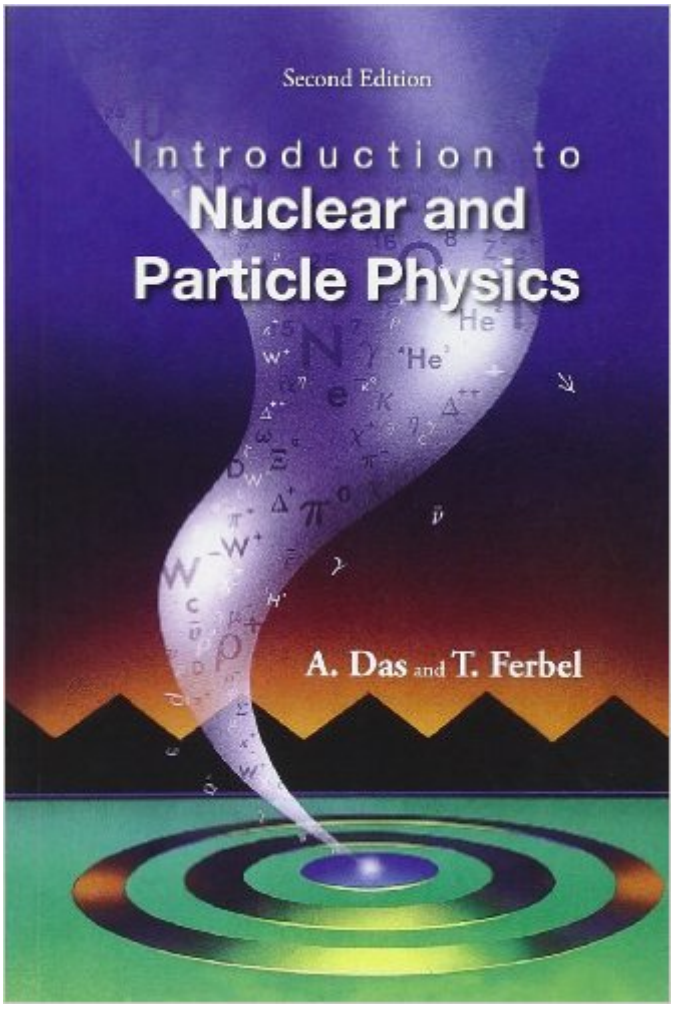
Introduction To Nuclear And Particle Physics



Synopsis

The original edition of Introduction to Nuclear and Particle Physics was used with great success for single-semester courses on nuclear and particle physics offered by American and Canadian universities at the undergraduate level. It was also translated into German, and used overseas. Being less formal but well-written, this book is a good vehicle for learning the more intuitive rather than formal aspects of the subject. It is therefore of value to scientists with a minimal background in quantum mechanics, but is sufficiently substantive to have been recommended for graduate students interested in the fields covered in the text. In the second edition, the material begins with an exceptionally clear development of Rutherford scattering and, in the four following chapters, discusses sundry phenomenological issues concerning nuclear properties and structure, and general applications of radioactivity and of the nuclear force. This is followed by two chapters dealing with interactions of particles in matter, and how these characteristics are used to detect and identify such particles. A chapter on accelerators rounds out the experimental aspects of the field. The final seven chapters deal with elementary-particle phenomena, both before and after the realization of the Standard Model. This is interspersed with discussion of symmetries in classical physics and in the quantum domain, bringing into full focus the issues concerning CP violation, isotopic spin, and other symmetries. The final three chapters are devoted to the Standard Model and to possibly new physics beyond it, emphasizing unification of forces, supersymmetry, and other exciting areas of current research. The book contains several appendices on related subjects, such as special relativity, the nature of symmetry groups, etc. There are also many examples and problems in the text that are of value in gauging the reader's understanding of the material. Contents: Rutherford Scattering; Nuclear Phenomenology; Nuclear Models; Nuclear Radiation; Applications of Nuclear Physics; Energy Deposition in Media; Particle Detection; Accelerators; Properties and Interactions of Elementary Particles; Symmetries; Discrete Transformations; Neutral Kaons, Oscillations, and CP Violation; Formulation of the Standard Model; Standard Model and Confrontation with Data; Beyond the Standard Model.

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Customer Reviews

I used this book for a 3rd year university course in subatomic physics. What I particularly liked was the two chapters on symmetries, which were thorough compared to what i have seen in comparable textbooks. I also found the chapters on nuclear physics quite good, as they gave a very compact presentation of the most important aspects of this subject. The weakest part of the book in my opinion is the chapter on the standard model.If you don’t know math and quantum mechanics you shouldn’t buy this book as it is somewhat mathematical in style and uses fewer words than many comparable textbooks. Readers who want a historical treatment of the subject matter should look elsewhere too, as this book tells little about the experiments that were instrumental in developing subatomic physics.

I was most disappointed with this book. Das must have written the nuclear section as it has a certain theoretical twang. Krane’s Introductory Nuclear Physics (a superior text) makes one realize how much Das & Ferbel leave to be desired.

I used this book for my first 400-level course in junior year. I found right off the bat that it is a bit difficult to adjust to, as it will probably be one of your first books with the CGS unit system. This might cause miscommunication with the author and reader- for example, q*(r)^-2 is the electric field, but it will seem to be missing the constants of nature in front. While this is a well-known example of CGS use, some other formulas have an enigmatic nature because of these features. Also, many topics are covered but quickly given up as enigmatic features because little rigorous derivation takes place. For the most part, it does introduce many new concepts of nuclear and particle physics but with few and ambiguous explanations of the mathematics behind it all.

The actual textbook is very good but lacks examples so sometimes the transition can be difficult for

the homework, this manual really helps you find the direction, and is a huge time saver if you are really pressed by everything else. The solutions manual goes into more depth than most do, which is good and bad I guess. It's good for both kinds of readers, those like myself actually trying to learn the subject, as well as those just looking for answers. I'd recommend to either, though I'm a dreamer and hope people just use it as a guide and not for less admirable purposes.

The ad conveniently hides the fact that this is a solutions manual for the author's text and does not link to the text book. What a rip off.

Its an ok book. There are not enough examples to fully explain the material that the author is trying to convey.