Mathematical Physics By Satya Prakash

PITTS ADALYNN

Heat and Thermodynamics Tata McGraw-Hill Education
An understanding of the collisions between micro particles is of great importance for the number of fields belonging to physics, chemistry, astrophysics, biophysics etc. The present book, a theory for electron-atom and molecule collisions is developed using non-relativistic quantum mechanics in a systematic and lucid manner. The scattering theory is an essential part of the quantum mechanics course of all universities. During the last 30 years, the author has lectured on the topics presented in this book (collisions physics, photon-atom collisions, electron-atom and electron-molecule collisions, "electron-photon delayed coincidence technique", etc.) at many institutions including Wayne State University, Detroit, MI, The University of Western Ontario, Canada, and The Meerut University, India. The present book is the outcome of those lectures and is written to serve as a textbook for post-graduate and pre-PhD students and as a reference book for researchers.
Festschrift in Honor of Berge Englert on His 60th Birthday Disha Publications
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Elements of Group Theory for Physicists University Science Books
This book leads readers from a basic foundation to an advanced-level understanding of fluid and solid mechanics. Perfect for graduate or PhD mathematical-science students looking for help in understanding the fundamentals of the topic, it also explores more specific areas such as multi-deck theory, time-mean turbulent shear flows, non-linear free surface flows, and internal fluid dynamics. "Fluid and Solid Mechanics" is the second volume of the LTCC Advanced Mathematics Series. This series is the first to provide advanced introductions to mathematical science topics to advanced students of mathematics. Edited by the three joint heads of the London Taught Course Centre for PhD Students in the Mathematical Sciences (LTCC), each book supports readers in broadening their mathematical knowledge outside of their immediate research disciplines while also covering specialized key areas.Contents: Introductory Geophysical Fluid Dynamics "(Michael Davey)"Multiple Deck Theory "(S N Timoshin)"Time-Mean Turbulent Shear Flows: Classical Modelling — Asymptotic Analysis — New Perspectives "(Bernhard Scheichl)"Nonlinear Free Surface Flows with Gravity and Surface Tension "(J-M Vanden-Broeck)"Internal Fluid Dynamics "(Frank T Smith)"Fundamentals of Physiological Solid Mechanics "(N C Ovenden and C L Walsh)" Readership: Researchers, graduate or PhD mathematical-science students who require a reference book that covers fluid dynamics and solid mechanics. Pure Mathematics;Applied Mathematics;Mathematical Sciences;Techniques;Algebra;Logic;Combinatorics;Fluid Dynamics;Solid MechanicsKey Features: Each chapter is written by a leading lecturer in the fieldConcise and versatileCan be used as a masters level teaching support or a reference handbook for researchers
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problems. This thoroughly class-texted material aims to bridge the gap between the books which give highly theoretical treatments and the ones which present only the descriptive accounts of quantum mechanics. Every effort has been made to make the book explanatory, exhaustive and student friendly. The text focuses its attention on problem-solving to accelerate the student's grasp of the basic concepts and their applications. What is new to this Edition : Includes new chapters on Field Quantization and Chemical Bonding. Provides new sections on Rayleigh Scattering and Raman Scattering. Offers additional worked examples and problems illustrating the various concepts involved. This textbook is designed as a textbook for postgraduate and advanced undergraduate courses in physics and chemistry. Solutions Manual containing the solutions to chapter-end exercises is available for instructors. Solution Manual is available for adopting faculty. Click here to request...

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This book is intended to provide an adequate background for various theortical physics courses, especially those in classical mechanics, electrodynamics, quatum mechanics and statistical physics. Each topic is dealt with in a generally self-contained manner and the text is interspersed with a number of solved examples ad a large number of exercise problems.

Introduction to Classical Mechanics Springer Science & Business Media

A leading theoretical physicist describes the search for a 'theory of everything'. The Holy Grail of modern physics is the search for a 'quantum gravity' view of the universe that unites Einstein's general relativity with quantum theory. Until recently, these two foundational pillars of modern science have seemed incompatible: relativity deals exclusively with the universe at the large scale (planets, solar systems and galaxies), whereas quantum theory is restricted to the domain of the very small (molecules, atoms, electrons). Here, Lee Smolin provides the first accessible overview of current attempts to reconcile these two theories. Written with wit and style, Three Roads to Quantum Gravity touches on some of the deepest questions about the nature of the universe - are space and time continuous or infinitely divisible? Is there a limit to how small things can be? - while speculating on what developments we can expect at the frontiers of physics in the twenty-first century.

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Heat Thermodynamics and Statistical Physics S. Chand Publishing

Primarily intended for the undergraduate students of mathematics, physics and engineering, this text gives in-depth coverage of differential equations and the methods for solving them. The book begins with the definitions, the physical and geometric origins of differential equations, and the methods for solving the first order differential equations. Then it goes on to give the applications of these equations to such areas as biology, medical sciences, electrical engineering and economics. The text also discusses, systematically and logically, higher order differential equations and their applications to telecommunications, civil engineering, cardiology and detection of diabetes, as also the methods of solving simultaneous differential equations and their applications. Besides, the book provides a detailed discussion on Laplace transforms and their applications, partial differential equations and their applications to vibration of stretched string, heat flow, transmission lines, etc., and calculus of variations and its applications. The book, which is a happy fusion of theory and application, would also be useful to postgraduate students.NEW TO THIS EDITION • New sections on: (a) Equations reducible to linear partial differential equations (b) General method for solving the second order non-linear partial differential equations (Monge's Method) (c) Lagrange's equations of motion • Number of solved examples in Chapters 5, 7, 8, 9 and 10.

Solid State Physics Springer Science & Business Media

The book is an introduction to the rapidly emerging field of fiber optic sensors that is having significant impact upon areas such as guidance and control, structural monitoring, process control, biotechnology, geographical information systems and medicine.

DIFFERENTIAL EQUATIONS AND THEIR APPLICATIONS PHI Learning Pvt. Ltd.

Designed to serve as a textbook for postgraduate students of physics and chemistry, this second edition improves the clarity of treatment, extends the range of topics, and includes more worked examples with a view to providing all the material needed for a course in molecular spectroscopy—from first principles to the very useful spectral data that comprise figures, charts and tables. To improve the conceptual appreciation and to help students develop more positive and realistic impressions of spectroscopy, there are two new chapters—one on the spectra of atoms and the other on laser spectroscopy. The chapter on the spectra of atoms is a detailed account of the basic principles involved in molecular spectroscopy. The chapter on laser spectroscopy covers some new experimental techniques for the investigation of the structure of atoms and molecules. Additional sections on interstellar molecules, inversion vibration of ammonia molecule, fibre-coupled Raman spectrometer, Raman microscope, supersonic beams and jet-cooling have also been included. Besides worked-out examples, an abundance of review questions, and end-of-chapter problems with answers are included to aid students in testing their knowledge of the material contained in each chapter. Solutions manual containing the complete worked-out solutions to chapter-end problems is available for instructors.

A Textbook of Quantum Mechanics S. Chand Publishing

Mathematical Physics

ELEMENTS OF SOLID STATE PHYSICS John Wiley & Sons

This book is an electromagnetics classic. Originally published in 1941, it has been used by many generations of students, teachers, and researchers ever since. Since it is classic electromagnetics, every chapter continues to be referenced to this day. This classic reissue contains the entire, original edition first published in 1941. Additionally, two new forewords by Dr. Paul E. Gray (former MIT President and colleague of Dr. Stratton) and another by Dr. Donald G. Dudley, Editor of the IEEE Press Series on E/M Waves on the significance of the book′s contribution to the field of Electromagnetics.

Quantum Theory for Mathematicians Tata McGraw-Hill Education

This introductory yet comprehensive book presents the fundamental concepts on the analysis and design of tribological systems. It is a unique blend of scientific principles, mathematical formulations and engineering practice. The text discusses properties and measurements of engineering surfaces, surface contact geometry and contact stresses. Besides, it deals with adhesion, friction, wear, lubrication and related interfacial pheno-mena. It also highlights recent developments like nanotribology and fractal analysis with great clarity. The book is intended as a text for senior under-graduate and postgraduate students of mechanical engineering, production/industrial engineering, metallurgy and material science. It can also serve as a reference for practising engineers and designers.

Advanced Quantum Mechanics New India Publishing

This volume is a collection of original articles or reprints of journal papers and book chapters written or inspired by Berge Englert, as well as essays recounting Professor Englert's impact on all the contributors' scientific careers and lives in general. The scientific articles span a wide range of topics in quantum physics — from quantum optics, foundations of quantum physics, to quantum information — reflecting his influential impact. The personal essays offer a rare insight into the man behind the science — the essence of who he is. Each article in the book is preceded by a commentary from the contributor who wrote or suggested the inclusion of the article, highlighting its significance. The collection was created in relation to a conference, BergeFest, held in UTown, National University of Singapore, in April 2014, in celebration of the 60th birthday of Professor Berge Englert.

Mathematics for Physics and Physicists Tata McGraw-Hill Education

This book covers advanced topics in quantum mechanics, including nonrelativistic multi-particle systems, relativistic wave equations, and relativistic fields. Numerous examples for application help readers gain a thorough understanding of the subject. The presentation of relativistic wave equations and their symmetries, and the fundamentals of quantum field theory lay the foundations for advanced studies in solid-state physics, nuclear, and elementary particle physics. The authors earlier book, Quantum Mechanics, was praised for its unsurpassed clarity.

Fluid and Solid Mechanics Springer Science & Business Media

Mathematics is an essential ingredient in the education of a student of mathematics or physics of a professional physicist, indeed in the education of any professional scientist or engineer. The purpose of Mathematical Physics is to provide a comprehensive study of the mathematics underlying theoretical physics at the level of graduate and postgraduate students and also have enough depth for others interested in higher level mathematics relevant to specialized fields. It is also intended to serve the research scientist or engineer who needs a quick refresher course in the subject. The Fourth Edition of the book has been thoroughly revised and updated keeping in mind the requirements of students and the latest UGC syllabus.

ENGINEERING TRIBOLOGY PHI Learning Pvt. Ltd.

Although ideas from quantum physics play an important role in many parts of modern mathematics, there are few books about quantum mechanics aimed at mathematicians. This book introduces the main ideas of quantum mechanics in language familiar to mathematicians. Readers with little prior exposure to physics will enjoy the book's conversational tone as they delve into such topics as the Hilbert space approach to quantum theory; the Schrödinger equation in one space dimension; the Spectral Theorem for bounded and unbounded self-adjoint operators; the Stone–von Neumann Theorem; the Wentzel–Kramers–Brillouin approximation; the role of Lie groups and Lie algebras in quantum mechanics; and the path-integral approach to quantum mechanics. The numerous exercises at the end of each chapter make the book suitable for both graduate courses and independent study. Most of the text is accessible to graduate students in mathematics who have had a first course in real analysis, covering the basics of L2 spaces and Hilbert spaces. The final chapters introduce readers who are familiar with the theory of manifolds to more advanced topics, including geometric quantization.

Encyclopaedia of Mathematical Physics Vikas Publishing House

This revised and updated Fourth Edition of the text builds on the strength of previous edition and gives a systematic and clear exposition of the fundamental principles of solid state physics. The text covers the topics, such as crystal structures and chemical bonds, semiconductors, dielectrics, magnetic materials, superconductors, and nanomaterials. What distinguishes this text is the clarity and precision with which the author discusses the principles of physics, their relations as well as their applications. With the introduction of new sections and additional information, the fourth edition should prove highly useful for the students. This book is designed for the courses in solid state physics for B.Sc. (Hons.) and M.Sc. students of physics. Besides, the book would also be useful to the students of chemistry, material science, electrical/electronic and allied engineering disciplines. New to the Fourth Edition • Solved examples have been introduced to explain the fundamental principles of physics. • Matrix representation for symmetry operations has been introduced in Chapter 1 to enable the use of Group Theory for treating crystallography. • A section entitled 'Other Contributions to Heat Capacity', has been introduced in Chapter 5. • A statement on 'Kondo effect (minimum)' has been added in Chapter 14. • A section on 'Graphenes' has been introduced in Chapter 16. • The section on 'Carbon Nanotubes', in Chapter 16 has been revised. • A "Lesson on Group Theory", has been added as Appendix.

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