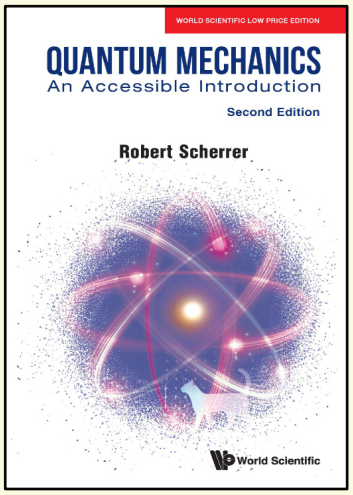
Quantum Mechanics

An Accessible Introduction

2nd Edition



By **Robert Scherrer**
(Vanderbilt University, USA)

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ABOUT THE BOOK

This book provides a comprehensive introduction to quantum mechanics from the ground up. It is designed to be completely self-contained and assumes very little knowledge or mathematical background on the part of students as it takes them through the major topics of quantum mechanics.

Designed to be appropriate for students across a wide range of abilities and backgrounds, this book will be particularly helpful for students who might lack some of the mathematical background typically assumed in an undergraduate quantum mechanics course. The book includes three "math interludes" covering such topics as complex numbers, linear operators, vector spaces, and matrix manipulation. The book also discusses some interesting modern applications of quantum mechanics: magnetic resonance imaging and quantum computing, and it concludes with an introduction to relativistic quantum theory.

This second edition includes expanded and improved coverage of the Heisenberg uncertainty principle, the use of ladder operators to solve the harmonic oscillator, as well as the treatment of the Lamb shift.

READERSHIP

Undergraduate students, useful for all Physics majors and some Engineering majors; Educators of undergrad students.

CONTENTS

Contd.

- Solutions of the Three-Dimensional Time-Independent Schrödinger Equation
- Math Interlude C: Matrices, Dirac Notation, and the Dirac Delta Function
- Spin Angular Momentum
- Time-Independent Perturbation Theory
- The Variational Principle
- Time-Dependent Perturbation Theory
- Scattering Theory
- Multiparticle Schrödinger Equation
- Modern Applications of Quantum Mechanics
- Relativistic Quantum Mechanics

ABOUT THE AUTHOR

Robert Scherrer is a Professor in the Department of Physics and Astronomy at Vanderbilt University. He received his undergraduate degree from Princeton University and his PhD from the University of Chicago. He is the recipient of the 2010 Klopsteg Memorial Award from the American Association of Physics Teachers for "*outstanding communication of the excitement of contemporary physics to the general public.*"

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