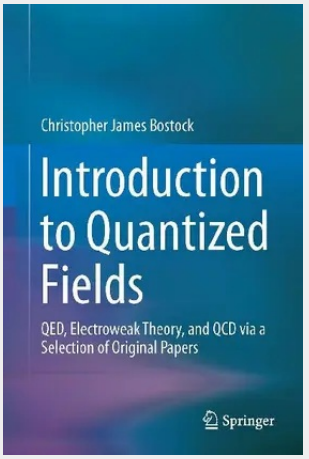
Bostock

Introduction to Quantized Fields

QED, Electroweak Theory, and QCD via a Selection of Original Papers



This short book approaches quantum field theory via the study of a selection of important papers in QED, electroweak theory and QCD. It places emphasis on Fermi and Bethe's original papers involving the non-covariant formulation of QED; their formalism is transparent and played an historically important role in the development of QFT. Although the field has changed dramatically since their time, it is prudent to understand Bethe's use of renormalization of mass in the calculation of the Lamb shift before embarking on a study of renormalization group techniques and running coupling constants that underpin concepts in QCD. Renormalization is an underlying theme in the development of quantum field theory, and Ken Wilson's work and the advent of effective field theory is also addressed. The modern view of renormalization is contrasted with the initial concerns of Dirac and others who were opposed to renormalization techniques.

This book is aimed at graduate students whohave mastered quantum mechanics and special relativity, and are about to embark on a study of QED, and QFT in general. It provides an invaluable framework for a reader to subsequently work through standard QFT textbooks.

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