Introduction To Special Relativity Robert Resnick

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An Introduction to the Mathematics of the Special Theory of Relativity Oxford University Press
A Wall Street Journal Best Book of 2013 If you ever regretted not taking physics in college--or simply want to know how to think like a physicist--this is the book for you. In this bestselling introduction, physicist Leonard Susskind and hacker-scientist George Hrabovsky offer a first course in physics and associated math for the ardent amateur. Challenging, lucid, and concise, The Theoretical Minimum provides a tool kit for amateur scientists to learn physics at their own pace.
General Relativity University of Notre Dame Pess
Hermann Minkowski recast special relativity as essentially a new geometric structure for spacetime. This book looks at the ideas of both Einstein and Minkowski, and then introduces the theory of frames, surfaces and intrinsic geometry, developing the main implications of Einstein's general relativity theory.
Pannenberg, Physics, and Eschatology in Creative Mutual Interaction Dover
Spacetime and Geometry is an introductory textbook on general relativity, specifically aimed at students. Using a lucid style, Carroll first covers the foundations of the theory and mathematical formalism, providing an approachable introduction to what can often be an intimidating subject. Three major applications of general relativity are then discussed: black holes, perturbation theory and gravitational waves, and cosmology. Students will learn the origin of how spacetime curves (the Einstein equation) and how matter moves through it (the geodesic equation). They will learn what black holes really are, how gravitational waves are generated and detected, and the modern view of the expansion of the universe. A brief introduction to quantum field theory in curved spacetime is also included. A student familiar with this book will be ready to tackle research-level problems in gravitational physics.
Special, General, and Cosmological Courier Corporation
A classic textbook on the principles of Newtonian mechanics for undergraduate students, accompanied by numerous worked examples and problems.
An Introduction to Mechanics Springer Science & Business Media
This excellent textbook offers a unique take on relativity theory, setting it in its historical context. Ideal for those interested in relativity and the history of physics, the book contains a complete account of special relativity that begins with the historical analysis of the reasons that led to a change in our view of space and time. Its aim is to foster a deep understanding of relativistic spacetime and its consequences for Dynamics.
Gravity Wiley
This text brings the challenge and excitement of modern relativity and cosmology at rigorous mathematical level within reach of advanced undergraduates and beginning graduates.
Relativity B.E.S. Publishing
A presentation of general relativity as a scheme for describing the gravitational field and the equations it obeys. Starting from physical motivations, curved co-ordinates are introduced, and then the notion of an affine connection field is added. At a later step, the metric field is added.
Introduction to Special Relativity Cambridge University Press
The book opens with a description of the smooth transition from Newtonian to Einsteinian behaviour from electrons as their energy is progressively increased, and this leads directly to the relativistic expressions for mass, momentum and energy of a particle.
Spacetime Physics Cambridge University Press
"This is a concise, beginning graduate-level textbook on classical electromagnetism, the branch of physics that describes the interaction of electric currents or fields and magnetic fields. Electromagnetism (also called electrodynamics) is one of the pillars of modern physics and, as such, of the modern physics curriculum, with courses on electromagnetism required at the undergraduate and graduate levels. These courses traditionally proceed in a quasi-historical fashion, starting from equations and laws that were first formulated in the eighteenth and nineteenth centuries and still form the foundations of our understanding of electromagnetism. However, as Robert Wald argues, teaching in this way can be imprecise and tends to promote outdated ways of thinking about the subject. This book rethinks how electromagnetism is presented at the graduate level, offering a corrective that aims to bring teaching up to date with our more modern understanding of the topic. The book begins by debunking four common misconceptions, or "myths," that can hinder a deep conceptual understanding of electromagnetism. Wald then proceeds through the major topics first-year grad courses (and textbooks) in electromagnetism typically cover, including electrostatics, dielectrics, magnetostatics, electrodynamics, geometric optics, special relativity, gauge theory, and point charge. Wald's aim throughout is to explain to students how to think about electromagnetism from a modern and mathematically precise perspective, formulating all the key conceptual ideas and results in the field clearly and concisely, while forgoing extensive collections of examples and applications. The book could be used as the basis for or as a supplement to a course, or for self-

study by students seeking a deeper understanding than traditional courses and books offer"--
The Theoretical Minimum CRC Press
This book gives an excellent introduction to the theory of special relativity. Professor Resnick presents a fundamental and unified development of the subject with unusually clear discussions of the aspects that usually trouble beginners. He includes, for example, a section on the common sense of relativity. His presentation is lively and interspersed with historical, philosophical and special topics (such as the twin paradox) that will arouse and hold the reader's interest. You'll find many unique features that help you grasp the material, such as worked-out examples,summary tables,thought questions and a wealth of excellent problems. The emphasis throughout the book is physical. The experimental background, experimental confirmation of predictions, and the physical interpretation of principles are stressed. The book treats relativistic kinematics, relativistic dynamics, and relativity and electromagnetism and contains special appendices on the geometric representation of space-time and on general relativity. Its organization permits an instructor to vary the length and depth of his treatment and to use the book either with or following classical physics. These features make it an ideal companion for introductory courses.
Introduction to Special Relativity Courier Corporation
This book unfolds the subject of Relativity for undergraduate students of physics. It is intended to allow an undergraduate physics course to extend somewhat further and wider in this area than has traditionally been the case, while ensuring that the mainstream of students can handle the material. Introducing Lorentz invariants and four-vectors early on, but postponing tensor notation till it is needed, the aim is to make manageable what would otherwise beregarded as hard; to make derivations as simple as possible and physical ideas as transparent as possible.
The Theory of Almost Everything CRC Press
This book is an introduction to hyperbolic and differential geometry that provides material in the early chapters that can serve as a textbook for a standard upper division course on hyperbolic geometry. For that material, the students need to be familiar with calculus and linear algebra and willing to accept one advanced theorem from analysis without proof. The book goes well beyond the standard course in later chapters, and there is enough material for an honors course, or for supplementary reading. Indeed, parts of the book have been used for both kinds of courses. Even some of what is in the early chapters would surely not be nec essary for a standard course. For example, detailed proofs are given of the Jordan Curve Theorem for Polygons and of the decomposability of poly gons into triangles, These proofs are included for the sake of completeness, but the results themselves are so believable that most students should skip the proofs on a first reading. The axioms used are modern in character and more "user friendly" than the traditional ones. The familiar real number system is used as an in gredient rather than appearing as a result of the axioms. However, it should not be thought that the geometric treatment is in terms of models: this is an axiomatic approach that is just more convenient than the traditional ones.
Time in Eternity Cambridge University Press
"This beautiful little book is certainly suitable for anyone who has had an introductory course in physics and even for some who have not."—Joshua N. Goldberg, Physics Today "An imaginative and convincing new presentation of Einstein's theory of general relativity. . . . The treatment is masterful, continual emphasis being placed on careful discussion and motivation, with the aim of showing how physicists think and develop their ideas."—Choice
Special Relativity Introduction to Special Relativity
This second edition is ideal for classical mechanics courses for first- and second-year undergraduates with foundation skills in mathematics.
Advanced Classical Electromagnetism University of Chicago Press
By the year 1900, most of physics seemed to be encompassed in the two great theories of Newtonian mechanics and Maxwell's theory of electromagnetism. Unfortunately, there were inconsistencies between the two theories that seemed irreconcilable. Although many physicists struggled with the problem, it took the genius of Einstein to see that the inconsistencies were concerned not merely with mechanics and electromagnetism, but with our most elementary ideas of space and time. In the special theory of relativity, Einstein resolved these difficulties and profoundly altered our conception of the physical universe. Readers looking for a concise, well-written explanation of one of the most important theories in modern physics need search no further than this lucid undergraduate-level text. Replete with examples that make it especially suitable for self-study, the book assumes only a knowledge of algebra. Topics include 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.
Introduction to Special Relativity Penguin
This work has been selected by scholars as being culturally important and is part of the knowledge base of civilization as we know it. This work is in the public domain in the United States of America, and possibly other nations. Within the United States, you may freely copy and distribute this work, as no entity (individual or corporate) has a copyright on the body of the work. Scholars believe, and we concur, that this work is important enough to be preserved, reproduced, and made generally available to the public. To ensure a quality reading experience, this work has been proofread and republished using a format that seamlessly blends the original graphical elements with text in an easy-to-read typeface. We appreciate your support of the preservation process, and thank you for being an important part of keeping this knowledge alive and relevant.
Introduction to General Relativity Cambridge University Press
A beloved introductory physics textbook, now including exercises and an answer key, explains the concepts essential for thorough scientific understanding In this concise book, R. Shankar, a well-known physicist and contagiously enthusiastic educator, explains the essential concepts of Newtonian mechanics, special relativity, waves, fluids, thermodynamics, and statistical mechanics. Now in an expanded edition—complete with problem sets and answers for course use or self-study—this work provides an ideal introduction for college-level students of physics, chemistry, and engineering; for AP Physics students; and for general readers interested in advances in the sciences. The book begins at the simplest level, develops the basics, and reinforces fundamentals, ensuring a solid foundation in the principles and methods of physics.
Special Relativity and Classical Field Theory Yale University Press
It is now nearly a century since special relativity reconciled seventeenth century dynamics and nineteenth century electromagnetism, yet physics students are almost invariably introduced to the

subject as “MODERN PHYSICS” — and something of a mystery. This book, instead, treats special relativity as a useful branch of physics rather than as an astounding novelty. The emphasis is on its dynamical consequences, its effect on quantum mechanics (with all that this implies for chemistry and biology), the new insights that it provides in electromagnetism and its utility in problems such as calculating radiation from fast-moving charged particles. To avoid giving the impression that relativity somehow eliminates the distinction between time and space, 4-vector notation is not used until the latter part of the book. Since all the consequences of relativity arise from the Lorentz transformation, more than usual care is taken to show how it arises from simple notions about the uniformity of space and time, and the absence of any universal reference system at absolute rest. Recent studies in dynamics stress the critical difference between linearity and nonlinearity and so there is a proof that the transformation must be linear, something ignored by almost every other book on the subject.

What You Need to Know to Start Doing Physics Cambridge University Press

Comprehensive coverage of special theory (frames of reference, Lorentz transformation, more), general theory (principle of equivalence, more) and unified theory (Weyl's gauge-invariant geometry, more.) Foreword by Albert Einstein.

Einstein's Space-Time Courier Dover Publications

Collaboration on the First Edition of Spacetime Physics began in the mid-1960s when Edwin Taylor took a junior faculty sabbatical at Princeton University where John Wheeler was a professor. The resulting text emphasized the unity of spacetime and those quantities (such as proper time, proper distance, mass) that are invariant, the same for all observers, rather than those quantities (such as space and time separations) that are relative, different for different observers. The book has become a standard introduction to relativity. The Second Edition of Spacetime Physics embodies what the authors have learned during an additional quarter century of teaching and research. They have updated the text to reflect the immense strides in physics during the same period and modernized and increased the number of exercises, for which the First Edition was famous. Enrichment boxes provide expanded coverage of intriguing topics. An enlarged final chapter on general relativity includes new material on gravity waves, black holes, and cosmology. The Second Edition of Spacetime Physics provides a new generation of readers with a deep and simple overview of the principles of relativity.