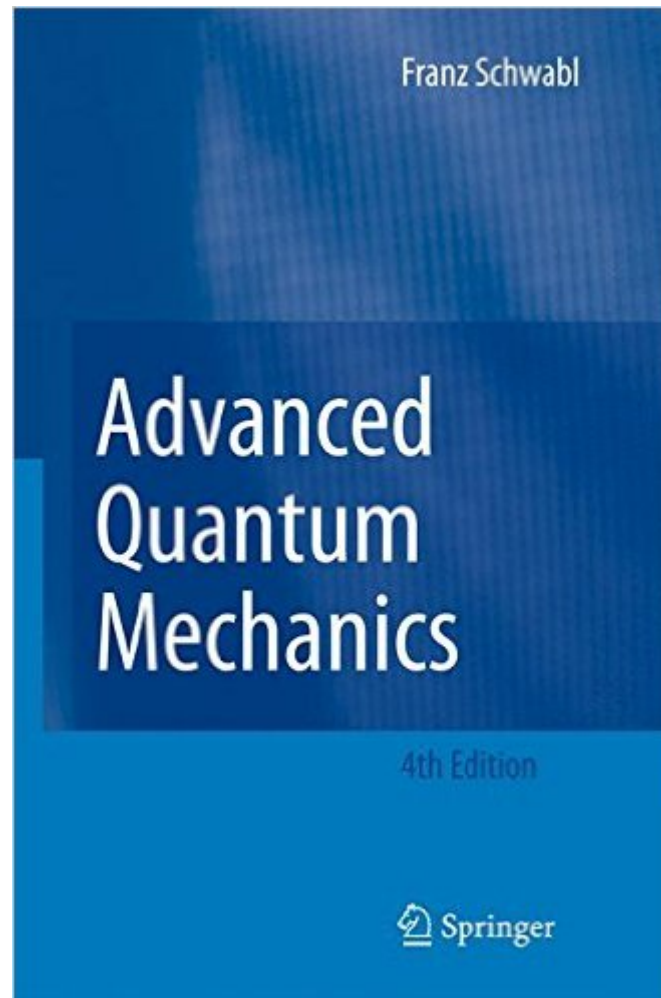


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Advanced Quantum Mechanics



Synopsis

Characteristic of Schwabl's work, this volume features a compelling mathematical presentation in which all intermediate steps are derived and where numerous examples for application and exercises help the reader to gain a thorough working knowledge of the subject. The treatment of relativistic wave equations and their symmetries and the fundamentals of quantum field theory lay the foundations for advanced studies in solid-state physics, nuclear and elementary particle physics. New material has been added to this third edition.

Book Information

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Customer Reviews

Caveat: My review pertains to the first (1999) edition (at 397 Pages). After spending much time with Sakurai's book of the same title (and not finding my voice there) it is a pleasure to recommend this book. Structured as it is into three sprawling parts: (1) Formalism of Second Quantization, (2) Klein Gordon and Dirac Equations, (3) Quantization of Radiation Fields and Quantum Electrodynamics. (Each part followed by a separate Bibliography). Structured throughout upon physical insight, mathematical derivations (complete) followed by numerous examples and remarks. Chapter One, Second Quantization, can hardly be improved upon. (The examples are a welcome addition in this first chapter). The Second Chapter--a delightful mix of the abstract and the concrete--espouses upon a gas of spin one-half Fermions. Next, of course, Bosons and the dilute Boson Gas along with a descriptive section devoted to Superfluidity. An unusual, fascinating, fourth chapter presents Scattering, density matrices, correlation functions followed by applications to harmonic

crystals, diffusion, damped oscillator. (These topics: difficult to find at this level and with such a surfeit of detail). The second part begins with five axioms--those axioms which comprise basic Quantum Mechanics. The development proceeds historically--at first--and, even this approach is presented with utmost clarity of thought. Chapter Six, this is the way to present Lorentz Transformations and Covariance of Dirac Equation. (Define Up and Down indices, A Metric, no pesky "i"'s to keep track of in the fourth component of four-vectors, that is, no "ict"). Spinors and Projection Operators: these end a lucid, useful, exposition.

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