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An Elementary Treatise on Statics World Scientific

Textbook on the science and methods behind a global transition to 100% clean, renewable energy for science, engineering, and social science students.

Principles of Electricity and Magnetism Cambridge University Press

This first volume covers the mechanics of point particles, gravitation, extended systems (starting from the two-body system), the basic concepts of relativistic mechanics and the mechanics of rigid bodies and fluids. It is part of a four-volume textbook, which covers electromagnetism, mechanics, fluids and thermodynamics, and waves and light, and is designed to reflect the typical syllabus during the first two years of a calculus-based university physics program.

Throughout all four volumes, particular attention is paid to in-depth clarification of conceptual aspects, and to this end the historical roots of the principal concepts are traced. Writings by the founders of classical mechanics, G. Galilei and I. Newton, are reproduced, encouraging students to consult them. Emphasis is also consistently placed on the experimental basis of the concepts, highlighting the experimental nature of physics. Whenever feasible at the elementary level, concepts relevant to more advanced courses in modern physics are included. Each chapter begins with an introduction that briefly describes the subjects to be discussed and ends with a summary of the main results. A number of "Questions" are included to help readers check their level of understanding. The textbook offers an ideal resource for physics students, lecturers and, last but not least, all those seeking a deeper understanding of the experimental basics of

physics.

Physics of Magnetism and Magnetic Materials John Wiley & Sons

A comprehensive, modern introduction to electromagnetism This graduate-level physics textbook provides a comprehensive treatment of the basic principles and phenomena of classical electromagnetism. While many electromagnetism texts use the subject to teach mathematical methods of physics, here the emphasis is on the physical ideas themselves. Anupam Garg distinguishes between electromagnetism in vacuum and that in material media, stressing that the core physical questions are different for each. In vacuum, the focus is on the fundamental content of electromagnetic laws, symmetries, conservation laws, and the implications for phenomena such as radiation and light. In material media, the focus is on understanding the response of the media to imposed fields, the attendant constitutive relations, and the phenomena encountered in different types of media such as dielectrics, ferromagnets, and conductors. The text includes applications to many topical subjects, such as magnetic levitation, plasmas, laser beams, and synchrotrons. Classical Electromagnetism in a Nutshell is ideal for a yearlong graduate course and features more than 300 problems, with solutions to many of the advanced ones. Key formulas are given in both SI and Gaussian units; the book includes a discussion of how to convert between them, making it accessible to adherents of both systems. Offers a complete treatment of classical electromagnetism Emphasizes physical ideas Separates the treatment of electromagnetism in vacuum and material media Presents key formulas in both SI and Gaussian units Covers applications to other areas of physics Includes more than 300 problems

Problems and Solutions in Introductory Mechanics Springer Science & Business Media

For 50 years, Edward M. Purcell's classic textbook has introduced students to the world of electricity and magnetism. The third edition has been brought up to date and is now in SI units. It features hundreds of new examples, problems, and figures, and contains discussions of real-life applications. The textbook covers all the standard introductory topics, such as electrostatics, magnetism, circuits, electromagnetic waves, and electric and magnetic fields in matter. Taking a nontraditional approach, magnetism is derived as a relativistic effect. Mathematical concepts are introduced in parallel with the physics topics at hand, making the motivations clear. Macroscopic phenomena are derived rigorously from the underlying microscopic physics. With worked examples, hundreds of illustrations, and nearly 600 end-of-chapter problems and exercises, this textbook is ideal for electricity and magnetism courses. Solutions to the exercises are available for instructors at www.cambridge.org/Purcell-Morin.

Introduction to CLASSICAL MECHANICS Cambridge University Press

The 1988 Nobel Prize winner establishes the subject's mathematical background, reviews the principles of electrostatics, then introduces Einstein's special theory of relativity and applies it to topics throughout the book.

Introduction to Magnetic Materials Cambridge University Press

An engaging writing style and a strong focus on the physics make this graduate-level textbook a must-have for electromagnetism students.

49011020Basic Laws Of Electromagnetism Springer Science & Business Media

Introduction to Magnetic Materials, 2nd Edition covers the basics of magnetic quantities, magnetic devices, and materials used in practice. While retaining much of the original, this revision now covers SQUID and alternating gradient magnetometers, magnetic force microscope, Kerr effect, amorphous alloys, rare-earth magnets, SI Units alongside cgs units, and other up-to-date topics. In addition, the authors have added an entirely new chapter on information materials. The text presents materials at the practical rather than theoretical level, allowing for a physical, quantitative, measurement-based understanding of magnetism among readers, be they professional engineers or graduate-level students.

Principles of Electrodynamics Princeton University Press

This problem book is ideal for high-school and college students in search of practice problems with detailed solutions. All of the standard introductory topics in mechanics are covered: kinematics, Newton's laws, energy, momentum, angular momentum, oscillations, gravity, and fictitious forces. The introduction to each chapter provides an overview of the relevant concepts. Students can then warm up with a series of multiple-choice questions before diving into the free-response problems which constitute the bulk of the book. The first few problems in each chapter are derivations of key results/theorems that are useful when solving other problems. While the book is calculus-based, it can also easily be used in algebra-based courses. The problems that require calculus (only a sixth of the total number) are listed in an appendix, allowing students to steer clear of those if they wish. Additional details: (1) Features 150 multiple-choice questions and nearly 250 free-response problems, all with detailed solutions. (2) Includes 350 figures to help students visualize important concepts. (3) Builds on solutions by frequently including extensions/variants and additional remarks. (4) Begins with a chapter devoted to problem-solving strategies in physics. (5) A valuable supplement to the assigned textbook in any introductory mechanics course.

Photonic Crystals Courier Corporation

Since it was first published in 1995, Photonic Crystals has remained the definitive text for both undergraduates and researchers on photonic band-gap materials and their use in controlling the propagation of light. This newly expanded and revised edition covers the latest developments in the field, providing the most up-to-date, concise, and comprehensive book available on these novel materials and their applications. Starting from Maxwell's equations and Fourier analysis, the authors develop the theoretical tools of photonics using principles of linear algebra and symmetry, emphasizing analogies with traditional solid-state physics and quantum theory. They then investigate the unique phenomena that take place within photonic crystals at defect sites and surfaces, from one to three dimensions. This new edition includes entirely new chapters describing important hybrid structures that use band gaps or periodicity only in some directions: periodic waveguides, photonic-crystal slabs, and photonic-crystal fibers. The authors demonstrate how the capabilities of photonic crystals to localize light can be put to work in devices such as filters and splitters. A new appendix provides an overview of computational methods for electromagnetism. Existing chapters have been considerably updated and expanded to include many new three-dimensional photonic crystals, an extensive tutorial on device design using temporal coupled-mode theory, discussions of diffraction and refraction at crystal interfaces, and more. Richly illustrated and accessibly written, Photonic Crystals is an indispensable resource for students and researchers. Extensively revised and expanded Features improved graphics throughout Includes new chapters on photonic-crystal fibers and combined index-and band-gap-guiding Provides an introduction to coupled-mode theory as a powerful tool for device design Covers many new topics, including omnidirectional reflection, anomalous refraction and diffraction, computational photonics, and much more.

An Introduction to Mechanics John Wiley & Sons Incorporated

This revised edition provides patient guidance in its clear and organized presentation of problems. It is rich in variety, large in number and provides very careful treatment of relativity. One outstanding feature is the inclusion of simple, standard examples demonstrated in different methods that will allow students to enhance and understand their calculating abilities. There are over 145 worked examples; virtually all of the standard problems are included.

The Mathematical Theory of Electricity and Magnetism Courier Corporation

This is a re-issued and affordable printing of the widely used undergraduate electrodynamics textbook.

Introduction To Classical Mechanics Cambridge University Press

In this book, the fundamentals of magnetism are treated, starting at an introductory level. The origin of magnetic moments, the response to an applied magnetic field, and the various interactions giving rise to different types of magnetic ordering in solids are presented and many examples are given. Crystalline-electric-field effects are treated at a level that is sufficient to provide the basic knowledge necessary in understanding the properties of materials in which these effects play a role. Itinerant-electron magnetism is presented on a similar basis. Particular attention has been given to magnetocrystalline magnetic anisotropy and the magnetocaloric effect. Also, the usual techniques for magnetic measurements are presented. About half of the book is devoted to magnetic materials and the properties that make them suitable for numerous applications. The state of the art is presented of permanent magnets, high-density recording materials, soft-magnetic materials, Invar alloys and magnetostrictive materials. Many references are given.

Classical Electromagnetism in a Nutshell Cambridge University Press

A self-contained guide to the Physics GRE, reviewing all of the topics covered alongside three practice exams with fully worked solutions.

Fundamentals of Electricity and Magnetism Imperial College Press

Market: Students in undergraduate courses in electromagnetism. This innovative textbook provides students with a modern view of the unity of electromagnetism by forsaking the traditional historically ordered development for a more logically ordered one. This approach involves the introduction of Maxwell's equations at the earliest opportunity to serve as the basis for everything that follows.

Advanced Electromagnetism: Foundations: Theory And Applications Cambridge University Press

This second edition is ideal for classical mechanics courses for first- and second-year undergraduates with foundation skills in mathematics.

The Theory of Electromagnetic Flow-Measurement Cambridge University Press

This book is, in essence, an updated and revised version of an earlier textbook, Newtonian Mechanics, written about fifteen years ago by one of us (APF) and published in 1971. The book has been significantly changed in emphasis as well as length. Our aim has been to produce a mechanics text, suitable for use at beginning university level, for students who have a background typified by the British sixth-form level in physics and mathematics. We hope, however, that the book will also be found useful in the teaching of mechanics at the upper levels of the secondary schools themselves. Calculus is freely used from the outset. In making the present revision we have drastically cut down on the amount of historical and more discursive material. Nevertheless, our goal has been to present classical mechanics as physics, not as applied mathematics. Although we begin at the beginning, we have aimed at developing the basic principles and their applications as rapidly as seemed reasonable, so that by the end of the book students will be able to feel that they have achieved a good working knowledge of the subject and can tackle fairly sophisticated problems. To help with this process, each chapter is followed by a good number of exercises, some of them fairly challenging. We shall be very grateful to receive comments and corrections from those who use this book.

Electricity and Magnetism Springer Science & Business Media

This is the fifth edition of a well-established textbook. It is intended to provide a thorough coverage of the fundamental principles and techniques of classical mechanics, an old subject that is at the base of all of physics, but in which there has also in recent years been rapid development. The book is aimed at undergraduate students of physics and applied mathematics. It emphasizes the basic principles, and aims to progress rapidly to the point of being able to handle physically and mathematically interesting problems, without getting bogged down in excessive formalism. Lagrangian methods are introduced at a relatively early stage, to get students to appreciate their use in simple contexts. Later chapters use Lagrangian and Hamiltonian methods extensively, but in a way that aims to be accessible to undergraduates, while including modern developments at the appropriate level of detail. The subject has been developed considerably recently while retaining a truly central role for all students of physics and applied mathematics. This edition retains all the main features of the fourth edition, including the two chapters on geometry of dynamical systems and on order and chaos, and the new appendices on conics and on dynamical systems near a critical point. The material has been somewhat expanded, in particular to contrast continuous and discrete behaviours. A further appendix has been added on routes to chaos (period-doubling) and related discrete maps. The new edition has also been revised to give more emphasis to specific examples worked out in detail. Classical Mechanics is written for undergraduate students of physics or applied mathematics. It assumes some basic prior knowledge of the fundamental concepts and reasonable familiarity with elementary differential and integral calculus.

Introduction to Electrodynamics Cambridge University Press

A classic textbook on the principles of Newtonian mechanics for undergraduate students, accompanied by numerous worked examples and problems.

Magnetism and Magnetic Materials John Wiley & Sons

This textbook aims to provide a clear and concise set of lectures that take one from the introduction and application of Newton's laws up to Hamilton's principle of stationary action and the Lagrangian mechanics of continuous systems.

An extensive set of accessible problems enhances and extends the coverage. It serves as a prequel to the author's recently published book entitled Introduction to Electricity and Magnetism based on an introductory course taught sometime ago at Stanford with over 400 students enrolled. Both lectures assume a good, concurrent, course in calculus and familiarity with basic concepts in physics; the development is otherwise self-contained. A good introduction to the subject allows one to approach the many more intermediate and advanced texts with better understanding and a deeper sense of appreciation that both students and teachers alike can share.

Classical Mechanics Princeton University Press

In questions of science, the authority of a thousand is not worth the humble reasoning of a single individual.

Galileo Galilei, physicist and astronomer (1564-1642) This book is a second edition of "Classical

Electromagnetic Theory" which derived from a set of lecture notes compiled over a number of years of teaching electromagnetic theory to fourth year physics and electrical engineering students. These students had a previous exposure to electricity and magnetism, and the material from the first four and a half chapters was presented as a review. I believe that the book makes a reasonable transition between the many excellent elementary books such as Griffiths' Introduction to Electrodynamics and the obviously graduate level books such as Jackson's Classical Electrodynamics or Landau and Lifshitz's Electrodynamics of Continuous Media. If the students have had a previous exposure to Electromagnetic theory,

all the material can be reasonably covered in two semesters. Neophytes should probably spend a semester on the first four or five chapters as well as, depending on their mathematical background, the Appendices B to F. For a shorter or more elementary course, the material on spherical waves, waveguides, and waves in anisotropic media may be omitted without loss of continuity.