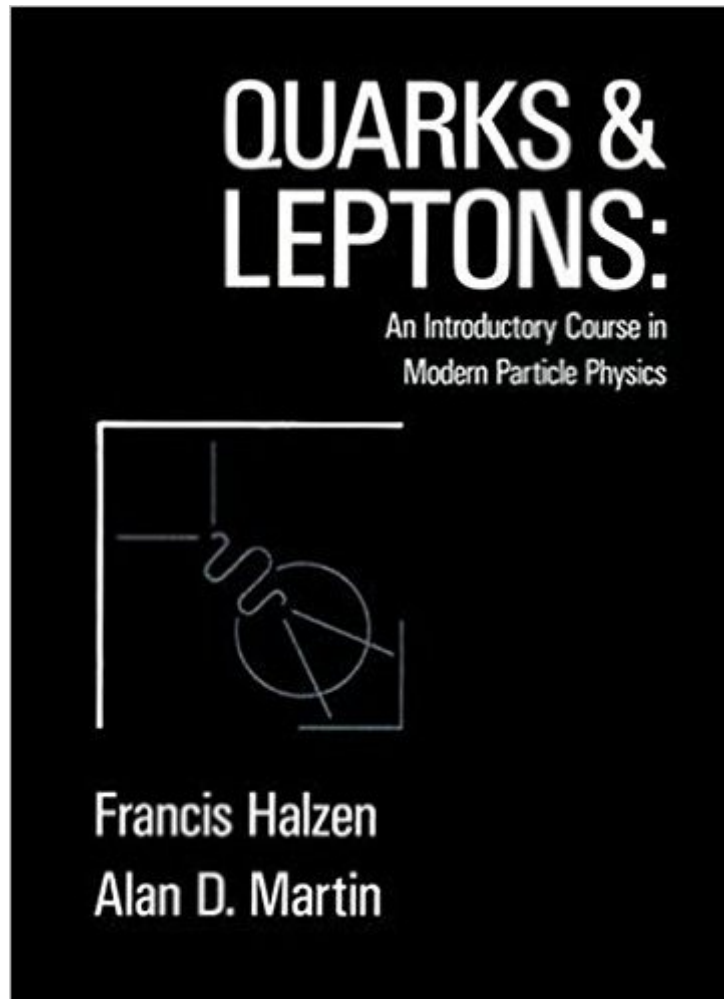


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# Quarks And Leptons: An Introductory Course In Modern Particle Physics



## Synopsis

This self-contained text describes breakthroughs in our understanding of the structure and interactions of elementary particles. It provides students of theoretical or experimental physics with the background material to grasp the significance of these developments.

## Book Information

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## Customer Reviews

If you are a grad student in high energy/nuclear/heavy ion physics, experimental or theoretical, do yourself a favour and buy this book. It starts really from the beginning (scalar fields, spinors, dirac equation, propagators) and slowly but steadily reaches the point of gauge field theory, QCD, partons, electroweak interactions, spontaneous symmetry breaking and the Weinberg-Salam model. Don't expect to find anything rigorous about renormalization. Chapter 7 has some calculations about running coupling constants etc. but most of it is intuitive (describing rather than proving) in order to give you a glimpse about these matters and serve as a tool for later chapters. Although I knew the basics of Quantum Field Theory before I read this book, it helped me understand topics like deep inelastic scattering, parton distribution functions, scaling, weak interactions, spontaneous symmetry breaking. Caution: It is not a Quantum Field Theory book, it is a particle physics book. If you are looking for Gribov anomalies, Ward-Takahashi identities, and renormalization of the Weinberg-Salam model and stuff like that then this is not the place to find it. The book is about particles and their interactions. Its purpose is to prepare the serious student for more rigorous Quantum Field Theory books and give him/her the big picture of the standard model (the forest) rather than the little details of field theory (the tree). I strongly recommend it to any

student in the field. The language is clear and the concepts are easy to follow. Its a down to earth approach trying to explain things in a clear cut manner rather than confusing the student with "big words" and terminology. A nice supplement to this book is the book by Chris Quigg (...huge number of references). In short, this book is worth its money ! Buy it !

This is a very good treatment of particle physics. Unfortunately, its one of those textbooks where exercises are dispersed throughout the text and which form an integral part of the pedagogy. In other words, the reader must work through the problems as they appear in the book as subsequent material is based upon it; not to do the exercises will result in an incomplete and fragmented exposure to the material. Some might like that approach but I personally find it irritating and slows down the reading. As I mentioned its a very well written expose of particle physics but it could have been great if its format had been more traditional.

I love this book, mostly because this book told me very well about how to do every kind of particle physics problems. Before you read it, you needn't have much background in Quantum Field Theory (while it should be quite good to read this book before studying QFT), and you can get almost all ideas of High Energy Physics in an aspect of phenomenology. If you wanna prepare for a professional particle physics test (such as a PhD Qualification test), for sure this book is the best one to read --- you can pass any kind of these tests if you concentrate more than 2 days on this book. And even you are not worrying about any test, this book is very good for a beginner to know particle physics quantitatively.

This book is really a jewel. It was used extensively to support two famous theoretical courses at Imperial College London, namely, Unification and Advanced Particle Physics. It doesn't have typos, its extremely concise and the mathematics are extremely well presented and explained (without hand-waving anything). It explains very simply and clearly hard-to-grasp concepts (a lot of it as part of the Appendix) such as symmetries and their link to particle physics, spontaneous symmetry breaking, Feynman diagrams, Abelian and Non Abelian groups, Fermi theory and in general an excellent explanation of the properties of particles. I would recommend buying this book to any Theoretical Physicist taking Advanced Particle Physics courses or interested in knowing the mathematics of High Energy Physics (and not just the theory, because for that there are many other good story-teller books!).

I think this textbook is acceptable, but Griffiths' particle physics book (2nd edition) is much nicer. I personally have low tolerance for physicists who cannot communicate well, so I am truly in love with Griffiths (the book, but I'm sure the man isn't too bad). Unlike Halzen and Martin...-Griffiths spends more time and paper using clear English making it an enjoyable read, which is especially helpful for the beginner.-Griffiths also has many very nice tables, figures, and explicitly written equations that are great for reference. Halzen and Martin sometimes requires having other reference materials (such as Griffiths) available to solve the problems.-Lastly, Griffiths does not waste your time with handwaving pseudo QFT and simply states that certain things can be derived from QFT.

This textbook is the pits. It's unorganized, and terse in the presentation of the subject matter. A lot of the subject matter being presented is in terms of exercises that the student must do to gain understanding and progress to future chapters of the book. Also, the hints that are provided to help with the exercises many times aren't helpful at all. Although it has introductory in its title, it assumes prior knowledge of the subject being presented. For a far better, although slightly less advanced textbook, refer to Griffith's "Introduction to Elementary Particles". What's way more disheartening than this is that there is a lack of good Particle Physics textbooks out there. This book definitely doesn't help the cause.

The other opinions here make it clear this is THE classic undergraduate text for particle physics. It's an excellent book which I was reminded of again today when I spent some time looking at symmetry relations. You can find the text online now. Do a quick search. The online copy is authorized by the authors.

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