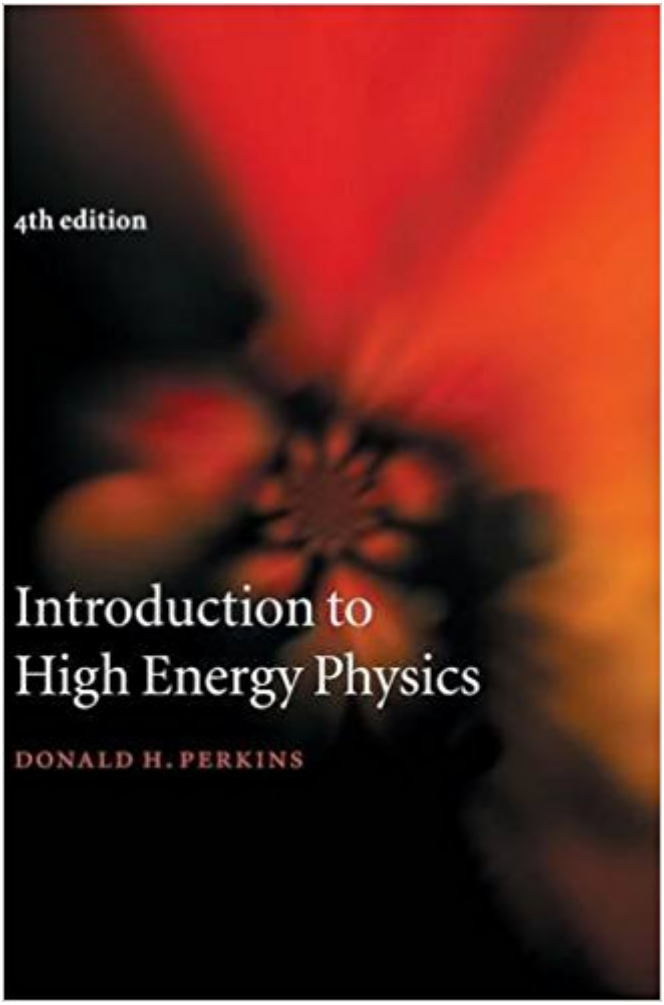
Introduction To High Energy Physics



Synopsis

This highly regarded textbook for advanced undergraduates provides a comprehensive introduction to modern particle physics. Coverage emphasizes the balance between experiment and theory. It places stress on the phenomenological approach and basic theoretical concepts rather than rigorous mathematical detail. Donald Perkins also details recent developments in elementary particle physics, as well as its connections with cosmology and astrophysics. A number of key experiments are also identified along with a description of how they have influenced the field. Perkins presents most of the material in the context of the Standard Model of quarks and leptons. He also fully explores the shortcomings of this model and new physics beyond its compass (such as supersymmetry, neutrino mass and oscillations, GUTs and superstrings). The text includes many problems and a detailed and annotated further reading list. The volume will also provide a solid foundation for graduate study.

Book Information

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Customer Reviews

"It holds a unique place in the literature. It is for graduates and undergraduates, and it describes in detail experiment, theory, particle physics, and cosmology. That’s a lot of material in one book. Perkins will thus continue to be a ’must-have’ for practicing experimentalists." Physics Today"Comprehensive and at about the right level and length for an introductory course." Professor Vassili Papavassiliou, New Mexico State University

The 4th edition of a textbook that has dominated advanced undergraduate and graduate particle

physics teaching for the last 25 years. The author is a senior figure of modern day particle physics and brings a unique authority and depth of understanding to the subject. The new edition has been extensively rewritten and completely updated. Completely new chapters have been added to cover the burgeoning field connecting particle physics with cosmology, and another new chapter introduces exciting new topics such as supersymmetry, superstrings, neutrino masses and grand unified theories.

This is a nice book to read. It explains particle physics intuitive way but it also keeps accuracy. I recommend first year graduate students to read this book.

As many previous reviewers have already pointed out, this book is not nearly as good an introduction to theoretical high energy physics as Griffiths' "Introduction to Elementary Particles". The primary reason for this is that Perkins' book was never meant to be read as a theoretical course in the first place. This is why Griffiths introduces Feynman rules and gamma matrices near the middle of the book and uses them extensively throughout the rest; Perkins mentions them in passing in the first chapter and then completely forgets them. In Perkins you will find little rigorous math, but a lot of experimental physics. If you want to understand the theory behind T violation, use Griffiths. If you want to know how physicists measured the electric dipole momentum of the neutron (thus putting an upper limit on the magnitude of T violation), Perkins will explain it in detail, together with the schematics of the apparatus they used.Overall, this book does not fit its title well - it is not a good introduction to high energy physics (unless you are so totally averse to math that you can't manage Griffiths or Peskin/Shroeder). However, it has its own purpose - that is, to teach experimental methods in high energy physics. It probably should be studied after Griffiths by those who are interested in experimental side of particle physics.

Basically, If you want theoretical approach stop reading this and buy griffiths' book, it's a lot better.I'm using Perkins for a course mainly made up of senior undergraduates. First of all, a lot of the other reviewers have ripped the book to shreds, and most of their complaints are valid. I'd like to point out that this book actually attempts a fairly difficult task of introducing relatively advanced concepts which require qft, to students without any background in field theory.The long and the short of it is... Perkins' book is geared for learning with a phenomonological, experimental approach. This results in a lot of hand waving, and not many mathematical or theoretical insights. If you're expecting these things, the book will be dissapointing.All of this aside, there are some major flaws in

the book. First of all, it kind of lacks on organization. There are a lot of charts, tables and graphs thrown about at random, and with little reasoning or thought. This makes Perkins' fairly useless as a reference, since you might have to look at four or more different charts to find out the relevant properties of a given particle.My other major complaint, is that Perkins uses a lot of jargon without sufficiently introducing the terminology. While, this is fine for people who already know particle physics, I'm guessing that if you're reading this book, you don't already know particle physics.Finally, despite being a fourth addition, there are still a bunch of misprints/omissions. For example, there's a question (which i conveniently had for a homework assignment) totally based on a concept not mentioned anywhere within the book. Google searches on the topic led only to obscure and inaccessible papers.Basically, if you have to use this book for a course be prepared to read and re-read each section of it, and to suppliment with other books. I'd suggest buying griffiths along with it, event if you're not into the whole theory thing.

I used Perkin's book for a one sememester 500 level graduate course. I honestly believe that of the 20+ books that I have used in undergrad and grad school, that this is the absolute worst text I have encountered. The equations in the text are mearly thrown in without the slightest justification or hint of the possible method of derivation. If you would truly understand the significance of the equations, then you would need a background knowledge that I can hardly believe anybody looking for an introduction to high energy physics could have. However, this is far from its biggest pitfall. The book is choppy to read. There are almost no quantitative examples and yet the questions are mostly quantitative. I am sure that I could think of more specifics dislikes, but I think that the reader has seen my opion. To anybody considering buying this text I suggest instead purchasing griffiths "introduction to elementary particles." My class was so displeased with perkins text that our professor has promised to switch to griffiths next year. To reiterate.... Perkins book is the epitome of bad writing. I give my apologies to the author, but I don't want others to waste their time and money on this text. Buy Griffiths Book, it is good!

I just took an intro to particle physics class as a fifth year undergraduate who has had all of the usual courses that one is supposed to have to be able to at least gain a glimpse into the world of particles. This book by Perkins is one of the worst textbooks that I have ever had to use. The examples were limited if any, and the problems seemed not to correlate with the content of the chapters at all. The problems that I did work on I had to reference other texts just to get an idea of what he was talking about. I have to say that Griffiths' (whose EM book was great and his quantum

book not all that bad) was much more mathematical and clear, as well as Halzen and Martin. I agree with the other comment. Get another book before ever buying this book. Plus my Professor was not too thrilled with it as well. I ended up buying the Griffiths text in the end, which helped a lot.