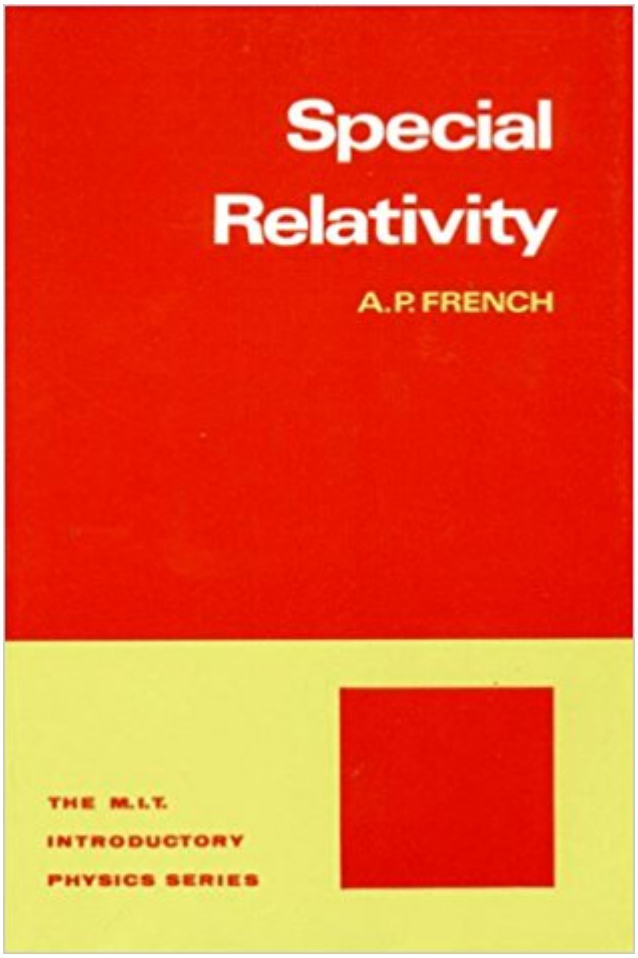
Special Relativity (M.I.T. Introductory Physics)



Synopsis

The M.I.T. Introductory Physics Series is the result of a program of careful study, planning, and development that began in 1960.The education Research Center at the Massachusetts Institute of Technology (formerly the Science Teaching Center) was established to study the process of instruction, aids thereto, and the learning process itself, with special reference to science teaching at the university level. Generous support from the National Science Foundation and from the Kettering, Shell, Victoria, W. T. Grant, and Bing Foundations provided the means for assembling and maintaining an experienced staff to cooperate with members of the Institute's Physics Department in the examination, improvement, and development of physics curriculum materials for students planning a career in the sciences.After careful analysis of objectives and the problems involved, preliminary versions of textbooks were prepared, tested through classroom use at M.I.T. and other institutions, re-evaluated, rewritten, and tried again. Only then were the final manuscripts undertaken.In general the books in the series will be brief. Most may be covered in a single term or less. Each will be available in either cloth or paper binding. Their brevity and structure (as well as their reasonable price) will make it possible for teachers to select topics and organize courses according to individual needs and preferences.

Book Information

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Customer Reviews

Lots of materials in this book. It is not very good in explaining the basics of theory but it does explain many physical phenomenon using the theory.

I think this is an excellent book to introduce special relativity. For a lot of books, if I could finish reading half of the book, I consider the book excellent. This is one of the books I actually finished reading the entire book. As a matter of fact, the last chapter is the most interesting. It really brings electrical field and magnetic field together, and this is the very purpose of me looking into special relativity. If the book could extend a bit more in four-vectors, that would be great. Nonetheless, this is still an excellent book. This makes me wonder if I should buy other books by French.

This is the best book on special relativity that I have ever come across. It truly teaches the reader where all the ideas from special relativity come from. The author spends incredible time trying to explain difficult ideas in a fashion that is as clear as possible. This maybe makes it lose points from the standpoint of brevity and aesthetics, but French's primary goal here is exactly what it should be: to be as clear as possible about the physical ideas. I definitely strongly recommend this superb book to any student of special relativity.Very little prerequisites are required, just basic calculus (even single variable is sufficient). More than anything the reader needs to be willing to think through the ideas carefully and confidently. At the end of the book, the reader is rewarded by learning how the magnetic field (and corresponding magnetic field laws) has to exist as a natural consequence coulombs law and the principle of special relativity. This ties into advanced ideas on electrodynamics (and can be pursued further in an also excellent book on electrodynamics by Schwartz).I do have a few potential criticisms of this book. The initial chapter on the history of the field is nice, but it definitely delays the reader (who is willing to take on face the experimental finding that the measurment of the speed of light is the same regardless of one's [inertial] state of motion) that is anxious to get on to SR. Another real criticism of this book is that despite its exceptional explanations of the physical insight and motivation behind SR and its key formulas, it does not nicely develop its four-dimensional formulation. This may be out of the scope of this book, but it really is essential for the development of the general theory of relativity (and is important to understand advanced treatments of electrodynamics such as that by Schwartz mentioned above).If you have time (and are also looking for an 'easier' read), it is worth reading Wheeler's spacetime physics after this book. That book gives better insight into the geometric nature of relativity than this book and thus helps the reader build up to GR. However, despite also being a good book, the wheeler book teaches you how to 'do' SR but really fails at logically developing the subject and explaining where the (initially very counter-intuitive) ideas come from. That is where French really excels.

great book for SR

Great book

This is a wonderful book, I really enjoyed it and I recommend all of A.P French’s books. Very clear writing, no confusion, it’s a joy to read.

This book is exactly what you think. It’s a textbook about special relativity written in 1968 - fortunately exactly nothing of value has changed in the field since then (inb4 angsty relativity specialists disagreeing with me - the math is the math is the math). I highly doubt anyone is buying this for any reason other than for a physics class, but on the off chance that someone is, here’s some actual thoughts: it seems to be relatively well written and straightforward (if you can ever say relativity is straightforward). A bit dry, but it is a textbook. My copy is more than a bit faded since, well, it’s from 1968, but it’s still in good enough shape. I guess I would recommend it if you want to read a special relativity textbook for fun?

If youÃƒÂ¢Ã â ¬Ã â„¢re looking for a gentle, compelling course textbook on special relativity or wish to introduce yourself to the subject through self-study, this wonderful, svelte text will meet all your needs. Readers looking for more advanced treatments or mathematical sophistication, however, should consider other options.Prof. French focuses heavily on explanation and empirical evidence while presenting the minimum amount of mathematics. He takes the reader through the history and motivations behind special relativity, then systemically applies the concepts to increasingly complex problems (e.g., kinematics, mechanical dynamics, and finally electrodynamics). In a very accessible and conversational manner, the book derives and explains all of the mathematics youÃƒÂ¢Ã â ¬Ã â„¢ll need to tackle basic problems in special relativity.Keep in mind, however, that Prof. French approaches the subject with a low level of mathematical rigor. I was fine with his informality because the mathematics of basic special relativity are (mind the pun) relatively simple. I rarely found his explanations vague or ambiguous due to a lack of rigor. But be warned that math geeks might find themselves in math-withdrawal.The exercises range in difficulty from simple to challenging, with a mean difficulty of maybe 5 out 10 (with ten being most difficult). I wish Prof. French included more advanced problems that would push the envelope of what the reader learned. Fortunately, many of the problems cover interesting subject matter, such as the structure of stars and space travel. The book also includes answers (but

not solutions) to all of the exercisesÃƒÂ¢Ã â ¬Ã â •essential for self-study!Prof. French was a great educator, and this book is widely considered a classic. With the caveats above, you should be very happy with this text.

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