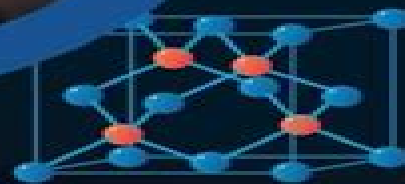


Solid State Physics

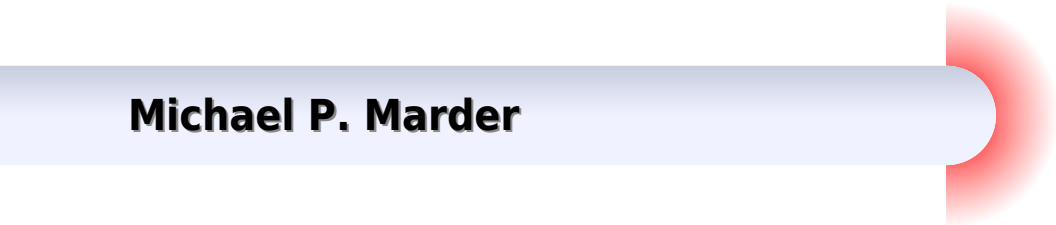
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J. R. Hook & H. E. Hall



Solid State Physics 2nd Edition

Michael P. Marder



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Solid State Physics Giuseppe Grosso, Giuseppe Pastori Parravicini, 2013-10-17 Solid State Physics is a textbook for students of physics material science chemistry and engineering It is the state of the art presentation of the theoretical foundations and application of the quantum structure of matter and materials This second edition provides timely coverage of the most important scientific breakthroughs of the last decade especially in low dimensional systems and quantum transport It helps build readers understanding of the newest advances in condensed matter physics with rigorous yet clear mathematics Examples are an integral part of the text carefully designed to apply the fundamental principles illustrated in the text to currently active topics of research Basic concepts and recent advances in the field are explained in tutorial style and organized in an intuitive manner The book is a basic reference work for students researchers and lecturers in any area of solid state physics Features additional material on nanostructures giving students and lecturers the most significant features of low dimensional systems with focus on carbon allotropes Offers detailed explanation of dissipative and nondissipative transport and explains the essential aspects in a field which is commonly overlooked in textbooks Additional material in the classical and quantum Hall effect offers further aspects on magnetotransport with particular emphasis on the current profiles Gives a broad overview of the band structure of solids as well as presenting the foundations of the electronic band structure Also features reported with new and revised material which leads to the latest research

Condensed Matter Physics Michael P. Marder, 2010-11-17 Now updated the leading single volume introduction to solid state and soft condensed matter physics This Second Edition of

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Solid State Physics Philip Hofmann, 2015-05-26 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

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Recommendations for further reading have been updated and increased New exercises on Hall mobility light penetrating metals band structure

INTRODUCTION TO SOLID STATE PHYSICS, Second Edition KUMAR, ARUN, 2015-10-01

Introduction to Solid State Physics in its Second Edition provides a comprehensive introduction to the physical properties of crystalline solids It explains the structure of crystals theory of crystal diffraction and the reciprocal lattice As the book advances it describes different kinds of imperfections in crystals bonding in solids and vibration in one dimensional monoatomic and diatomic linear lattice Different theories of specific heat thermal conductivity of solids and lattice thermal conductivity are thoroughly dealt with Coverage also includes the free electron theory band theory of solids and semiconductors In addition the book also describes in detail the magnetic properties of solids and superconductivity Finally the book includes discussions on lasers nanotechnology and the basic principles of fibre optics and holography Some new topics like cellular method quantum Hall effect de Haas van Alphen effect Pauli paramagnetism and semiconductor laser have been added in the present edition of the book to make it more useful for the students The book is designed to meet the requirements of undergraduate and postgraduate students of physics for their courses in solid state physics condensed matter physics and material science

KEY FEATURES Puts a conceptual emphasis on the subject Includes numerous diagrams and figures to clarify the concepts Gives step by step explanations of theories Provides chapter end exercises to test the knowledge acquired

Elements of Solid State Physics Michael Noel Rudden, John Wilson, 1980

Solid State Physics J. S. Blakemore, 1985-12-12 Updated to reflect recent work in the field this book emphasizes crystalline solids going from the crystal lattice to the ideas of reciprocal space and Brillouin zones and develops these ideas for lattice vibrations for the theory of metals and for semiconductors The theme of lattice periodicity and its varied consequences runs through eighty percent of the book Other sections deal with major aspects of solid state physics controlled by other phenomena superconductivity dielectric and magnetic properties and magnetic resonance

Solid State Device Physics (Second Edition) Sujaul Chowdhury, 2024-11-01 The Physics and 6 experiments of some electronic devices are documented in this book like never before to our knowledge The experiments are on room temperature I V characteristics of npn Bipolar Junction Transistor BJT C828 in common base and in common emitter configurations of n channel Junction Field Effect transistor n JFET 2N5457 in common source configuration and on Unijunction Transistors UJT 2N494 and 2N493 The other 2 experiments are on design construction and implementation of common emitter amplifier using npn BJT with voltage divider bias and on temperature dependent I V characteristics of an undoped bulk bar of semiconductor crystal Ge The book will be a great aid in teaching and learning for students majoring in physics In this 2nd edition more carefully obtained data are presented Texts of device Physics have been polished for more accurate arguments in explaining the data Physics and experiments on I V data of UJT are described and explained in detail using band models known from studies of nanostructure

physics or microelectronics for M S students majoring in physics *Solid-State Physics* James Deane Patterson, Bernard C. Bailey, 2007 Learning solid state physics involves a certain degree of maturity since it involves tying together diverse concepts from many areas of physics The objective is to understand in a basic way how solid materials behave To do this one needs both a good physical and mathematical background One definition of solid state physics is that it is the study of the physical e g the electrical dielectric magnetic elastic and thermal properties of solids in terms of basic physical laws In one sense solid state physics is more like chemistry than some other branches of physics because it focuses on common properties of large classes of materials It is typical that solid state physics emphasizes how physics properties link to electronic structure We have retained the term solid state physics even though condensed matter physics is more commonly used Condensed matter physics includes liquids and non crystalline solids such as glass which we shall not discuss in detail Modern solid state physics came of age in the late thirties and forties and had its most extensive expansion with the development of the transistor integrated circuits and microelectronics Most of microelectronics however is limited to the properties of inhomogeneously doped semiconductors Solid state physics includes many other areas of course among the largest of these are ferromagnetic materials and superconductors Just a little less than half of all working physicists are in condensed matter A course in solid state physics typically begins with three broad areas 1 How and why atoms bind together to form solids 2 Lattice vibrations and phonons and 3 Electrons in solids One would then typically apply the above to 4 Interactions especially of electrons with phonons 5 Metals the Fermi surface and alloys 6 Semiconductors 7 Magnetism 8 Superconductivity 9 Dielectrics and ferroelectrics 10 Optical properties 11 Defects and 12 Certain other modern topics such as layered materials quantum Hall effect mesoscopics nanophysics and soft condensed matter In this book we will consider all of these

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