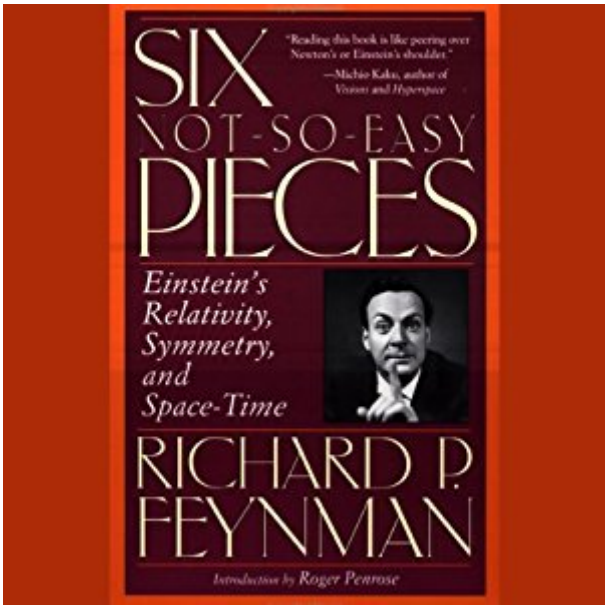
Six Not-So-Easy Pieces: Einstein's Relativity, Symmetry, And Space-Time



Synopsis

No twentieth-century American scientist is better known to a wider spectrum of people than Richard P. Feynman (1918–1988)—physicist, teacher, author, and cultural icon. His autobiographies and biographies have been read and enjoyed by millions of readers around the world, while his wit and eccentricities have made him the subject of TV specials and even a theatrical film.The spectacular reception of the book and audio versions of Feynmanâ ™s Six Easy Pieces (published in 1995) resulted in a worldwide clamor for “More Feynman! More Feynman!â • The outcome is these six additional lectures, drawn from the celebrated three-volume Lectures on Physics. Though slightly more challenging than the first six, these lectures are more focused, delving into the most revolutionary discovery in twentieth-century physics: Einsteinâ ™s Theory of Relativity.No single breakthrough in twentieth-century physics (with the possible exception of quantum mechanics) changed our view of the world more than that of Einsteinâ ™s discovery of relativity. The notions that the flow of time is not a constant, that the mass of an object depends on its velocity, and that the speed of light is a constant no matter what the motion of the observer, at first seemed shocking to scientists and laymen alike. But, as Feynman shows so clearly and so entertainingly in the lectures chosen for this volume, these crazy notions are no mere dry principles of physics, but are things of beauty and elegance. No one—not even Einstein himself—explained these difficult, anti-intuitive concepts more clearly, or with more verve and gusto, than Richard Feynman. --This text refers to an out of print or unavailable edition of this title.

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Customer Reviews

Six Not-So-Easy Pieces is the sequel to the book Six Easy Pieces. The first book is a collection of

six of the easier lectures from Feynman's freshman and sophomore physics classes at CalTech. Six Not-So-Easy Pieces are some of the more difficult lectures from those classes. In contrast to the first book, these lessons are much more mathematical. Freshman calculus is definitely a prerequisite to reading this book. Courses in vector calculus and differential equations will help the reader to more completely understand the works, but they are not absolutely necessary. However, without much mathematical knowledge, one can just take Feynman at his word for all the equations, reading mainly the conceptual explanations, but one will invariably miss out on some of the points. For anyone reading the book, Feynman's teaching style is something that can be enjoyed. He explains the concepts in a comprehensive and not-too-difficult manner and seems to have a full understanding of what the student in the lecture hall is thinking. The six topics (chapters) covered in this book are: Vectors, Symmetry in Physical Laws, The Special Theory of Relativity, Relativistic Energy and Motion, Space-Time, and Curved Space. This book is in no way a survey of physics. It is more of a sampling of Feynman's teaching. However, the common thread that runs through the six pieces is that they all relate to understanding relativity. For the layman who has a mathematical background and wants to understand the concept of relativity, this book is an excellent help. I would suggest reading Six Easy Pieces before reading this book, but it is not necessary. If you enjoyed reading the first book, I would highly recommend this one and vice versa.

These lectures where designed to give the student the reasoning behind relativity. Unlike some books, this book does not just explain the results or phenomena of relativity. Feynman actually explains the problems with Newton's laws and actually derives and gives the reasoning for Einstein's theories about relativity. These lectures need only some calculus and basic physics knowledge to appreciate. However, as with most bonfide scientific literature, the more "mathematically and scientifically mature" the reader the better. Feynman uses pieces of calculus (very basic stuff), algebra (symmetry, vector notation, cross products, and dot products), geometry (non-Euclidian), and basic physics knowledge (conservation laws, Newton's laws, Maxwell's equations etc). You don't need all of this to listen and understand the lectures, but obviously the more the better. Feynman also does a good job of explaining some the mathematics involved as well. The lectures pretty much follow the book so you can read along while you listen. These are actual lectures that Feynman gave at Caltech to undergraduates so they are very rigorous. In short, the lectures were clear, very understandable, and offer something to everyone. You don't need anything more than a solid background in calculus and introductory physics to get something out of these lectures.

If you've got a fair background in beginning Calculus and elementary physics, you may find this book very worthwhile. I wouldn't know.Don't be fooled, however, by reviewers who claim that Feynman explains things in such a way that even without those basic tools, the book isn't incomprehensible. I've HAD basic calculus, albeit a LONG time ago, and I'm a tad rusty. And I have even less grounding in physics. But I'm far from mathematically illiterate, or incapable. And it isn't true that I got nothing out of my reading of this book; the sixth chapter did, in fact, answer the question that I'd hoped to have answered when I bought it. But by and large, the book was close to impenetrable. Now, clearly, this may well be due to my lack of preparation in the prerequisites for understanding it. But it definitely is NOT the first step in the process of understanding physics, as one reviewer actually called it and others implied. Read "Six Easy Pieces" first, and brush up on first-year Calculus. THEN consider tackling this book.

Though the title implies it, this book is not really a sequal to the Six Easy Pieces. They can be read seperately. It treats some of the concepts centered around Special and General Relativity that revolutionized physics near the turn of the century. It would be impossible to find another book that can dive so deeply into topics such as symmetry and space-time, while bypassing formalism and exposing the fundemental ideas and signficance in every-day terms. The delivery is in lecture form, and while that makes it more authentic and real, the fact that this is a book and the reader is not really in a lecture, makes it a little awkward. One often gets the feeling that one had to be there to get the full benefit. There is little attempt at explaining the historical context and other niceties and focus is solely on the concepts themselves. One needs to have at least college level math background to follow the derivations. Feynman has done a phenomenal job in reducing such complex concepts into digestable pieces of conversation. There is no abstraction, everything is quantified. I especially enjoyed the chapter Curved Space, as I had never seen it treated so intimately. The self consistency of all these topics and how they are interrelated is elegantly presented.

"Six Not-So-Easy Pieces" are six selections from the Feynman "Lectures on Physics". They represent not the hardest material to be found in the "Lectures" (and certainly not elsewhere concerning Feymnan's essays or other lectures) but perhaps some of the most thought-provoking and challenging conceptually (although, if you would like a conceptual challenge, check out Feynman's "QED"). Spacetime, Relativity (Special and General), Vectors, Symmetry --- there is no

end to the knowledge and unique grasp of physics that Feynman possesses. I recommend this book highly to anyone with the impulse to ask, "Why?"

Six Not-So-Easy Pieces: Einstein's Relativity, Symmetry, and Space-Time Einstein's Cosmos: How Albert Einstein's Vision Transformed Our Understanding of Space and Time: Great Discoveries It's About Time: Understanding Einstein's Relativity Albert Einstein and Relativity for Kids: His Life and Ideas with 21 Activities and Thought Experiments (For Kids series) The Hunt for Vulcan: ...And How Albert Einstein Destroyed a Planet, Discovered Relativity, and Deciphered the Universe Albert Einstein and the Theory of Relativity (Solutions) What Is Relativity?: An Intuitive Introduction to Einstein's Ideas, and Why They Matter Newton to Einstein: The Trail of Light: An Excursion to the Wave-Particle Duality and the Special Theory of Relativity God's Equation: Einstein, Relativity, and the Expanding Universe Easy Duets from Around the World for Flute and Oboe: 26 pieces arranged for two equal players who know all the basics. Includes several Christmas pieces. All are in easy keys. Space and Time in Special Relativity Albert Einstein: The incredible life, discoveries, stories and lessons of Einstein! Baby Einstein: Water, Water Everywhere (Baby Einstein (Special Formats)) Einstein: A Life of Genius | The True Story of Albert Einstein (Historical Biographies of Famous People) Einstein's Unfinished Symphony: Listening to the Sounds of Space-Time Four Lectures on Relativity and Space - Scholar's Choice Edition Now: The Physics of Time - and the Ephemeral Moment That Einstein Could Not Explain Eiko & Koma: Time Is Not Even, Space Is Not Empty Fearful Symmetry: The Fall and Rise of Canadas Founding Values Seeing Symmetry