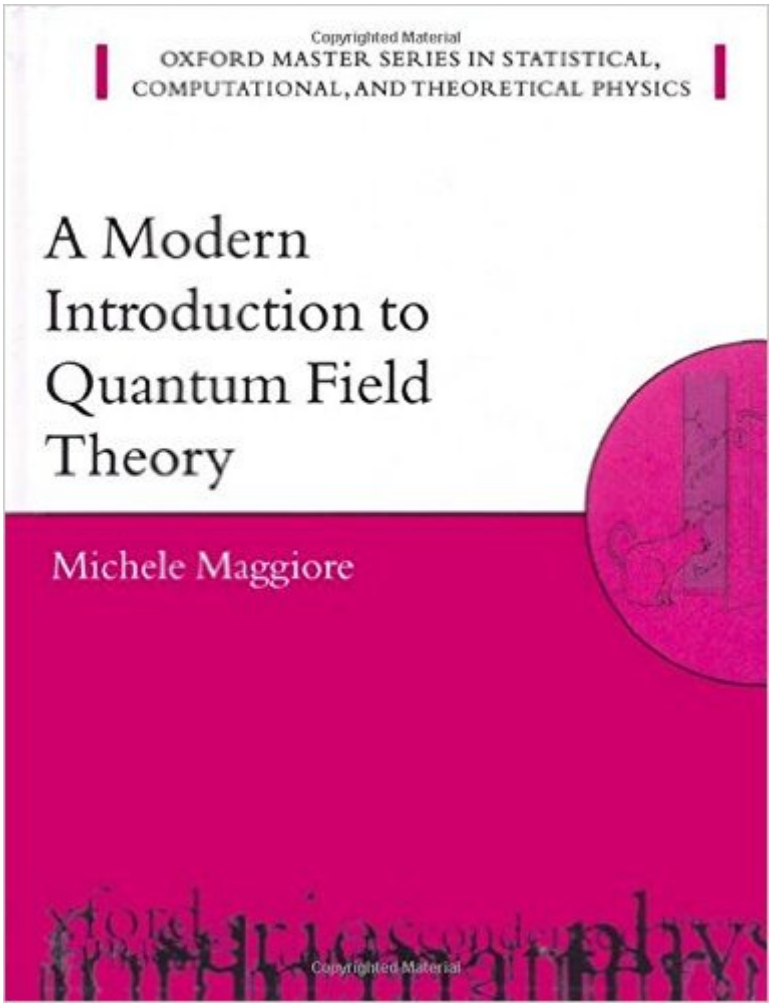
A Modern Introduction To Quantum Field Theory (Oxford Master Series In Physics)



Synopsis

The importance and the beauty of modern quantum field theory resides in the power and variety of its methods and ideas, which find application in domains as different as particle physics, cosmology, condensed matter, statistical mechanics and critical phenomena. This book introduces the reader to the modern developments in a manner which assumes no previous knowledge of quantum field theory. Along with standard topics like Feynman diagrams, the book discusses effective lagrangians, renormalization group equations, the path integral formulation, spontaneous symmetry breaking and non-abelian gauge theories. The inclusion of more advanced topics will also make this a most useful book for graduate students and researchers.

Book Information

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Customer Reviews

This book is short and to the point. The author has a good sense for the heart of the subject and how to present it in an efficient way. I would recommend this book to anybody who wants to either a.) learn the meat of QFT quickly or b.) wants a good reference which quickly reviews the most important parts of QFT. Since the technical details are important, I would highly recommend using this book in conjunction with a book with more technical details like the one by Peskin and Schroeder. (However, this book does have a lot of good information for its size.) Reading this book will help catalyze your understanding of the details in a more technical book.

This book presents the basics of QFT in a form that is very understandable. The author starts by

presenting Lie algebra, which is used to justify spinors. A spinor Lagrangian then creates the Dirac equation. This approach makes the Dirac equation seem as natural as the Maxwell equation. I have previously seen two other books that took the approach of taking Schrodinger's equation and relativity and mashing the two together using Pauli matrices as glue. That never sat well with me and I was glad to see some justification. The clear, consistent, modern notation was a great help - I have seen other books that mix Einstein notation with bold-face 4-vectors using dot products, etc. I also found it helpful to have a concise book to introduce the concepts without getting bogged down in examples with equations spanning the entire page (this book does however have examples at the end of the chapters).The next chapters introduce quantization, perturbation theory, non-abelian theories, etc. I only got through half the book as it was just some summer reading for me, but paging through the latter half makes me look forward to having the time to finish it.

Tried multiple QFT books but kept on coming back to Maggiore's book.Maggiore exposes the reader only to the important topics and succeeds in explaining most them in 265 pages; in comparison, Sredniki's Quantum Field Theory is > 600 pages while Peskin & Schroeders' An Introduction To Quantum Field Theory (Frontiers in Physics) is > 800 pages!Maggiore's style is terse, so expect making progress one paragraph at a time. The good news is that rereading helps. Again this is unlike the above mentioned two classics where you can reread some sections all you want and still would not make progress.If you want to start with an easier introduction, try Robinson's Symmetry and the Standard Model: Mathematics and Particle Physics or even Griffith's Introduction to Elementary Particles. So Griffiths --> Robinson --> Maggiore would be a reasonable sequence of books to read.Five star is compared to other QFT books and does not imply this book is perfect. The binding comes out after some use, I found chapter 1 to be unnecessary, wish some topics were explained in more detail and wanted the Standard Model to be discussed at the end.

I like the approach of this book in the sense that it first treats groups and the transformations that comprise representations of the groups. Then it moves to the construction of various spinor fields. Only once the full equipment of transformations on these fields has been explained, does the book move into Lagrangian field theory. Then, finally, it treats the quantization of the fields. For a first field theory text (which this is for me) I like this approach because it shows the more exciting and exotic material at the very beginning.Though I like the broad arrangement of the material, individual sections can be a bit obtuse from time to time. They are very dense and frequently seek to explain things in the most general sense, even when the most general sense is not the clearest or most

intuitive.

With this excellent book the path that a cultivated layman should follow to fulfill his noble attempt to familiarize himself with QFT is firmly traced. He (or of course She) should first read David Griffiths' book, "Introduction to Elementary Particles" to acquire a general idea of what QFT is all about. Having done so, in a Landau scale 1 to 10, he will now be at level 9. He should then read Maggiore's book aiming for an incomparably deeper understanding of the field that will catapult him to level 5 (keep in mind that Landau placed himself at level three!). About Maggiore's book: The author in chapter two, about Lie, Lorentz, PoincarÃ© groups, and representations, warns the reader that its understanding will not be a picnic.It is however apparent that the author has done the best (as also in the sections concerning Noether's theorem, Spinor fields and Dirac Equation, Lehmann-Symanzik-Zimmermann -reduction formula, Path Integral Quantization....) to clarify difficult issues. At the aimed level of the book I think that it was a good idea to limit the discussions to the low energy approximation of the electroweak theory, and to expound only the two main ingredients of the Standard Model, namely Yang-Mills theories and the Higgs mechanism.The best introductory book on the field in my opinion.

Entanglement for Babies (Physics for Babies) (Volume 4) Mathematical Physics of Quantum Wires and Devices: From Spectral Resonances to Anderson Localization (Mathematics and Its Applications) Multi-scale Analysis for Random Quantum Systems with Interaction (Progress in Mathematical Physics) Quantum Enigma: Physics Encounters Consciousness