Special Relativity For Beginners 330 Pages

Albert Einstein's Special Theory of Relativity
Quantum Field Theory III: Gauge Theory
Special Relativity, Tensors, And Energy Tensor: With Worked Problems
Great Experiments in Physics
Good Thinking
A Stubbornly Persistent Illusion
Relativity Principles and Theories from Galileo to Einstein
The Diva Incident
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Scientific Understanding
A Life Against the Grain

RHODES JOSIAH

Running Press Adult
Starting with Galileo's experiments with motion, this study of 25 crucial discoveries includes Newton's laws of motion, Chadwick's study of the neutron, Hertz on electromagnetic waves, and more. Includes Isaac Newton's "The Laws of Motion," Henry Cavendish's "The Law of Gravitation," Heinrich Hertz's "Electromagnetic Waves," Niels Bohr's "The Hydrogen Atom," and more.
Albert Einstein's Special Theory of Relativity Elsevier
The Sciences: An Integrated Approach, 9th Edition by James Trefil and Robert Hazen recognizes that science forms a seamless web of knowledge about the universe. This text fully integrates physics, chemistry, astronomy, Earth sciences, and biology and emphasizes general principles and their application to real world situations. The goal of the text is to help students achieve scientific literacy. Applauded by students and instructors for its easy-to-read style and detail appropriate for non-science majors, the ninth edition has been updated to bring the most up-to-date coverage to the students in all areas of science, with increased emphasis on climate change, sustainability, viruses and public health, and an extensively updated chapter on the importance of bioengineering. FEATURES INCLUDE: The Science of Life - To help show the interdisciplinary nature of the many concepts introduced in the text, sections on living things are included in most chapters. The chapters that emphasize principles specifically related to life are at the end of the book, but the biological examples appear throughout. The Ongoing Process of Science - Science is a never-ending process of asking questions and seeking answers. In these features, some of the most exciting questions currently being addressed by scientists are examined. Mathematical Equations and Worked Examples -Whenever an equation is introduced, it is presented in three steps: first as a sentence, second as a word equation, and finally in its traditional symbolic form. In this way, students can focus on the meaning rather than the abstraction of the mathematics. An appendix on English and SI units is also included. Science by the Numbers - To help students understand the importance of simple mathematical calculations in areas of magnitude, several nontraditional calculations have been incorporated. For example, how much solid waste is generated in the United States, how long it

would take to erode a mountain, and how many people were required to build Stonehenge. Great Ideas and Great Ideas Concept - Each chapter begins with a statement of a great unifying idea or theme in science and a concept map so that students immediately grasp the chief concept of the chapter and how the idea relates to the different branches of science. These statements are intended to provide a framework for placing everyday experiences into a broad context. Stop and Think! Questions challenge students to think critically about the implications of a scientific discovery or principle. Resources for Instructors and Students including practice quizzes, flashcards, lecture slides, an instructor’s manual, images and tables from the book, a test bank, and much more!

Quantum Field Theory III: Gauge Theory Birkhäuser

Unique in its coverage of all aspects of modern particle physics, this textbook provides a clear connection between the theory and recent experimental results, including the discovery of the Higgs boson at CERN. It provides a comprehensive and self-contained description of the Standard Model of particle physics suitable for upper-level undergraduate students and graduate students studying experimental particle physics. Physical theory is introduced in a straightforward manner with full mathematical derivations throughout. Fully-worked examples enable students to link the mathematical theory to results from modern particle physics experiments. End-of-chapter exercises, graded by difficulty, provide students with a deeper understanding of the subject. Online resources available at www.cambridge.org/MPP feature password-protected fully-worked solutions to problems for instructors, numerical solutions and hints to the problems for students and PowerPoint slides and JPEGs of figures from the book.

Special Relativity, Tensors, And Energy Tensor: With Worked Problems Cambridge University Press

This book takes the reader from the preliminary ideas of the Special Theory of Relativity (STR) to the doorsteps of the General Theory of Relativity (GTR).The first part explains the main concepts in a layman's language, including STR, the Lorentz transformation, relativistic mechanics. Thereafter the concept of tensors is built up in detail, especially Maxwell's stress tensor with illustrative examples, culminating in the energy-momentum conservation in electromagnetic fields. Mathematical structure of Minkowski's space-time is constructed and explained graphically. The equation of motion is formulated and then illustrated by the example of relativistic rocket. The principle of covariance is explained with the covariant equations of classical electrodynamics. Finally, the book constructs the energy tensor which constitutes the source term in Einstein's field equation, which clears the passage to the GTR.In the book, the concepts of tensors are developed carefully and a large number of numerical examples taken from atomic and nuclear physics. The graphs of important equations are included. This is suitable for studies in classical electrodynamics, modern physics, and relativity.

Great Experiments in Physics Springer Science & Business Media

The celebrated physicist and author of A Brief History of Time brings together a single-volume compilation of the most important works by Albert Einstein, presenting his papers on the Theory of Relativity, quantum theory, statistical mechanics, the photoelectric effect, and other ground-breaking studies that transformed modern physics. 75,000 first printing.

Good Thinking World Scientific

An inviting, intuitive, and visual exploration of differential geometry and forms Visual Differential Geometry and Forms fulfills two principal goals. In the first four acts, Tristan Needham puts the geometry back into differential geometry. Using 235 hand-drawn diagrams, Needham deploys Newton’s geometrical methods to provide geometrical explanations of the classical results. In the fifth act, he offers the first undergraduate introduction to differential forms that treats advanced topics in an intuitive and geometrical manner. Unique features of the first four acts include: four distinct geometrical proofs of the fundamentally important Global Gauss-Bonnet theorem, providing a stunning link between local geometry and global topology; a simple, geometrical proof of Gauss’s famous Theorema Egregium; a complete geometrical treatment of the Riemann curvature tensor of an n-manifold; and a detailed geometrical treatment of Einstein’s field equation, describing gravity as curved spacetime (General Relativity), together with its implications for gravitational waves, black holes, and cosmology. The final act elucidates such topics as the unification of all the integral theorems of vector calculus; the elegant reformulation of Maxwell’s equations of electromagnetism in terms of 2-forms; de Rham cohomology; differential geometry via Cartan’s method of moving frames; and the calculation of the Riemann tensor using curvature 2-forms. Six of the seven chapters of Act V can be read completely independently from the rest of the book. Requiring only basic calculus and geometry, Visual Differential Geometry and Forms provocatively rethinks the way this important area of mathematics should be considered and taught.

A Stubbornly Persistent Illusion Silly Beagle Productions

In these newly commissioned essays, leading Whitehead scholars ask a range of important questions about Whitehead's first year of philosophy lectures. Do these lectures challenge or confirm previous understandings of Whitehead's published works? What is revealed about the development of Whitehead's thought in the crucial period after London but before the publication of Science and the Modern World? What should we make of concepts and terms that were introduced in these lectures but were never incorporated into subsequent publications? Also included is the text of Whitehead's first lecture at Harvard, recently gifted to the Critical Edition, allowing for a clearer understanding of Whitehead's plans and goals for his first course of lectures in philosophy than has previously been possible.

Relativity Principles and Theories from Galileo to Einstein String Theory For Dummies

These sparkling essays by a gifted thinker offer philosophical views on the roots of statistical interference. A pioneer in the early development of computing, Irving J. Good made fundamental contributions to the theory of Bayesian inference and was a key member of the team that broke the German Enigma code during World War II. Good maintains that a grasp of probability is essential to answering both practical and philosophical questions. This compilation of his most accessible works concentrates on philosophical rather than mathematical subjects, ranging from rational decisions, randomness, and the nature of probability to operational research, artificial intelligence, cognitive psychology, and chess. These twenty-three self-contained articles represent the author's work in a variety of fields but are unified by a consistently rational approach. Five closely related sections explore Bayesian rationality; probability; corroboration, hypothesis testing, and simplicity; information and surprise; and causality and explanation. A comprehensive index, abundant references, and a bibliography refer readers to classic and modern literature. Good's thought-provoking observations

and memorable examples provide scientists, mathematicians, and historians of science with a coherent view of probability and its applications.
The Diva Incident Oxford University Press
String Theory For DummiesJohn Wiley & Sons
Classical Mechanics, Second Edition Princeton University Press
This new edition also treats smart materials and artificial life. A new chapter on information and computational dynamics takes up many recent discussions in the community.
Gravitation and Inertia Springer
Classical Mechanics, Second Edition presents a complete account of the classical mechanics of particles and systems for physics students at the advanced undergraduate level. The book evolved from a set of lecture notes for a course on the subject taught by the author at California State University, Stanislaus, for many years. It assumes the reader has been exposed to a course in calculus and a calculus-based general physics course. However, no prior knowledge of differential equations is required. Differential equations and new mathematical methods are developed in the text as the occasion demands. The book begins by describing fundamental concepts, such as velocity and acceleration, upon which subsequent chapters build. The second edition has been updated with two new sections added to the chapter on Hamiltonian formulations, and the chapter on collisions and scattering has been rewritten. The book also contains three new chapters covering Newtonian gravity, the Hamilton-Jacobi theory of dynamics, and an introduction to Lagrangian and Hamiltonian formulations for continuous systems and classical fields. To help students develop more familiarity with Lagrangian and Hamiltonian formulations, these essential methods are introduced relatively early in the text. The topics discussed emphasize a modern perspective, with special note given to concepts that were instrumental in the development of modern physics, for example, the relationship between symmetries and the laws of conservation. Applications to other branches of physics are also included wherever possible. The author provides detailed mathematical manipulations, while limiting the inclusion of the more lengthy and tedious ones. Each chapter contains homework problems of varying degrees of difficulty to enhance understanding of the material in the text. This edition also contains four new appendices on D'Alembert's principle and Lagrange's equations, derivation of Hamilton’s principle, Noether’s theorem, and conic sections.
Albert Einstein, Historical and Cultural Perspectives Edinburgh University Press
This book pieces together the jigsaw puzzle of Einstein’s journey to discovering the special theory of relativity. Between 1902 and 1905, Einstein sat in the Patent Office and may have made calculations on old pieces of paper that were once patent drafts. One can imagine Einstein trying to hide from his boss, writing notes on small sheets of paper, and, according to reports, seeing to it that the small sheets of paper on which he was writing would vanish into his desk-drawer as soon as he heard footsteps approaching his door. He probably discarded many pieces of papers and calculations and flung them in the waste paper basket in the Patent Office. The end result was that Einstein published nothing regarding the special theory of relativity prior to 1905. For many years before 1905, he had been intensely concerned with the topic; in fact, he was busily working on the problem for seven or eight years prior to 1905. Unfortunately, there are no surviving notebooks and manuscripts, no notes and papers or other primary sources from this critical period to provide any information about the crucial steps that led Einstein to his great discovery. In May 1905, Henri Poincaré sent three letters to Hendrik Lorentz at the same time that Einstein wrote his famous May 1905 letter to Conrad Habicht, promising him four works, of which the fourth one, Relativity, was a rough draft at that point. In the May 1905 letters to Lorentz, Poincaré presented the basic equations of his 1905 “Dynamics of the Electron”, meaning that, at this point, Poincaré and Einstein both had drafts of papers relating to the principle of relativity. The book discusses Einstein’s and Poincaré’s creativity and the process by which their ideas developed. The book also explores the misunderstandings and paradoxes apparent in the theory of relativity, and unravels the subtleties and creativity of Einstein.
Welcome to the Universe Princeton University Press
Motion is always relative to some thing. Is this thing a concrete body like the earth, is it an abstract space, or is it an imagined frame? Do the laws of physics depend on the choice of reference? It there a choice for which the laws are simplest? Is this choice unique? Is there a physical cause for the choice made? These questions traverse the history of modern physics from Galileo to Einstein. The answers involved Galilean relativity, Newton's absolute space, the purely relational concepts of Descartes, Leibniz, and Mach, and many forgotten uses of relativity principles in mechanics, optics, and electrodynamics - until the relativity theories of Poincaré, Einstein, Minkowksi, and Laue radically redefined space and time to satisfy universal kinds of relativity. Accordingly, this book retraces the emergence of relativity principles in early modern mechanics, documents their constructive use in eighteenth- and nineteenth-century mechanics, optics, and electrodynamics, and gives a well-rooted account of the genesis of special and general relativity in the early twentieth century. As an exercise in long-term history, it demonstrates the connectivity of issues and approaches across several centuries, despite enormous changes in context and culture. As an account of the genesis of relativity theories, it brings unprecedented clarity and fullness by broadening the spectrum of resources on which the principal actors drew.
Whitehead at Harvard, 1924-1925 Nelson Thornes
To most scientists, and to those interested in the sciences, understanding is the ultimate aim of scientific endeavor. In spite of this, understanding, and how it is achieved, has received little attention in recent philosophy of science. Scientific Understanding seeks to reverse this trend by providing original and in-depth accounts of the concept of understanding and its essential role in the scientific process. To this end, the chapters in this volume explore and develop three key topics: understanding and explanation, understanding and models, and understanding in scientific practice. Earlier philosophers, such as Carl Hempel, dismissed understanding as subjective and pragmatic. They believed that the essence of science was to be found in scientific theories and explanations. In Scientific Understanding, the contributors maintain that we must also consider the relation between explanations and the scientists who construct and use them. They focus on understanding as the cognitive state that is a goal of explanation and on the understanding of theories and models as a means to this end. The chapters in this book highlight the multifaceted nature of the process of scientific research. The contributors examine current uses of theory, models, simulations, and experiments to evaluate the degree to which these elements contribute to understanding. Their analyses pay due attention to the roles of intelligibility, tacit knowledge, and feelings of understanding. Furthermore, they investigate how

understanding is obtained within diverse scientific disciplines and examine how the acquisition of understanding depends on specific contexts, the objects of study, and the stated aims of research.
Symmetries in Physics World Scientific
A clear, plain-English guide to this complex scientific theory String theory is the hottest topic in physics right now, with books on the subject (pro and con) flying out of the stores. String Theory For Dummies offers an accessible introduction to this highly mathematical "theory of everything," which posits ten or more dimensions in an attempt to explain the basic nature of matter and energy. Written for both students and people interested in science, this guide explains concepts, discusses the string theory's hypotheses and predictions, and presents the math in an approachable manner. It features in-depth examples and an easy-to-understand style so that readers can understand this controversial, cutting-edge theory.
The Path to Posthumanity University of Pittsburgh Pre
You're no idiot of course. You know that Albert Einstein came up with the famous "E=mc" equation and that his hair looked like it had survived a nuclear test blast. But when it comes to understanding his theories and how they changed the world--well, youre no Einstein. Dont go nuclear yet! The Complete Idiots Guide to Understanding Einstein shows how relatively easy--and fun--it can be to learn and appreciate the world of physics and Einsteins brillant accomplishments.
Quantum Theory John Wiley & Sons
The New York Times bestselling tour of the cosmos from three of today's leading astrophysicists Welcome to the Universe is a personal guided tour of the cosmos by three of today's leading astrophysicists. Inspired by the enormously popular introductory astronomy course that Neil deGrasse Tyson, Michael A. Strauss, and J. Richard Gott taught together at Princeton, this book covers it all—from planets, stars, and galaxies to black holes, wormholes, and time travel. Describing the latest discoveries in astrophysics, the informative and entertaining narrative propels you from our home solar system to the outermost frontiers of space. How do stars live and die? Why did Pluto lose its planetary status? What are the prospects of intelligent life elsewhere in the universe? How did the universe begin? Why is it expanding and why is its expansion accelerating? Is our universe alone or part of an infinite multiverse? Answering these and many other questions, the authors open your eyes to the wonders of the cosmos, sharing their knowledge of how the universe works. Breathtaking in scope and stunningly illustrated throughout, Welcome to the Universe is for those who hunger for insights into our evolving universe that only world-class astrophysicists can provide.
Visual Differential Geometry and Forms Springer Science & Business Media
Special Relativity: A Heuristic Approach provides a qualitative exposition of relativity theory on the basis of the constancy of the speed of light. Using Einstein's signal velocity as the defining idea for the notion of simultaneity and the fact that the speed of light is independent of the motion of its source, chapters delve into a qualitative exposition of the relativity of time and length, discuss the time dilation formula using the standard light clock, explore the Minkowski four-dimensional space-time distance based on how the time dilation formula is derived, and define the components of the two-dimensional space-time velocity, amongst other topics. Provides a heuristic derivation of the Minkowski distance formula Uses relativistic photography to see Lorentz transformation and vector algebra manipulation in action Includes worked examples to elucidate and complement the topic being discussed Written in a very accessible style
Astroparticle Physics John Wiley & Sons
This collection of 32 papers generated by an international symposium held in December 2000 at the B.M. Birla Science Centre, where editor Sidarth is based, includes conventional and alternative formulations of topics ranging from cosmology to quantum superstrings and particle physics. Co-editor Altaisky (Laboratory of Information Technologies, Dubna, Russia) elaborates on field theory on a Lie group. Other cosmic topics presented in non-grouped fashion include an anti- grand unification theory, explorations of space-time, quarks as vortices in vacuum, a novel method to solve familiar differential equations and its applications, a new model of gravity waves, and the effect of the expanding universe on fundamental "constants." c. Book News Inc.
The Complete Idiot's Guide to Understanding Einstein University of Chicago Press
Based on papers presented at the Jerusalem Einstein Centennial Symposium in March 1979, this volume sets forth an articulated sequence of chapters on the impact of Einstein's work, not only in science but in humanistic studies and problems such as international security in the nuclear age. Originally published in 1982. The Princeton Legacy Library uses the latest print-on-demand technology to again make available previously out-of-print books from the distinguished backlist of Princeton University Press. These editions preserve the original texts of these important books while presenting them in durable paperback and hardcover editions. The goal of the Princeton Legacy Library is to vastly increase access to the rich scholarly heritage found in the thousands of books published by Princeton University Press since its founding in 1905.

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