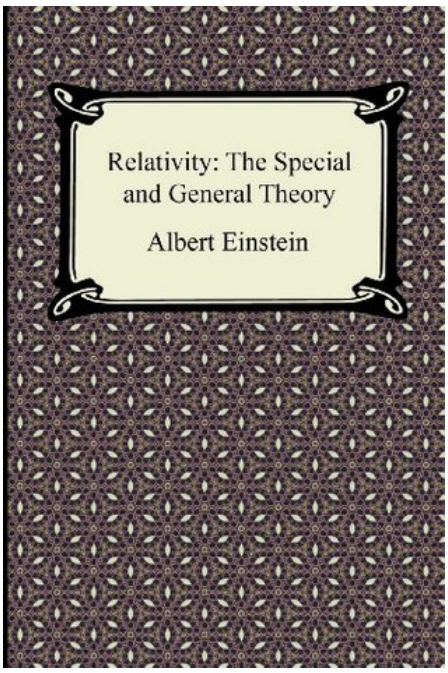

Relativity: The Special and General Theory

Albert Einstein , Robert W. Lawson (Translator)

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Relativity: The Special and General Theory Albert Einstein , Robert W. Lawson (Translator)
The present book is intended, as far as possible, to give an exact insight into the theory of relativity to those readers who, from a general scientific and philosophical point of view, are interested in the theory, but who are not conversant with the mathematical apparatus of theoretical physics. The text is divided into three parts which deal respectively with the special theory of relativity, with the general theory of relativity, and with considerations on the universe as a whole. The special theory deals with the physics of elementary particles while the general theory is concerned with the force of gravity and its effect on the other forces of nature. These two theories, while exceptional in their explanations of their particular focus, are inconsistent with each other, and it has long been an aim of the science of physics to help resolve these inconsistencies. Einstein proposed that, rather than discarding these two principles for being conflicting, the rules of time and space should be completely revamped and rethought in order to find a way to make these two principles work in harmony. It is Einstein's work on relativity which would earn him the 1921 Nobel Prize in Physics and establish his legacy as one of the most famous scientists of all time. This edition is translated by Robert W. Lawson and is printed on premium acid-free paper.

Relativity: The Special and General Theory Details

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ISBN	:	9781420946338
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Format	:	Paperback 78 pages
Genre	:	Science, Physics, Nonfiction, Classics, Philosophy

From Reader Review Relativity: The Special and General Theory for online ebook

Erik Graff says

As a kid my serious interests were scientific. I collected feathers, insects, rocks and fossils; maintained an aerospace scrapbook; kept a journal about space exploration; and read a lot of science books ranging from popular stuff and textbooks to serious works from the library which I hardly understood. My greatest intellectual interests by junior high were in cosmology and astronomy.

During middle school, or possibly during the freshman year in high school, I started going to the library to read Einstein. Like many, I thought him the ne plus ultra and believed that mastering his work was of great importance. Having learned some algebra, trigonometry and geometry in school, I was able to read a little bit of his notation, but not much. Basically, it was beyond me.

In high school, starting freshman year, geopolitical concerns started commanding my attention. I'd been raised under the mushroom cloud like the rest of my generation and we were at war in southeast Asia. History and politics seemed more important, ethically and personally, than science. Sophomore Chemistry sealed the matter. My lab skills were terrible, the teacher was poor, the textbook boring. That was my last physical science class until a single physics course in college.

Being laid off from Loyola and working now only part-time gave me the opportunity to pursue some of the things I'd foregone. So, I picked up Einstein's Relativity, a book he wrote about the relativity theory for the general public.

Rob says

edit: i wrote the 4-star review below before reading the fifth appendix. i mean, who could imagine that an appendix could change anything? well, this one did. all the chapters in the body of the book are 2 or 3 pages. Appendix V is a 20-page essay, written 36 years after the rest of the book and just 3 years before einstein died. it is a tour de force on the history, philosophy, and *psychology* (i kid you not) of the scientific understanding of empty space. it was shocking, thrilling, amazing. the book now gets 5 stars.

careful, i think some editions don't have Appendix V.

original "4-star" review:
the subtitle of this slim book is "a clear explanation that anyone can understand", but unfortunately i'm afraid that's far from true. there's not too much math in the book, but there is enough that "anyone" really needs to be replaced with "any egghead".

but if you are already familiar with relativity, this is a great book, with lots of deep philosophical underpinnings as expounded my the man himself. i found his writing style to be exquisite - not too dry, not too colloquial.

the treatment of special relativity is wonderful.

but trying to teach general relativity in 45 pages with no math is just too tall an order. he even warns us as things start to get rough:

"...I am guilty of a certain slovenliness of treatment, which as we know from the special theory of relativity, is far from being unimportant and pardonable. It is now high time that we remedy this defect; but I would mention at the outset, that this matter lays no small claims on the patience and on the power of abstraction of the reader."

indeed, the treatment of GR is in very broad strokes, with rather obscure connections. still, quite enjoyable to find this readable text by one of my great heroes.

Mihai Dumitru says

Nu am niciun motiv s? m? îndoiesc de faptul c? Einstein a simplificat teoria sa în aceast? carte pe care, în prefa??, el însu?i o consider? prizabil? inclusiv de c?tre "cititorul neini?iat în fizic?". Nu m? îndoiesc c? inten?iile autorului au fost bune. Ba?ca apreciez exemplele concrete, gen aruncarea unei pietre dintr-un vagon de tren ?i calcularea traiectoriei/vitezei sale fa?? de terasamentul c?ii ferate. De altfel, mai toate exemplele implic? trenuri, un adev?rat laitmotiv al c?r?ii. Cu toate acestea, eu a? redenumi cartea "Teoria relativit??ii pe în?elesul tuturor, mai pu?in al meu". Ce-i drept, am r?mas corigent la fizic? & matematic? de câteva ori în liceu ?i m? consider mai degrab? o persoan? a ?tiin?elor sociale decât a celor exacte. Îns? cartea m-a pierdut înc? de la primele pagini. Cu toate c? am continuat ?i am în?eles vag despre ce e vorba, recunosc c? a fost ca ?i cum a? fi citit în limba olandez?, pe care abia o buchisesc, deducând cuvinte asem?n?toare din englez? ?i german?. Apreciez tou?i traducerea excelent? în limba român? a termenilor din fizic? (editura Humanitas e un etalon în materie de traduceri de bun? calitate).

PS: odat? cu aceast? carte, am descoperit binefacerile abonamentului corporatist la Bookster.

Dominika Kaníková says

I hope that no one will ask me what was this book about .

Heather Cawte says

Read on my Kindle, free from Project Gutenberg.

The biggest problem I had with this was actually one of presentation. The team which had prepared it for release had presented all the equations as jpegs, a reasonable idea when reading it in HTML, but not a good one when reading it on a Kindle! Still, who am I kidding - the equations probably wouldn't have made sense to me anyway....

I am an arts graduate trying to understand relativity. I've read Hawking, and I've read Cox, and I thought I should really look at the source. I wasn't expecting to understand much, but I was amazed by how much I really did 'get'. Every version of the theory explains it in a slightly different way, and with each version I read, I discover and comprehend a little more.

This is by no means an easy read, but it was much more comprehensible than I expected. It was written for the general public, which certainly helped, and it was an extraordinary experience to be reading such an iconic book and finding that at least some of it made sense...

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Adam says

The theory of relativity is amazing and important, but contrary to what the tagline says, Einstein himself is probably not the best person to have explain it to you. I read this class for Freshman Studies in college, and I honestly have to admit that I wouldn't have gotten much of it without the significant aid of in-depth lectures and classroom discussions. This is not because the ideas themselves are too complex, but because Einstein fails in his attempt to make his ideas understood to a layman. I don't know what book you ought to read instead, but there are certainly many alternatives, of which some must be good. Einstein does not assume any knowledge of physics, but he does kind of glide over what his variables mean or where they come from, and this makes it hard to grasp what the math means and how it fits in.

Sanjay Gautam says

This book by Dr. Einstein is very well written, though you will find the anatomy of sentences a little unusual. Well this should not be a problem considering the theory's difficulty level. Though the theory is very simple mathematically (special theory of relativity I'm talking about), but the case is reverse when it comes to understand it intuitively. It defies the common sense. And that's what the book is about. It changes your outlook, the way you see the nature and gives you a new and better understanding.

B. Han Varli says

> ***düzgün olarak hareket etmekte olan bir tren vagonunun penceresinden yere f?rlatmadan bir ta? b?rak?yorum.***

böyle bir kitab?n oldu?undan birçok ki?inin haberi bile yok.

ama, evet, einstein'?n "fizikle pek u?ra?mam?? olan okuyucular?n ayr?nt?lara bo?ulup a?açlardan orman? göremez hale gelmesini istemedim" dü?üncesiyle yazd??? bir kitab? var, hem de ne kitap.

bilim adam? kimli?inin yan?nda ne kadar nahif bir insan oldu?unu dü?ünerek okuyorsunuz, çok iyi bir ö?retmen oldu?unun da fark?na var?yorsunuz.

national geographic'in yak?n dönemde yay?nlad??? einstein belgeselini izlerseniz en az?ndan ne demek istedi?imi daha iyi anlayacaks?n?z.

neyse, kitaba dönelim, bir lise mezunun anlayaca?? düzeyde oldu?u iddia edilse de, türkiye'de ortalama bir üniversite mezunun dahi anlayamayaca??na eminim, sak?n masal okur gibi okuyaca??n?z? dü?ünmeyin!

birkaç y?ld?r fizik, zaman kavram?, gökyüzü ile ilgileniyorum.

kitab?n içerisinde bo?ulunca üniversitemdeki uzay gözlem evine gittim, hocam? buldum.

bir, bir buçuk saat kadar ilerledik birlikte; ne kadar kafa yorsan da akl?na tak?lan bir soru ile bamba?ka sorgulamalar?n içerisinde buluyorsun kendini.

interstellar bir gecede yaz?lmad? tabii :')

benim ba?ucu kitab?m... ufaktan bu y?l? bitirdi?im için okudum olarak i?aretliyorum.

Edward says

Preface
Note to the Fifteenth Edition

--Relativity

Appendices:
1. Simple Derivation of the Lorentz Transformation
2. Minowski's Four-dimensional Space ("World")
3. The Experimental Confirmation of the General Theory of Relativity
(a) Motion of the Perihelion of Mercury
(b) Deflection of Light by a Gravitational Field
(c) Displacement of Spectral Lines towards the Red
4. The Structure of Space according to the General Theory of Relativity
5. Relativity and the Problem of Space

Bibliography
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Momen ahmadi says

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Robert says

The aim of this book is to introduce people without a strong physics (or even scientific) background to the special and general theories of relativity - theories that Einstein was the primary developer of. Einstein assumes the reader has passes a "university matriculation exam." What that meant in the first half of the 20th Century, I don't know but in practice what's required is the level of algebra I had by age 16 plus a smattering of mentions of the square root of minus 1. I also found basic calculus useful for one section, though it is possible to do without it.

For the most part this book is excellent, introducing the minimal amount of mathematics and formal language necessary to understand the most important and fundamental concepts of Einstein's theories in a way that is accessible whilst concise. It might be possible to do it better with a bigger book, a less formal style and a lot more diagrams but it very interesting to get Einstein's unique perspective as originator of the theories and insight into his thought processes.

A few sections are remarkable in contrast with the rest, for being unclear. The section on addition of velocities in special relativity leaves rather more to the reader than anything else in the book, mathematically, and when I looked it up it turned out to be much easier to work out using basic calculus than algebraic division - and the bit that wasn't clear was that a division of two equations was what was required. This section could be skipped without losing much.

The remainder of the muddy sections come at the back end of the section on general relativity. The simplest precise mathematical formulation of this theory is expressed using tensors - and tensor algebra is way beyond what anybody encounters in standard school maths or physics curricula. Einstein makes no attempt to explain it and in fact never shows the fundamental equation of general relativity. This makes it very hard for him to explain how gravitational fields and space-time interact, which leads to the lack of clarity in the latter stages of this part of the book. Things get easier and clearer again when he moves on to relativity and cosmology.

The final part of the book is a collection of appendices expanding on things discussed earlier on. I required pen and paper to check the derivation of the Lorentz Transformations from first principles - but this section could just be skipped if the maths bothers you - it doesn't add a lot but it is interesting to see it, if your algebra is up to it.

The most rewarding thing for me, since nothing here is completely new to me, was listening to Einstein's voice. He seemed to come at things from a viewpoint much more generally philosophical than most present day physicists would, discussing Kant, Descartes and Hume, for instance. The section on the concept of "empty space" was fascinating - he concludes that general relativity precludes this notion - one cannot have space-time without it containing "fields." What he means is fields of force - the electromagnetic field, gravitational field etc. This implies the notion of a field being present even if its magnitude is zero - which is a bizarre concept. Modern quantum mechanics backs these ideas to the hilt and leads me to think that one of the most important areas of inquiry for fundamental physics as it stands is the connection between the classical idea of space-time and the quantum idea of the vacuum. The fundamental nature of both is obscure - and in some sense they should be the same thing.

Overall this is an excellent introduction to special relativity and at least the conceptual underpinnings of general relativity, if not of the full theory, which really just can't be explained properly without knowledge of tensors.

Jonathan says

This is the copy that I wanted. In his own words, he describes conceptually the theory of special and general relativity. He uses very clever and easy to understand theoretical and real situations to guide your understanding towards an omega point. I bought this book at special price from here: https://www.amazon.com/Relativity-Spe...

Riku Sayuj says

Some years ago in France a book by Jean-François Gautier appeared, entitled *Does the universe exist?*.

Good question.

What if the universe were a concept like cosmic ether, or phlogiston, or the conspiracy of the Elders of Zion?

Philosophically, Gautier's arguments make sense.

The idea of the universe, as the totality of the cosmos, is one that comes from the most ancient cosmographies, cosmologies, and cosmogonies. But can one describe, as if seeing it from above, something within which we are contained, of which we are part, and from which we cannot exit? Can there be a descriptive geometry of the universe when there is no space outside it on which to project it? Can we talk about the beginning of the universe, when a temporal notion such as "beginning" must refer to the parameter of a clock, while the universe must be the clock of itself and cannot be referred to anything that is external to it?

Can we say, as Eddington does, that a hundred billion stars constitute a galaxy and a hundred billion galaxies constitute the universe, when, as Gautier observes, while a galaxy is an observable object, the universe is not, and therefore we would be establishing an improper analogy between two incommensurable objects? Can we postulate the universe and then study with empirical instruments this postulate as if it were an object? Can a singular object exist (surely the most singular of all) that has as its characteristic that of being only a law?

And what if the story of the big bang were a tale as fantastic as the gnostic account that insisted the universe was generated by the lapsus of a clumsy demiurge?

Basically, this criticism of the notion of the universe reiterates Kant's criticism of the notion of the world.

After all, the cultivated person's first duty is to be always prepared to rewrite the encyclopedia.

P.S. The reflections are directly borrowed from Umberto Eco's lectures, but are genuine concerns of this reviewer too. Questions are addressed to Einstein, of course.

Owlseyes says

(The Times from Nov. 10, 1919, left; Nov. 16, 1919, center; and Dec. 3, 1919)

"He was living alone. A friend, Janos Plesch, once said, “He sleeps until he is awakened; he stays awake until he is told to go to bed; he will go hungry until he is given something to eat; and then he eats until he is stopped.”

In:A Century Ago, Einstein’s Theory of Relativity Changed Everything
By DENNIS OVERBYENOV. 24, 2015

http://www.nytimes.com/2015/11/24/sci...

Awesome, see here:http://www.economist.com/relativity
