrum of disciplines including material sciences, chemistry, physics and life sciences, have been written and edited by an outstanding team of international experts. Addressing an extensive, cross-disciplinary audience, each chapter aims to cover key developments in a scholarly, readable and critical style, providing an indispensable first point of entry to the literature for scientists and technologists from interdisciplinary fields. The work focuses on the major classes of nanomaterials in terms of their synthesis, structure and applications, reviewing nanomaterials and their respective technologies in well-structured and comprehensive articles with extensive cross-references. It has been a constant

surprise and delight to have found, amongst the rapidly escalating number who work in nanoscience and technology, so many highly esteemed authors willing to contribute. Sharing our anticipation of a major addition to the literature, they have also captured the excitement of the field itself in each carefully crafted chapter. Along with our painstaking and meticulous volume editors, full credit for the success of this enterprise must go to these individuals, together with our thanks for (largely) adhering to the given deadlines. Lastly, we record our sincere thanks and appreciation for the skills and professionalism of the numerous Elsevier staff who have been involved in this project, notably Fiona Geraghty, Megan Palmer and Greg Harris, and especially Donna De Weerd-Wilson who has steered it through from its inception. We have greatly enjoyed working with them all, as we have with each other.

Some Aspects of Vacuum Ultraviolet Radiation Physics

Recent Advances in Topological Ferroics and Their Dynamics, Volume 70 in the Solid State Physics series, provides the latest information on the branch of physics that is primarily devoted to the study of matter in its solid phase, especially at the atomic level. This prestigious serial presents timely and state-of-the-art reviews pertaining to all aspects of solid state physics. Contains contributions from leading authorities in the study of solid state physics, especially at the atomic level Informs and updates on all the latest developments in the field Presents timely, state-of-

the-art reviews pertaining to all aspects of solid state physics

Soviet Physics, Solid State

Building on the earlier edition it now encapsulates the substantial developments that have been made in supersymmetric quantum mechanics in recent years. Aimed at graduate students and scientists this book provides a thorough review supersymmetric quantum mechanics and now includes problems and solutions.

Advanced Solid State Physics

Theoretical Solid State Physics, Volume 2 deals with the electron-lattice interaction and the effect of lattice imperfections. Conductivity, semiconductors, and luminescence are discussed, with emphasis on the basic physical problems and the various phenomena derived from them. The theoretical basis of interaction between electrons and lattices is considered, along with basic concepts of conduction theory, scattering of electrons by imperfections, and radiationless transitions. This volume is comprised of 19 chapters and begins with an overview of the coupling of electrons and the crystal lattice in a solid, followed by a discussion on the conduction phenomena. The reader is then introduced to defects in the crystal lattice and their effects on the distribution and energy spectrum of

the electrons as well as the frequency spectrum of the lattice vibrations. Subsequent chapters focus on semiconductors and their conductivity, thermoelectric effects, and effects in a magnetic field; radiative processes; and radiationless transitions. This book will be of interest to physicists and students of solid state physics.

Syncope Cases

An essential guide to solid state physics through the lens of dimensionality and symmetry Foundations of Solid State Physics introduces the essential topics of solid state physics as taught globally with a focus on understanding the properties of solids from the viewpoint of dimensionality and symmetry. Written in a conversational manner and designed to be accessible, the book contains a minimal amount of mathematics. The authors' noted experts on the topic offer an insightful review of the basic topics, such as the static and dynamic lattice in real space, the reciprocal lattice, electrons in solids, and transport in materials and devices. The book also includes more advanced topics: the quasi-particle concept (phonons, solitons, polarons, excitons), strong electron-electron correlation, light-matter interactions, and spin systems. The authors' approach makes it possible to gain a clear understanding of conducting polymers, carbon nanotubes, nanowires, two-dimensional chalcogenides, perovskites and organic crystals in terms of their expressed dimension, topological connectedness, and quantum confinement. This

important guide: -Offers an understanding of a variety of technology-relevant solid-state materials in terms of their dimension, topology and quantum confinement
-Contains end-of-chapter problems with different degrees of difficulty to enhance understanding
-Treats all classical topics of solid state physics courses - plus the physics of low-dimensional systems
Written for students in physics, material sciences, and chemistry, lecturers, and other academics, Foundations of Solid State Physics explores the basic and advanced topics of solid state physics with a unique focus on dimensionality and symmetry.

Solid State Physics

Solid State Physics, Volume 50 continues the series' tradition of excellence by focusing on the optical and electronic properties and applications of semiconductors. All of the topics in this volume are at the cutting-edge of research in the semiconductor field and will be of great interest to the scientific community.

Comprehensive Nanoscience and Technology

Written in the perspective of an experimental chemist, this book puts together some fundamentals from chemistry, solid state physics and quantum chemistry, to help with understanding and predicting the electronic and optical properties of

organic semiconductors, both polymers and small molecules. The text is intended to assist graduate students and researchers in the field of organic electronics to use theory to design more efficient materials for organic electronic devices such as organic solar cells, light emitting diodes and field effect transistors. After addressing some basic topics in solid state physics, a comprehensive introduction to molecular orbitals and band theory leads to a description of computational methods based on Hartree-Fock and density functional theory (DFT), for predicting geometry conformations, frontier levels and energy band structures. Topological defects and transport and optical properties are then addressed, and one of the most commonly used transparent conducting polymers, PEDOT:PSS, is described in some detail as a case study.

INIS

Scientific communication depends primarily on publishing in journals. The most important indicator to determine the influence of a journal is the Impact Factor. Since this factor only measures the average number of citations per article in a certain time window, it can be argued that it does not reflect the actual value of a periodical. This book defines five dimensions, which build a framework for a multidimensional method of journal evaluation. The author is winner of the Eugene Garfield Doctoral Dissertation Scholarship 2011.

Supersymmetric Methods in Quantum and Statistical Physics

This book describes the recent evolution of solid-state physics, which is primarily dedicated to examining the behavior of solids at the atomic scale. It also presents various state-of-the-art reviews and original contributions related to solid-state sciences. The book consists of four sections, namely, solid-state behavior, metastable materials, spintronics materials, and mechanics of deformable bodies. The authors' contributions relating to solid-state behavior deal with the performance of solid matters pertaining to quantum mechanics, physical metallurgy, and crystallography. The authors' contributions relating to metastable materials demonstrate the behavior of amorphous/bulk metallic glasses and some nonequilibrium materials. The authors' contributions relating to spintronic materials explain the principles and equations underlying the physics, transport, and dynamics of spin in solid-state systems. The authors' contributions relating to the mechanics of deformable bodies deal with applications of numeric and analytic solutions/models for solid-state structures under deformation. Key Features: Issues in solid-state physics, Lagrangian quantum mechanics, Quantum and thermal behavior of HCP crystals, Thermoelectric properties of semiconductors, Bulk metallic glasses and metastable atomic density determination, Applications of spintronics and Heusler alloys, 2D elastostatic, mathematical modeling and dynamic stiffness methods on deformable bodies.

Solid State Physics

Solid-State Physics

Describing the fundamental physical properties of materials used in electronics, the thorough coverage of this book will facilitate an understanding of the technological processes used in the fabrication of electronic and photonic devices. The book opens with an introduction to the basic applied physics of simple electronic states and energy levels. Silicon and copper, the building blocks for many electronic devices, are used as examples. Next, more advanced theories are developed to better account for the electronic and optical behavior of ordered materials, such as diamond, and disordered materials, such as amorphous silicon. Finally, the principal quasi-particles (phonons, polarons, excitons, plasmons, and polaritons) that are fundamental to explaining phenomena such as component aging (phonons) and optical performance in terms of yield (excitons) or communication speed (polarons) are discussed.

Papers from [the] Conference on Solid State Physics, Melbourne, August 1959

The Physics of Interacting Electrons in Disordered Systems

A must-have textbook for any undergraduate studying solid state physics. This successful brief course in solid state physics is now in its second edition. The clear and concise introduction not only describes all the basic phenomena and concepts, but also such advanced issues as magnetism and superconductivity. Each section starts with a gentle introduction, covering basic principles, progressing to a more advanced level in order to present a comprehensive overview of the subject. The book is providing qualitative discussions that help undergraduates understand concepts even if they can't follow all the mathematical detail. The revised edition has been carefully updated to present an up-to-date account of the essential topics and recent developments in this exciting field of physics. The coverage now includes ground-breaking materials with high relevance for applications in communication and energy, like graphene and topological insulators, as well as transparent conductors. The text assumes only basic mathematical knowledge on the part of the reader and includes more than 100 discussion questions and some 70 problems, with solutions free to lecturers from the Wiley-VCH website. The author's webpage provides Online Notes on x-ray scattering, elastic constants, the quantum Hall effect, tight binding model, atomic magnetism, and topological insulators. This new edition includes the following updates and new features: *

- * Expanded coverage of mechanical properties of solids, including an improved discussion of the yield stress
- * Crystal structure, mechanical properties, and band

structure of graphene * The coverage of electronic properties of metals is expanded by a section on the quantum hall effect including exercises. New topics include the tight-binding model and an expanded discussion on Bloch waves. * With respect to semiconductors, the discussion of solar cells has been extended and improved. * Revised coverage of magnetism, with additional material on atomic magnetism * More extensive treatment of finite solids and nanostructures, now including topological insulators * Recommendations for further reading have been updated and increased. * New exercises on Hall mobility, light penetrating metals, band structure

Characterisation Methods in Solid State and Materials Science

Solid state physics continues to be the most rapidly growing subdiscipline in physics. As a result, entering graduate students wishing to pursue research in this field face the daunting task of not only mastering the old topics but also gaining competence in the problems of current interest, such as the fractional quantum Hall effect, strongly correlated electron systems, and quantum phase transitions. This book is written to serve the needs of such students. I have attempted in this book to present some of the standard topics in a way that makes it possible to move smoothly to current material. Hence, all the interesting topics are not presented at the end of the book. For example, immediately after the first 50 pages, Anderson's analysis of local magnetic moments is presented as an

application of Hartree-Fock theory; this affords a discussion of the relationship with the Kondo model and how scaling ideas can be used to uncloak low-energy physics. As the key problems of current interest in solid state involve some aspects of electron-electron interactions or disorder or both, I have focused on the archetypal problems in which such physics is central. However, only those problems in which there is a consensus view are discussed extensively. In addition, I have placed the emphasis on physics rather than on techniques. Consequently, I focus on a clear presentation of the phenomenology along with a pedagogical derivation of the relevant equations. A key goal of the detailed derivations is to make it possible for the students who have read this book to immediately comprehend research papers on related topics. A key omission in this book is magnetism beyond the Stoner criterion and local magnetic moments. This omission has arisen primarily because the topic is adequately treated in the book by Assa Auerbach.

Recent Advances in Topological Ferroics and their Dynamics

The ideal companion in condensed matter physics - now in new and revised edition. Solving homework problems is the single most effective way for students to familiarize themselves with the language and details of solid state physics. Testing problem-solving ability is the best means at the professor's disposal for measuring student progress at critical points in the learning process. This book

enables any instructor to supplement end-of-chapter textbook assignments with a large number of challenging and engaging practice problems and discover a host of new ideas for creating exam questions. Designed to be used in tandem with any of the excellent textbooks on this subject, Solid State Physics: Problems and Solutions provides a self-study approach through which advanced undergraduate and first-year graduate students can develop and test their skills while acclimating themselves to the demands of the discipline. Each problem has been chosen for its ability to illustrate key concepts, properties, and systems, knowledge of which is crucial in developing a complete understanding of the subject, including: * Crystals, diffraction, and reciprocal lattices. * Phonon dispersion and electronic band structure. * Density of states. * Transport, magnetic, and optical properties. * Interacting electron systems. * Magnetism. * Nanoscale Physics.

Solid State Physics Metastable, Spintronics Materials and Mechanics of Deformable Bodies

Solid State Physics: An Introduction to Theory presents an intermediate quantum approach to the properties of solids. Through this lens, the text explores different properties, such as lattice, electronic, elastic, thermal, dielectric, magnetic, semiconducting, superconducting and optical and transport properties, along with the structure of crystalline solids. The work presents the general theory for most of

the properties of crystalline solids, along with the results for one-, two- and three-dimensional solids in particular cases. It also includes a brief description of emerging topics, such as the quantum hall effect and high superconductivity. Building from fundamental principles and requiring only a minimal mathematical background, the book includes illustrative images and solved problems in all chapters to support student understanding. Provides an introduction to recent topics, such as the quantum hall effect, high-superconductivity and nanomaterials Utilizes the Dirac' notation to highlight the physics contained in the mathematics in an appropriate and succinct manner Includes many figures and solved problems throughout all chapters to provide a deeper understanding for students Offers topics of particular interest to engineering students, such as elasticity in solids, dislocations, polymers, point defects and nanomaterials

Advances in Research and Applications

While the standard solid state topics are covered, the basic ones often have more detailed derivations than is customary (with an emphasis on crystalline solids). Several recent topics are introduced, as are some subjects normally included only in condensed matter physics. Lattice vibrations, electrons, interactions, and spin effects (mostly in magnetism) are discussed the most comprehensively. Many problems are included whose level is from "fill in the steps" to long and challenging, and the text is equipped with references and several comments about

experiments with figures and tables.

An Introduction to Solid State Physics and Its Applications

While the standard solid state topics are covered, the basic ones often have more detailed derivations than is customary (with an emphasis on crystalline solids). Several recent topics are introduced, as are some subjects normally included only in condensed matter physics. Lattice vibrations, electrons, interactions, and spin effects (mostly in magnetism) are discussed the most comprehensively. Many problems are included whose level is from "fill in the steps" to long and challenging, and the text is equipped with references and several comments about experiments with figures and tables.

Recent Advances in Magnetic Insulators - From Spintronics to Microwave Applications

The idea of supersymmetry was originally introduced in relativistic quantum field theories as a generalization of Poincare symmetry. In 1976 Nicolai suggested an analogous generalization for non-relativistic quantum mechanics. With the one-dimensional model introduced by Witten in 1981, supersymmetry became a major tool in quantum mechanics and mathematical, statistical, and condensed-matter

physics. Supersymmetry is also a successful concept in nuclear and atomic physics. An underlying supersymmetry of a given quantum-mechanical system can be utilized to analyze the properties of the system in an elegant and effective way. It is even possible to obtain exact results thanks to supersymmetry. The purpose of this book is to give an introduction to supersymmetric quantum mechanics and review some of the recent developments of various supersymmetric methods in quantum and statistical physics. Thereby we will touch upon some topics related to mathematical and condensed-matter physics. A discussion of supersymmetry in atomic and nuclear physics is omitted. However, the reader will find some references in Chap. 9. Similarly, supersymmetric field theories and supergravity are not considered in this book. In fact, there exist already many excellent textbooks and monographs on these topics. A list may be found in Chap. 9. Yet, it is hoped that this book may be useful in preparing a footing for a study of supersymmetric theories in atomic, nuclear, and particle physics. The plan of the book is as follows.

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