
Special Relativity

As recognized, adventure as with ease as experience virtually lesson, amusement, as with ease as pact can be gotten by just checking out a ebook **Special Relativity** after that it is not directly done, you could recognize even more roughly speaking this life, roughly the world.

We find the money for you this proper as skillfully as easy quirk to acquire those all. We provide Special Relativity and numerous book collections from fictions to scientific research in any way. in the course of them is this Special Relativity that can be your partner.

Special Relativity

2021-06-15

JEFFERSON HUNTER

The Special Theory of Relativity Springer Science & Business Media

A textbook-neutral problems-and-solutions book that complements any relativity textbook at advanced undergraduate or masters level.

Introduction to Special Theory of Relativity University of Chicago Press
An astrophysicist offers an entertaining introduction to Einstein's theories, explaining how well they have held up to rigorous testing over the years, and even describing the amazing phenomena readers would actually experience if they took a trip through a black hole.

Introduction to the Theory of Relativity CRC Press

This book provides a thorough introduction to Einstein's special theory of relativity, suitable for anyone with a minimum of one year's university physics with calculus. It is divided into fundamental and advanced topics. The first section starts by recalling the Pythagorean rule and its relation to the geometry of space, then covers every aspect of special relativity, including the history. The second section covers the impact of relativity in quantum theory,

with an introduction to relativistic quantum mechanics and quantum field theory. It also goes over the group theory of the Lorentz group, a simple introduction to supersymmetry, and ends with cutting-edge topics such as general relativity, the standard model of elementary particles and its extensions, superstring theory, and a survey of important unsolved problems. Each chapter comes with a set of exercises. The book is accompanied by a CD-ROM illustrating, through interactive animation, classic problems in relativity involving motion.

Meson Theory Of Nuclear Forces Columbia University Press

The special theory of relativity, a monumental achievement of scientific creativity, appeared in 1905 as a culmination of deep and careful analysis of contradictions in old notions. The subject is now taught in almost all universities and colleges in the departments of physics and mathematics. This text is designed to give students a solid foundation in experimental background of the theory, relativistic kinematics, relativistic dynamics, and relativistic electrodynamics. What distinguishes the text are some special features, not found in other similar texts, that give a more

intuitive understanding of the subject. Another important feature of the text is its clarity and correctness with which the principles, their relations, and their applications are set forth. This well-accepted book, now in its second edition, includes a brief account of the “properties of Cartesian tensors” and also adds “experimental verifications of the mass variation of a particle with velocity and the mass-energy equivalence relation” in Chapter 3. Besides, in Chapter 4, some calculations to show how the potentials obtained for a uniformly moving charge lead to Lorentz transformation have been added. It also includes some new problems in the exercise section of Chapters 2, 3 and 4 with their solutions given in the Appendix. The book will also be useful for competitive examinations to PG and Ph.D. courses. **KEY FEATURES :** Discusses relativistic mechanics and electrodynamics of continuous media. Presents the covariant four-dimensional formulation of relativistic mechanics and electrodynamics. Explains the Lagrangian and Hamiltonian formulations in mechanics and electrodynamics. Describes the Terrell effect (visual appearance of moving objects) and the Thomas precession. Includes a large number of solved problems. Provides solutions to end-of-chapter exercises.

Special Relativity for Beginners Springer Science & Business Media
Elements and Formulae of Special Relativity presents elements and formulas of the theory of special relativity and covers topics ranging from kinematics and propagation of light to mechanics of single bodies, hydrodynamics, and thermodynamics. Vector operators, electromagnetic fields, electrodynamics, and statistical

mechanics are also explored. This book is comprised of 13 chapters and begins by introducing the reader to the kinematics of special relativity, paying particular attention to formulas required for transformations between two frames of reference. Attention then turns to the propagation of light, the Doppler effect, the mechanics of single bodies, and the more general and more powerful approach to relativistic mechanics due to Lagrange and to Hamilton. The chapters that follow focus on formulas for a fluid maintained at a constant uniform pressure; relativistic formulas for thermodynamics; and representation of M-vectors with real components by cartesian 4-vectors with imaginary components. This book also considers the equations for an electromagnetic field in a vacuum and a gaseous phase composed of one or several perfect monatomic gases. A brief historical synopsis is given in the last chapter. This monograph will be useful to chemical physicists and other not-too-theoretical physicists.

An Intuitive Introduction to Einstein's Ideas, and Why They Matter

Cambridge University Press
Concise, well-written treatment of epochal theory of modern physics covers classical relativity and the relativity postulate, time dilation, the twin paradox, momentum and energy, particles of zero mass, electric and magnetic fields and forces and more. Only high school math needed. Replete with examples, ideal for self-study. Introduction. 70 illustrations.

Einstein's World in New Axiomatics
Special Relativity

Albert Einstein, a Nobel laureate, has changed the world with his research and theories. He is regarded as the founder of modern physics. Besides 'Relativity',

he worked on Photoelectric effect, Brownian motion, Special relativity, and Mass-Energy equivalence ($E=mc^2$). They reformed the views on time, space and matter. Allert Einstein developed the general theory of 'Relativity'. He published 'Relativity: The Special and the General Theory' in German. Its first English translation was published in 1920. The book deals with the special theory of relativity, the general theory of relativity, and the considerations on the universe as a whole The book gives an exact insight into the theory of Relativity. It covers, the system of Co-ordinates; The Lorentz Transformation; The experiment of Fizeau; Minkowski's four dimensional space; The Gravitational Field; Gaussian Co-ordinates; The structure of space, and lot many other scientific concepts thus will be highly beneficial to the Readers. A must have book for everyone related to modern physics.

Unusually Special Relativity Psychology Press

A funny, insightful, and self-contained guide to Einstein's relativity theory and classical field theories--including electromagnetism Physicist Leonard Susskind and data engineer Art Friedman are back. This time, they introduce readers to Einstein's special relativity and Maxwell's classical field theory. Using their typical brand of real math, enlightening drawings, and humor, Susskind and Friedman walk us through the complexities of waves, forces, and particles by exploring special relativity and electromagnetism. It's a must-read for both devotees of the series and any armchair physicist who wants to improve their knowledge of physics' deepest truths.

Special Relativity Dover

"Special Relativity is a superb text for

students to begin or continue a serious study of physics. Describing the most accessible of the 20th-century revolutions, it also illustrates the fact that nature is stranger than one imagines. The book evolved through years of teaching a highly-successful course to thousands of first-year students in science and engineering. It is appropriate as part of an introductory physics course, as a supplement to a "modern physics" course, as a text for a special topics or advanced placement course, or even as a supplement in an advanced undergraduate course.

Numerous illustrations, examples, and problems are presented throughout, with the concise mathematical description postponed until after the reader has built up some physical intuition for what is going on. The book contains many applications, from particle decays, colliding-beam experiments and photon rockets to a brief introduction to relativistic gravitation, including the Principle of Equivalence, the effect of altitude on clocks, and the Global Positioning System. Ten appendices can be taken up as interest and time allow, including The "Cosmic Speed Limit." The book is a serious introduction, praised for its clarity, accessibility, and informal, light-hearted style."--pub. desc.

The Special Theory of Relativity Diamond Pocket Books Pvt Ltd

Semi-technical account includes a review of classical physics (origin of space and time measurements, Ptolemaic and Copernican astronomy, laws of motion, inertia, more) and of Einstein's theories of relativity.

Einstein's Theory of Relativity CUP Archive

This book is written for high school and college students learning about special relativity for the first time. It will appeal

to the reader who has a healthy level of enthusiasm for understanding how and why the various results of special relativity come about. All of the standard introductory topics in special relativity are covered: historical motivation, loss of simultaneity, time dilation, length contraction, velocity addition, Lorentz transformations, Minkowski diagrams, causality, Doppler effect, energy/momentum, collisions/decays, force, and 4-vectors. Additionally, the last chapter provides a brief introduction to the basic ideas of general relativity, including the equivalence principle, gravitational time dilation, and accelerating reference frames. The book features more than 100 worked-out problems in the form of examples in the text and solved problems at the end of each chapter. These problems, along with the discussions in the text, will be a valuable resource in any course on special relativity. The numerous examples also make this book ideal for self-study. Very little physics background is assumed (essentially none in the first half of the book). An intriguing aspect of special relativity is that it is challenging due to its inherent strangeness, as opposed to a heavy set of physics prerequisites. Likewise for the math prerequisite: calculus is used on a few occasions, but it is not essential to the overall flow of the book.

Space and Time in Special Relativity

Hassell Street Press

This book presents an alternative representation of Einstein's Special Theory of Relativity, which makes Special Relativity much more comprehensible. Moreover, one will come across a fundamental relationship between the Special Theory of Relativity and the mechanics of space lattice. In all previous formulations, the Einsteinian

special principle of relativity, in one or the other form is used as the starting point for Special Relativity. In correspondence to this principle, one takes it as granted a priori, that all observers independent of their uniform motion to each other measure one and the same propagation velocity of a light signal. This book is thought of as a lecture for physicists, mathematicians and computer scientists and concentrates on the students of these fields. The book should reach a broad circle of interested readers from the fields of natural sciences and philosophy and provide an invigorating experience for engineers.

Relativity: The Special and General Theory Courier Corporation

The Geometry of Special Relativity provides an introduction to special relativity that encourages readers to see beyond the formulas to the deeper geometric structure. The text treats the geometry of hyperbolas as the key to understanding special relativity. This approach replaces the ubiquitous γ symbol of most standard treatments with the appropriate hyperbolic trigonometric functions. In most cases, this not only simplifies the appearance of the formulas, but also emphasizes their geometric content in such a way as to make them almost obvious.

Furthermore, many important relations, including the famous relativistic addition formula for velocities, follow directly from the appropriate trigonometric addition formulas. The book first describes the basic physics of special relativity to set the stage for the geometric treatment that follows. It then reviews properties of ordinary two-dimensional Euclidean space, expressed in terms of the usual circular trigonometric functions, before

presenting a similar treatment of two-dimensional Minkowski space, expressed in terms of hyperbolic trigonometric functions. After covering special relativity again from the geometric point of view, the text discusses standard paradoxes, applications to relativistic mechanics, the relativistic unification of electricity and magnetism, and further steps leading to Einstein's general theory of relativity. The book also briefly describes the further steps leading to Einstein's general theory of relativity and then explores applications of hyperbolic geometry to non-Euclidean geometry and calculus, including a geometric construction of the derivatives of trigonometric functions and the exponential function.

300 Problems in Special and General Relativity Springer Nature

The book aims to illuminate the importance of special relativity in the examination of dynamics, thermodynamics and electromagnetism.

The Special Theory of Relativity CRC Press

Special Relativity, Electrodynamics, and General Relativity: From Newton to Einstein is intended to teach students of physics, astrophysics, astronomy, and cosmology how to think about special and general relativity in a fundamental but accessible way. Designed to render any reader a "master of relativity, all material on the subject is comprehensible and derivable from first principles. The book emphasizes problem solving, contains abundant problem sets, and is conveniently organized to meet the needs of both student and instructor. Fully revised and expanded second edition with improved figures Enlarged discussion of dynamics and the relativistic version of Newton's second law Resolves the twin paradox

from the principles of special and general relativity Includes new chapters which derive magnetism from relativity and electrostatics Derives Maxwell's equations from Gauss' law and the principles of special relativity Includes new chapters on differential geometry, space-time curvature, and the field equations of general relativity Introduces black holes and gravitational waves as illustrations of the principles of general relativity and relates them to the 2015 and 2017 observational discoveries of LIGO

An Introduction to the Special Theory Cambridge University Press

The M.I.T. Introductory Physics Series is the result of a program of careful study, planning, and development that began in 1960.

The Theoretical Minimum Courier Corporation

The book presents the theory of relativity as a unified whole. By showing that the concepts of this theory are interrelated to form a unified totality David Bohm supplements some of the more specialist courses which have tended to give students a fragmentary impression of the logical and conceptual nature of physics as a whole.

Special Relativity Mercury Learning and Information

Special Relativity W W Norton & Company Incorporated

THE SPECIAL THEORY OF RELATIVITY Springer

Based on his successful work "Special Relativity and Motions Faster than Light", Moses Fayngold has written a thorough presentation of the special theory of relativity. The unique feature of the textbook is its two-levelled structure helping students to master the material more effectively: the first level presents a qualitative discussion of a

problem, while the second one contains its rigorous treatment. Fayngold points out the connection between fundamental principles and known phenomena. In three new chapters on 'Relativity at Work' (Electromagnetism, Optics, Quantum Mechanics), he not only shows what relativity is, but also how it works. The scope of new material extends to include a chapter on Causality and on Applied Relativity, including astrophysical and accelerator topics. Backed throughout by numerous examples and exercises.

The Commonwealth and International Library: Physics Division Elsevier

"Iconoclastic physics professor and artist Andrzej Dragan presents a unique feast of knowledge on special relativity in a straightforward, progressive manner that even a savvy high school student could follow. Encompassing the derivation of Lorentz transformations to Wigner

rotations and Thomas precession; from non-inertial accelerated reference frames to event horizons, curved spacetime, and static black holes; and from the Doppler effect to relativistic structure of electromagnetism, Dragan peels back the enigmatic layers of modern physics to enable a deeper understanding of Einstein's groundbreaking theory. Comprehensive and elegantly written, full of insightful apparent paradoxes and riddles, but without any complicated math, Dragan's unique overview takes the reader well beyond the orthodox verses of standard Special Relativity to the bleeding edge of "new-fangled" superluminal apocrypha and their relation to Quantum Theory. The book is based on a course on Special Relativity and acclaimed by students taught by Dragan who is a leader of a research group on Relativistic Quantum Information theory at the University of Warsaw and the National University of Singapore"--