

Topics in Modern Physics: Theoretical Foundations

By John Dirk Walecka

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While the two previous books entitled *Introduction to Modern Physics: Theoretical Foundations and Advanced Modern Physics: Theoretical Foundations* exposed the reader to the foundations and frontiers of today's physics, the goal of this third volume is to cover in some detail several topics omitted in the essentially linear progression of the first two.

This book is divided into three parts. Part 1 is on quantum mechanics. Analytic solutions to the Schrödinger equation are developed for some basic systems. The analysis is then formalized, concluding with a set of postulates for the theory. Part 2 is on applications of quantum mechanics: approximation methods for bound states, scattering theory, time-dependent perturbation theory, and electromagnetic radiation and quantum electrodynamics. Part 3 covers some selected topics in relativistic quantum field theory: discrete symmetries, the Heisenberg picture, and the Feynman rules for quantum chromodynamics.

The three volumes in this series taken together provide a clear, logical, self-contained, and comprehensive base from which the very best students can learn modern physics. When finished, readers should have an elementary working knowledge in the principal areas of theoretical physics of the twentieth century.

Readership: Advanced undergraduates, graduate students and researchers in theoretical physics and quantum mechanics.

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Editorial Review

About the Author
Professor Walecka is Governor's Distinguished CEBAF Professor of Physics, Professor Emeritus at Stanford University and Professor of Physics at the College of William and Mary. He was the Scientific Director of the Continuous Electron Beam Accelerator Facility (CEBAF) in its initial stage (from 1986 to 1992). He was awarded the Bonner Prize for Nuclear Physics by the American Physical Society and was a Distinguished Schiff Lecturer and Primakoff Lecturer. For his many contributions to research, administration, and teaching, he was awarded the Virginia Lifetime Achievement in Science.

From the Inside Flap
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