MATHEMATICAL FOUNDATIONS OF QUANTUM FIELD THEORY

By
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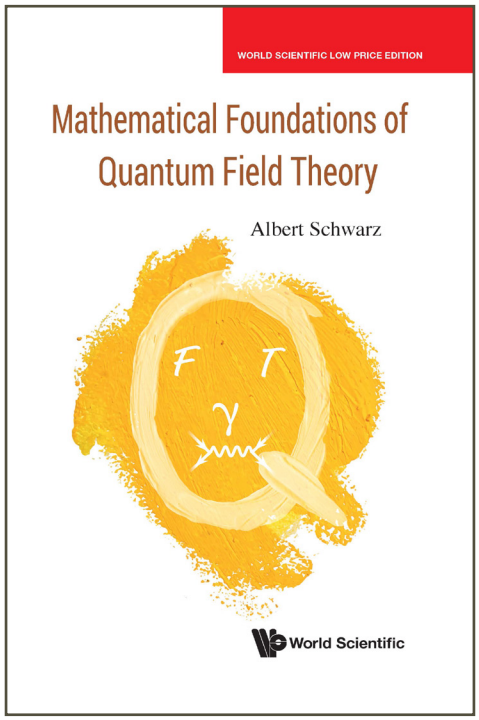

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ABOUT THE BOOK

The book is very different from other books devoted to quantum field theory, both in the style of exposition and in the choice of topics. Written for both mathematicians and physicists, the author explains the theoretical formulation with a mixture of rigorous proofs and heuristic arguments; references are given for those who are looking for more details. The author is also careful to avoid ambiguous definitions and statements that can be found in some physics textbooks.

In terms of topics, almost all other books are devoted to relativistic quantum field theory, conversely this book is concentrated on the material that does not depend on the assumptions of Lorentz-invariance and/or locality. It contains also a chapter discussing application of methods of quantum field theory to statistical physics, in particular to the derivation of the diagram techniques that appear in thermo-field dynamics and Keldysh formalism. It is not assumed that the reader is familiar with quantum mechanics; the book contains a short introduction to quantum mechanics for mathematicians and an appendix devoted to some mathematical facts used in the book.

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Physics and mathematics students and researchers interested in quantum field theory.

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CONTENTS

- Preface
- Principles of Quantum Theory
- Quantum Mechanics of Single-Particle and Non-Identical Particle Systems
- Quantum Mechanics of a System of Identical Particles
- Operators of Time Evolution: S(t, t0) and Sα(t, t0)
- Theory of Potential Scattering
- Operators on the Fock Space
- Wightman and Green's Functions
- Translation-Invariant Hamiltonians
- The Scattering Matrix for Translation-Invariant Hamiltonians
- Axiomatic Scattering Theory
- Translation-Invariant Hamiltonian (Further Investigation)
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- Methods of Quantum Field Theory in Statistical Physics

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