

Quantum Mechanics Fundamentals 2nd Edition

This textbook offers a unique introduction to quantum mechanics progressing gradually from elementary quantum mechanics to aspects of particle physics. It presents the microscopic world by analysis of the simplest possible quantum mechanical system (spin $1/2$). A special feature is the author's use of visual aids known as process diagrams, which show how amplitudes for quantum mechanical processes are computed. The second edition includes a new chapter and problems on time-dependent processes, in addition to new material on quantum computing and improved illustrations. Key Features: Provides a completely updated text with expanded contents. Includes a brand new chapter on time-dependent processes and expanded coverage of recent developments in particle physics. Emphasizes a visual approach employing process diagrams and utilizing new figures. Incorporates quantum information theory in a new appendix, with other helpful supplements on notation, lattice models, weak flavor mixing, and numerical simulations.

Quantum Mechanics: Concepts and Applications provides a clear, balanced and modern introduction to the subject. Written with the student's background and ability in mind the book takes an innovative approach to quantum mechanics by combining the essential elements of the theory with the practical applications: it is therefore both a textbook and a problem solving book in one self-contained volume. Carefully structured, the book starts with the experimental basis of quantum mechanics and then discusses its mathematical tools. Subsequent chapters cover the formal foundations of the subject, the exact solutions of the Schrödinger equation for one and three dimensional potentials, time-independent and time-dependent approximation

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methods, and finally, the theory of scattering. The text is richly illustrated throughout with many worked examples and numerous problems with step-by-step solutions designed to help the reader master the machinery of quantum mechanics. The new edition has been completely updated and a solutions manual is available on request. Suitable for senior undergraduate courses and graduate courses.

We have written this book in order to provide a single compact source for undergraduate and graduate students, as well as for professional physicists who want to understand the essentials of supersymmetric quantum mechanics. It is an outgrowth of a seminar course taught to physics and mathematics juniors and seniors at Loyola University Chicago, and of our own research over a quarter of a century.

Statistical Mechanics: Fundamentals and Model Solutions, Second Edition Fully updated throughout and with new chapters on the Mayer expansion for classical gases and on cluster expansion for lattice models, this new edition of Statistical Mechanics: Fundamentals and Model Solutions provides a comprehensive introduction to equilibrium statistical mechanics for advanced undergraduate and graduate students of mathematics and physics. The author presents a fresh approach to the subject, setting out the basic assumptions clearly and emphasizing the importance of the thermodynamic limit and the role of convexity. With problems and solutions, the book clearly explains the role of models for physical systems, and discusses and solves various models. An understanding of these models is of increasing importance as they have proved to have applications in many areas of mathematics and physics. Features Updated throughout with new content from the field An established and well-loved textbook Contains new problems and solutions for further learning opportunity Author

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Professor Teunis C. Dorlas is at the Dublin Institute for Advanced Studies, Ireland. If you think projection operators work in the cinema, or learning about spin-1/2 makes your head, well, spin, Quantum Mechanics DeMYSTiFieD will energize your knowledge of this topic's fundamental concepts and theories, and allow you to learn at your own pace. This thoroughly revised and updated guide eases you into the subject, beginning with wave mechanics then introducing you to the mathematical foundations needed to do modern quantum physics. As you progress, you will learn the fundamentals of matrix mechanics, including how to compute the trace of a matrix, find eigenvalues, and use ladder operators. You will understand the difference between time independent perturbation and time dependent perturbation theory and other once-complicated concepts. Detailed examples make it easy to understand the material, and end-of-chapter quizzes and a final exam help reinforce key ideas. It's a no-brainer! You'll learn about: State Space Basis Vectors Functions of Operators The Postulates of Quantum Mechanics Angular Momentum Spin and the Pauli Matrices Scattering Theory Simple enough for a beginner, but challenging enough for an advanced student, Quantum Mechanics DeMYSTiFieD, Second Edition is your shortcut to a working knowledge of this engaging science.

Explore the relationship between quantum mechanics and information-age applications This volume takes an altogether unique approach to quantum mechanics. Providing an in-depth exposition of quantum mechanics fundamentals, it shows how these concepts are applied to most of today's information technologies, whether they are electronic devices or materials. No other text makes this critical, essential leap from theory to real-world applications. The book's lively discussion of the mathematics involved fits right in with contemporary multidisciplinary

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trends in education: Once the basic formulation has been derived in a given chapter, the connection to important technological problems is summarily described. A book for the information age, Quantum Mechanics: Fundamentals and Applications to Technology promises to become a standard in departments of electrical engineering, applied physics, and materials science, as well as physics. It is an excellent text for senior undergraduate and graduate students, and a helpful reference for practicing scientists, engineers, and chemists in the semiconductor and electronic industries.

This new edition of the unrivalled textbook introduces the fundamental concepts of quantum mechanics such as waves, particles and probability before explaining the postulates of quantum mechanics in detail. In the proven didactic manner, the textbook then covers the classical scope of introductory quantum mechanics, namely simple two-level systems, the one-dimensional harmonic oscillator, the quantized angular momentum and particles in a central potential. The entire book has been revised to take into account new developments in quantum mechanics curricula. The textbook retains its typical style also in the new edition: it explains the fundamental concepts in chapters which are elaborated in accompanying complements that provide more detailed discussions, examples and applications. * The quantum mechanics classic in a new edition: written by 1997 Nobel laureate Claude Cohen-Tannoudji and his colleagues Bernard Diu and Franck Lalö * As easily comprehensible as possible: all steps of the physical background and its mathematical representation are spelled out explicitly * Comprehensive: in addition to the fundamentals themselves, the book contains more than 350 worked examples plus exercises Claude Cohen-Tannoudji was a researcher at the Kastler-Brossel laboratory of the Ecole Normale Supérieure in Paris where he also studied and

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received his PhD in 1962. In 1973 he became Professor of atomic and molecular physics at the Collège des France. His main research interests were optical pumping, quantum optics and atom-photon interactions. In 1997, Claude Cohen-Tannoudji, together with Steven Chu and William D. Phillips, was awarded the Nobel Prize in Physics for his research on laser cooling and trapping of neutral atoms. Bernard Diu was Professor at the Denis Diderot University (Paris VII). He was engaged in research at the Laboratory of Theoretical Physics and High Energy where his focus was on strong interactions physics and statistical mechanics. Franck Laloë was a researcher at the Kastler-Brossel laboratory of the Ecole Normale Supérieure in Paris. His first assignment was with the University of Paris VI before he was appointed to the CNRS, the French National Research Center. His research was focused on optical pumping, statistical mechanics of quantum gases, musical acoustics and the foundations of quantum mechanics.

This bestselling textbook teaches students how to do quantum mechanics and provides an insightful discussion of what it actually means.

Classic undergraduate text explores wave functions for the hydrogen atom, perturbation theory, the Pauli exclusion principle, and the structure of simple and complex molecules. Numerous tables and figures.

Quantum Mechanics Fundamentals CRC Press

A beloved introductory physics textbook, now including exercises and an answer key, accessibly explains electromagnetism, optics, and quantum mechanics R. Shankar is a well-known physicist and contagiously enthusiastic educator, whose popular online

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introductory-physics video lectures have been viewed over a million times. In this second book based on his online courses, Shankar explains electromagnetism, optics, and quantum mechanics, developing the basics and reinforcing the fundamentals. With the help of problem sets and answer keys, students learn about the most interesting findings of today's research while gaining a firm foundation in the principles and methods of physics.

This clear, concise introduction to quantum mechanics is the perfect supplement and complement to the math-heavy texts that dominate the field. The author includes hundreds of worked examples to illustrate the processes discussed and Dirac's Method, explains how to obtain a desired result in familiar terms rather than with confusing terminology and formulas.

The author has published two texts on classical physics, Introduction to Classical Mechanics and Introduction to Electricity and Magnetism, both meant for initial one-quarter physics courses. The latter is based on a course taught at Stanford several years ago with over 400 students enrolled. These lectures, aimed at the very best students, assume a good concurrent course in calculus; they are otherwise self-contained. Both texts contain an extensive set of accessible problems that enhances and extends the coverage. As an aid to teaching and learning, the solutions to these problems have now been published in additional texts. The present text completes the first-year introduction to physics with a set of lectures on Introduction to Quantum

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Mechanics, the very successful theory of the microscopic world. The Schrödinger equation is motivated and presented. Several applications are explored, including scattering and transition rates. The applications are extended to include quantum electrodynamics and quantum statistics. There is a discussion of quantum measurements. The lectures then arrive at a formal presentation of quantum theory together with a summary of its postulates. A concluding chapter provides a brief introduction to relativistic quantum mechanics. An extensive set of accessible problems again enhances and extends the coverage. The goal of these three texts is to provide students and teachers alike with a good, understandable, introduction to the fundamentals of classical and quantum physics.

The mathematical formalism of quantum theory in terms of vectors and operators in infinite-dimensional complex vector spaces is very abstract. The definitions of many mathematical quantities used do not seem to have an intuitive meaning, which makes it difficult to appreciate the mathematical formalism and understand quantum mechanics. This book provides intuition and motivation to the mathematics of quantum theory, introducing the mathematics in its simplest and familiar form, for instance, with three-dimensional vectors and operators, which can be readily understood. Feeling confident about and comfortable with the mathematics used helps readers appreciate and understand the concepts and formalism of quantum mechanics. This book is divided into four parts. Part I is a brief review of the general properties of classical and quantum

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systems. A general discussion of probability theory is also included which aims to help in understanding the probability theories relevant to quantum mechanics. Part II is a detailed study of the mathematics for quantum mechanics. Part III presents quantum mechanics in a series of postulates. Six groups of postulates are presented to describe orthodox quantum systems. Each statement of a postulate is supplemented with a detailed discussion. To make them easier to understand, the postulates for discrete observables are presented before those for continuous observables. Part IV presents several illustrative applications, which include harmonic and isotropic oscillators, charged particle in external magnetic fields and the Aharonov–Bohm effect. For easy reference, definitions, theorems, examples, comments, properties and results are labelled with section numbers. Various symbols and notations are adopted to distinguish different quantities explicitly and to avoid misrepresentation. Self-contained both mathematically and physically, the book is accessible to a wide readership, including astrophysicists, mathematicians and philosophers of science who are interested in the foundations of quantum mechanics.

R. Shankar has introduced major additions and updated key presentations in this second edition of Principles of Quantum Mechanics. New features of this innovative text include an entirely rewritten mathematical introduction, a discussion of Time-reversal invariance, and extensive coverage of a variety of path integrals and their applications. Additional highlights include: - Clear, accessible treatment of underlying mathematics -

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A review of Newtonian, Lagrangian, and Hamiltonian mechanics - Student understanding of quantum theory is enhanced by separate treatment of mathematical theorems and physical postulates - Unsurpassed coverage of path integrals and their relevance in contemporary physics The requisite text for advanced undergraduate- and graduate-level students, Principles of Quantum Mechanics, Second Edition is fully referenced and is supported by many exercises and solutions. The book's self-contained chapters also make it suitable for independent study as well as for courses in applied disciplines.

Learning Quantum Mechanics doesn't have to be hard What if there was a way to learn Quantum Mechanics without all the usual fluff and mystification? What if there were a book that allowed you to see the whole picture and not just tiny parts of it? Thoughts like this are the reason that No-Nonsense Quantum Mechanics now exists. What will you learn from this book? Get to know the fundamental quantum features — grasp how different nature works at the level of elementary particles. Learn how to describe Quantum Mechanics mathematically — understand the origin and meaning of the most important quantum equations: the Schrödinger equation + the canonical commutation relations. Master the most important quantum systems — read step-by-step calculations and understand the general algorithm we use to describe them. Get an understanding you can be proud of — learn why there are alternative frameworks to describe Quantum Mechanics and how they are connected to the standard wave

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description. No-Nonsense Quantum Mechanics is the most student-friendly book on Quantum Mechanics ever written. Here's why. First of all, it's is nothing like a formal university lecture. Instead, it's like a casual conversation with a more experienced student. This also means that nothing is assumed to be "obvious" or "easy to see". Each chapter, each section, and each page focusses solely on the goal to help you understand. Nothing is introduced without a thorough motivation and it is always clear where each equation comes from. The book contains no fluff since unnecessary content quickly leads to confusion. Instead, it ruthlessly focusses on the fundamentals and makes sure you'll understand them in detail. The primary focus on the readers' needs is also visible in dozens of small features that you won't find in any other textbook. In total, the book contains more than 100 illustrations that help you understand the most important concepts in visually. In each chapter, you'll find fully annotated equations and calculations are done carefully step-by-step. This makes it much easier to understand what's going on in. Whenever a concept is used that was already introduced previously there is a short sidenote that reminds you where it was first introduced and often recites the main points. In addition, there are summaries at the beginning of each chapter that make sure you won't get lost.

This is a self-contained student-friendly introduction to the key concepts of quantum chemistry. The math is developed as needed and motivated by the concepts themselves. (Midwest). Tough Test Questions? Missed Lectures? Not Enough Time? Fortunately for you, there's

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Schaum's. More than 40 million students have trusted Schaum's to help them succeed in the classroom and on exams. Schaum's is the key to faster learning and higher grades in every subject. Each Outline presents all the essential course information in an easy-to-follow, topic-by-topic format. You also get hundreds of examples, solved problems, and practice exercises to test your skills. This Schaum's Outline gives you Hundreds of examples with explanations of quantum mechanics concepts Exercises to help you test your mastery of quantum mechanics Complete review of all course fundamentals Fully compatible with your classroom text, Schaum's highlights all the important facts you need to know. Use Schaum's to shorten your study time--and get your best test scores! Topics include: Mathematical Background; Schrodinger Equation and Applications; Foundations of Quantum Mechanics; Harmonic Oscillator; Angular Momentum; Spin; Hydrogen-Like Atoms; Particle Motion in an Electromagnetic Field; Solution Methods in Quantum Mechanics; Solutions Methods in Quantum Mechanics; Numerical Methods in Quantum Mechanics; Identical Particles; Addition of Angular Momenta; Scattering Theory; and Semiclassical Treatment of Radiation Schaum's Outlines--Problem Solved.

Electrical and mechanical engineers, materials scientists and applied physicists will find Levi's uniquely practical 2006 explanation of quantum mechanics invaluable. This updated and expanded edition of the bestselling original text covers quantization of angular momentum and quantum communication, and problems and additional references are included. Using real-world engineering examples to engage the reader, the author makes quantum mechanics accessible and relevant to the engineering student. Numerous illustrations, exercises, worked examples and problems are included; Matlab source codes to support the text are available

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Atomic physics and its underlying quantum theory are the point of departure for many modern areas of physics, astrophysics, chemistry, biology, and even electrical engineering. This textbook provides a careful and eminently readable introduction to the results and methods of empirical atomic physics. The student will acquire the tools of quantum physics and at the same time learn about the interplay between experiment and theory. A chapter on the quantum theory of the chemical bond provides the reader with an introduction to molecular physics. Plenty of problems are given to elucidate the material. The authors also discuss laser physics and nonlinear spectroscopy, incorporating latest experimental results and showing their relevance to basic research. Extra items in the second edition include solutions to the exercises, derivations of the relativistic Klein-Gordon and Dirac equations, a detailed theoretical derivation of the Lamb shift, a discussion of new developments in the spectroscopy of inner shells, and new applications of NMR spectroscopy, for instance tomography. Quantum mechanics was already an old and solidly established subject when the first edition of this book appeared in 1966. The context in which a graduate text on quantum mechanics is studied today has changed a good deal, however. In 1966, most entering physics graduate students had a quite limited exposure to quantum mechanics in the form of wave mechanics. Today the standard undergraduate curriculum contains a large dose of elementary quantum mechanics, and often introduces the abstract formalism due to Dirac. Back then, the study of the foundations by theorists and experimenters was close to dormant, and very few courses spent any time whatever on this topic. At that very time, however, John Bell's famous theorem broke the ice, and there has been a great flowering ever since, especially in the laboratory

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thanks to the development of quantum optics, and more recently because of the interest in quantum computing. And back then, the Feynman path integral was seen by most as a very imaginative but rather useless formulation of quantum mechanics, whereas it now plays a large role in statistical physics and quantum field theory, especially in computational work. For these and other reasons, this book is not just a revision of the 1966 edition. It has been rewritten throughout, is differently organized, and goes into greater depth on many topics that were in the old edition.

First Published in 2018. Routledge is an imprint of Taylor & Francis, an Informa company. The basic concepts of quantum mechanics are explained in this book in a concise and easy-to-read manner, leading toward applications in solid-state electronics and optics. Following a logical sequence, the book focuses on key ideas and is conceptually and mathematically self-contained.

Primarily intended for the undergraduate students of physics, the book, in its second edition, apprises the students with the fundamentals of quantum mechanics. While retaining the same flow of contents and distinguishing features of the previous edition, the book now encompasses a number of modifications and additions. The author sets out with Planck's quantum hypothesis and takes the students along through the new concepts and ideas, providing an easy-to-understand description of core quantum concepts and basic mathematical structures. The fundamental principles and the mathematical formalism introduced are amply illustrated through a number of solved examples. Chapter-end exercises and review questions, generally designed as per the examination pattern, serve to reinforce the material learnt. Chapter-end summaries capture the key points discussed in the text. **NEW TO THE SECOND**

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EDITION • Incorporates detailed historical introduction to quantum mechanics • Comprises new sections on Time Variation of the Expectation Value of An Observable and Ehrenfest's Theorem in the respective chapter • Includes several new numerical problems as well as solutions/hints to the existing exercise problems

This book is a comprehensive text in the field of quantum mechanics, covering fundamental concepts including the state of a quantum mechanical system, operators, superposition principle and measurement postulate. The notion of an operator and the algebra of operators are introduced with the help of elementary concepts of mathematical analysis. Mathematical tools developed will help readers in understanding the difficulties encountered in classical physics while trying to explain the experimental results involving atomic spectra and other phenomena. The differential equations that arise while solving eigenvalue problems are solved rigorously, to make the text self-sufficient. The solutions are then physically interpreted and explained. The text offers solved examples, analogous and homework problems to help students in solving practical problems of physics requiring quantum mechanical treatment.

Bell presents a new edition of the extremely successful collected papers volume that includes two new papers.

Explains the fundamental concepts of Newtonian mechanics, special relativity,

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waves, fluids, thermodynamics, and statistical mechanics. Provides an introduction for college-level students of physics, chemistry, and engineering, for AP Physics students, and for general readers interested in advances in the sciences. In volume II, Shankar explains essential concepts, including electromagnetism, optics, and quantum mechanics. The book begins at the simplest level, develops the basics, and reinforces fundamentals, ensuring a solid foundation in the principles and methods of physics.

Changes and additions to the new edition of this classic textbook include a new chapter on symmetries, new problems and examples, improved explanations, more numerical problems to be worked on a computer, new applications to solid state physics, and consolidated treatment of time-dependent potentials.

Quantum mechanics is a general theory of the motions, structures, properties, and behaviors of particles of atomic and subatomic dimensions. While quantum mechanics was created in the first third of the twentieth century by a handful of theoretical physicists working on a limited number of problems, it has further developed and is now applied by a great number of people working on a vast range of problems in wide areas of science and technology. Basic Molecular Quantum Mechanics introduces quantum mechanics by covering the fundamentals of quantum mechanics and some of its most important chemical

applications: vibrational and rotational spectroscopy and electronic structure of atoms and molecules. Thoughtfully organized, the author builds up quantum mechanics systematically with each chapter preparing the student for the more advanced chapters and complex applications. Additional features include the following: This book presents rigorous and precise explanations of quantum mechanics and mathematical proofs. It contains qualitative discussions of key concepts with mathematics presented in the appendices. It provides problems and solutions at the end of each chapter to encourage understanding and application. This book is carefully written to emphasize its applications to chemistry and is a valuable resource for advanced undergraduates and beginning graduate students specializing in chemistry, in related fields such as chemical engineering and materials science, and in some areas of biology. This book, the second in a two-volume set, provides an introduction to the basics of (mainly) non-relativistic quantum mechanics. While the first volume addresses the basic principles, this second volume discusses applications and extensions to more complex problems. In addition to topics dealt with in traditional quantum mechanics texts, such as symmetries or many-body problems, it also treats issues of current interest such as entanglement, Bell's inequality, decoherence and various aspects of quantum information in detail. Furthermore, questions

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concerning the basis of quantum mechanics and epistemological issues which are relevant e.g. to the realism debate are discussed explicitly. A chapter on the interpretations of quantum mechanics rounds out the book. Readers are introduced to the requisite mathematical tools step by step. In the appendix, the most relevant mathematics is compiled in compact form, and more advanced topics such as the Lenz vector, Hardy's experiment and Shor's algorithm are treated in more detail. As an essential aid to learning and teaching, 130 exercises are included, most of them with solutions. This revised second edition is expanded by an introduction into some ideas and problems of relativistic quantum mechanics. In this second volume, an overview of quantum field theory is given and basic conceptions of quantum electrodynamics are treated in some detail. Originally written as a course for students of science education, the book addresses all those science students and others who are looking for a reasonably simple, fresh and modern introduction to the field.

This is the solution manual for Riazuddin's and Fayyazuddin's Quantum Mechanics (2nd edition). The questions in the original book were selected with a view to illustrate the physical concepts and use of mathematical techniques which show their universality in tackling various problems of different physical origins. This solution manual contains the text and complete solution of every

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problem in the original book. This book will be a useful reference for students looking to master the concepts introduced in Quantum Mechanics (2nd edition).

"The standard work in the fundamental principles of quantum mechanics, indispensable both to the advanced student and to the mature research worker, who will always find it a fresh source of knowledge and stimulation." --Nature

"This is the classic text on quantum mechanics. No graduate student of quantum theory should leave it unread"--W.C Schieve, University of Texas

A comprehensive and engaging textbook, providing a graduate-level, non-historical, modern introduction of quantum mechanical concepts.

The two-volume textbook Quantum Mechanics for Pedestrians provides an introduction to the basics of nonrelativistic quantum mechanics. Originally written as a course for students of science education, the book addresses all those science students and others who are looking for a reasonably simple, fresh and modern introduction to the field. The basic principles of quantum mechanics are presented in the first volume. This second volume discusses applications and extensions to more complex problems. In addition to topics traditionally dealt with in quantum mechanics texts, such as symmetries or many-body problems, here also issues of current interest such as entanglement, Bell's inequalities, decoherence and various aspects of quantum information are treated in detail.

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Furthermore, questions of the basis of quantum mechanics and epistemological issues are discussed explicitly; these are relevant e.g. to the realism debate. A chapter on the interpretations of quantum mechanics completes this volume. The necessary mathematical tools are introduced step by step; in the appendix, the most relevant mathematics is compiled in compact form. More advanced topics such as the Lenz vector, Hardy's experiment and Shor's algorithm are treated in more detail in the appendix. As an essential aid to learning and teaching, 130 exercises are included, most of them with their solutions.

Providing a unified account of nonrelativistic quantum mechanics, *Fundamentals of Quantum Mechanics* covers the principles and formalism of quantum mechanics and the development and application of general techniques for the solution of quantum mechanical problems. The author has done everything possible to make the math in this book accessible. The book

Presents a distinctive and modern treatment of quantum mechanics, including detailed chapters on group theory and quantum entanglement.

Learning Quantum Mechanics doesn't have to be hard What if there was a way to learn Quantum Mechanics without all the usual fluff and mystification? What if there were a book that allowed you to see the whole picture and not just tiny parts of it? Thoughts like this are the reason that *No-Nonsense Quantum*

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Mechanics now exists. What will you learn from this book? Get to know the fundamental quantum features -- grasp how different nature works at the level of elementary particles. Learn to describe Quantum Mechanics mathematically -- understand the origin and meaning of the most important quantum equations: the Schrödinger equation + the canonical commutation relations. Master the most important quantum systems -- read step-by-step calculations and understand the general algorithm we use to describe them. Get an understanding you can be proud of -- learn why there are alternative frameworks to describe Quantum Mechanics and how they are connected to the standard wave description. No-Nonsense Quantum Mechanics is the most student-friendly book on Quantum Mechanics ever written. Here's why. First of all, it's is nothing like a formal university lecture. Instead, it's like a casual conversation with a more experienced student. This also means that nothing is assumed to be "obvious" or "easy to see". Each chapter, each section, and each page focusses solely on the goal to help you understand. Nothing is introduced without a thorough motivation and it is always clear where each equation comes from. The book contains no fluff since unnecessary content quickly leads to confusion. Instead, it ruthlessly focusses on the fundamentals and makes sure you'll understand them in detail. The primary focus on the readers' needs is also visible in dozens of small

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features that you won't find in any other textbook. In total, the book contains more than 100 illustrations that help you understand the most important concepts visually. In each chapter, you'll find fully annotated equations and calculations are done carefully step-by-step. This makes it much easier to understand what's going on in. Whenever a concept is used that was already introduced previously there is a short sidenote that reminds you where it was first introduced and often recites the main points. In addition, there are summaries at the beginning of each chapter that make sure you won't get lost.

Fundamentals of Quantum Mechanics, Third Edition is a clear and detailed introduction to quantum mechanics and its applications in chemistry and physics. All required math is clearly explained, including intermediate steps in derivations, and concise review of the math is included in the text at appropriate points. Most of the elementary quantum mechanical models—including particles in boxes, rigid rotor, harmonic oscillator, barrier penetration, hydrogen atom—are clearly and completely presented. Applications of these models to selected “real world topics are also included. This new edition includes many new topics such as band theory and heat capacity of solids, spectroscopy of molecules and complexes (including applications to ligand field theory), and small molecules of astrophysical interest. Accessible style and colorful illustrations make the content

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appropriate for professional researchers and students alike Presents results of quantum mechanical calculations that can be performed with readily available software Provides exceptionally clear discussions of spin-orbit coupling and group theory, and comprehensive coverage of barrier penetration (quantum mechanical tunneling) that touches upon hot topics, such as superconductivity and scanning tunneling microscopy Problems given at the end of each chapter help students to master concepts

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