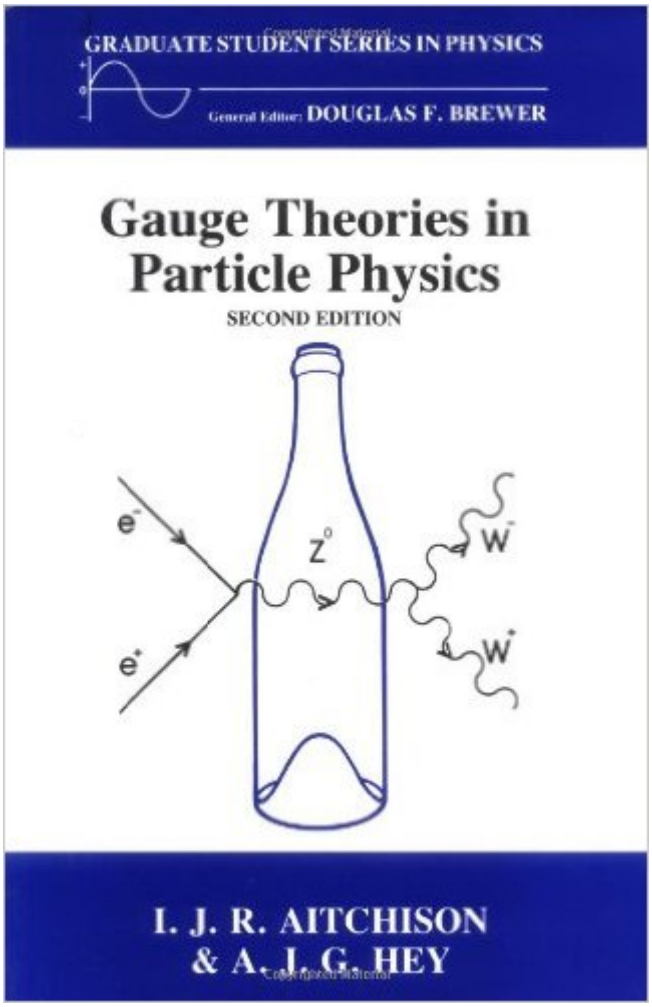
Gauge Theories In Particle Physics, Second Edition (Graduate Student Series In Physics)



Synopsis

This book will provide you with a good practical understanding of quantum electrodynamics, quantum chromodynamics and the electroweak theory, which together make up the standard model. The new edition includes over 50 diagrams showing experimental data, allowing the reader to work through calculations in the three gauge theories and compare the results with experiment.

Book Information

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Customer Reviews

The 3rd edition of that book clarified to a degree the fog left in my mind by a two-semester QFT course. The book is better suited for beginners than Peskin & Shroeder, Mandl & Show or Lahiri & Pal simply because it senses better the difficult points for beginners and tries to explain them at lower level. It focuses on the main concepts and doesn't try to `cover broad material in shortest time' or get into extreme computational technicalities totally irrelevant to beginners. The correct historical perspective of many ideas is given and the important historical papers are cited. The theory is frequently compared to the experimental results. Violin string is used as a prototype of a continuous system described by a classical field which is the first field quantized later. The book develops physical intuition showing how a scattering process can be analyzed in full QED (all fields are operators), in semiclassical approximation (all fields are operators except the EM field) or using the lowest level wavefunction approximation (all fields are treated like wave functions just like scattering in nonrelativistic QM) often getting the same result (see chapter 8). Important concepts like Feynman diagrams and Renormalization of a theory are first explored in a simple theoretical playground - a hypothetical `ABC theory' of three massive scalar fields with an interaction ABC term

- and later discussed again in the case of QED with all the complications like fermions and Electromagnetic gauge field.Topics discussed include gauge invariance principle; relativistic field equations describing free particles like Klein-Gordon and Dirac; Feynman interpretation of the negative energy solutions of Dirac eq.

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