《量子力学简明教程》

图书基本信息

书名：《量子力学简明教程》

13位ISBN编号：9787308079846

10位ISBN编号：7308079848

出版时间：2010-12

出版社：浙江大学

作者：李有泉

页数：229

版权说明：本站所提供下载的PDF图书仅提供预览和简介以及在线试读，请支持正版图书。

更多资源请访问：www.tushu000.com

《量子力学简明教程》

内容概要

《量子力学简明教程(英文)》内容简介：This is based on the author's following two principles: (i) if a textbook were so perfectly arranged that leaves nothing to be desired, it would make the readers feel that the scientific discovery is so mystical that they lose passion of creativity; (ii) if a course were so purely presented that highes on a perfect axiomatics without mention of incomplete doctrine in history of science, it would lose the chance of training students' power of creativity. College students should cultivate their ability of capturing knowledge and attain the power of employing knowledge in addition to the simple task of absorbing knowl-edge. So the author tried to adopt second-person pronoun in presenting this course. According to the author's teaching experience, some mediate steps of mathematical formulation that beginners are not able to figure out frequently, are also given. In order to avoid too much content in class, some important examples are arranged as problems with solutions.

《量子力学简明教程》

书籍目录

I Basic Concepts and Main Applications1 The Discovery of Quantum Theory 1.1 Blackbody Radiation and Planck's Hypothesis of Energy Quanta 1.2 Photoelectric Effect and Einstein's Hypothesis of Light Quanta 1.3 The Atomic Spectra and Bohr's Model of Atoms2 Wavefunction and Schr6dinger Equation 2.1 The de Broglie Hypothesis and Davisson-Germer Experiment 2.2 Schrodinger Equation 2.3 Stationary Solutions 2.4 General Properties of Motion in One Dimension 2.5 Bound States in Potential Well 2.5.1 Square Well of Infinite Depth 2.5.2 Square Well of Finite Depth 2.6 The Harmonic Oscillator 2.7 Tunnelling Effect3 Operators and Heisenberg Uncertainty Relation 3.1 Observables and Operators 3.2 Hermitian Operators and Their Properties 3.3 Some Example Operators 3.3.1 Momentum Operators and Their Eigenfunctions 3.3.2 Angular Momentum Operators and Their Eigenfunctions 3.3.3 Coordinate Representation and Momentum Representation 3.4 Evaluation of the Expectation Values 3.5 The Heisenberg Uncertainty Relation 3.5.1 Commutation Relations and Their Implications 3.5.2 Uncertainty Relation and the Minimum Uncertainty State 3.6 The Time Evolution of Expectation Values4 Motion in a Centrally Symmetric Field 4.1 Three Dimensional Harmonic Oscillators 4.2 The Feature of Motion in a Centrally Symmetric Field 4.3 Spherical Waves and Plane Waves 4.4 Motion in a Coulomb Field 4.5 Hydrogen-like Energy Levels 4.6 Hydrogen Atom and Hydrogen-like Ions5 States and Heisenberg Equation 5.1 Matrix Representation of Operators 5.2 States and Their Representations 5.3 The Heisenberg Equation 5.4 Algebraic Approach for Harmonic Oscillator 5.5 Algebraic Approach for Angular Momentum II Developing Skills6 Bound-State Perturbation and Corrections to Energy Levels 6.1 Nondegenerate Perturbation TheOry 6.2 Degenerate Perturbation Theory 6.3 Stark Effect7 Time-dependent Perturbation and Quantum Transitions 7.1 Perturbation Depending on Time 7.2 Transition Probability 7.2.1 Periodic Perturbation of Single Frequency 7.2.2 Transition to Continuous Spectrum 7.3 Induced Absorption and Emission 7.4 Einstein's Semi-phenomenological Theory for Spontaneous Emission8 Scattering Theory for Elastic Collisions 8.1 Scattering Amplitude and Cross Section 8.2 Born Approximation 8.2.1 The Simplest Approach 8.2.2 Lippmann-Schwinger Equation 8.2.3 Scattering by Screened Coulomb Potential 8.3 Partial-Wave Approach 8.3.1 Phase Shifts and Scattering Amplitudes for Centrally Symmetric Potentials 8.3.2 Neutron-Proton Scattering 8.3.3 The Center-of-Mass Frame and the Lab Frame9 Motion in a Magnetic Field 9.1 Schrodinger Equation for a Charged Particle in Electromagnetic Fields 9.2 Electrons in a Uniform Magnetic Field 9.3 Atoms in Magnetic Field and Zeeman Effect 9.4 Electron Spin 9.5 Spin-Orbit Coupling and the Fine Structure of Atomic Spectra 9.5.1 On Spin-Orbit Coupling 9.5.2 On the Fine Structure of Atomic Spectra10 Identical Particles and Pauli Exclusive Principle 10.1 Permutation Symmetry and the Indistinguishability of Identical Particles 10.2 Noninteracting Systems, Pauli Exclusive Principle 10.2.1 Two-particle Systems 10.2.2 N-particle Systems 10.3 Interacting Systems 10.3.1 Helium Atom, Hund's RuleA Matrix and Vector SpaceB δ-functionC Confluent Hypergeometric FunctionD Orbitals for d-ElectronsE Lab Frame and Center-of-mass FrameF On an IntegralG Time Reversal and Kramers Degeneracy

《量子力学简明教程》

章节摘录

版权页：插图：You have captured the basic concepts and solved, as main applications, several quantum mechanical problems exactly inprevious chapters. However, it happens often that an interesting and important physical problem is described by a Schrsdinger equation that can not be solved exactly. It is therefore inevitable to develop various skills (strategies or methods). An important and powerful method is called perturbation theory that refers to any situation in which a solution to an equation is analyzed by using an existing nearby solution as a reference, or even possibly by solving a nearby equation rather than the original equation. In order for perturbation theory to be applicable, one or more of the following items should be true: (i) The desired initial data should be close to the reference initial data. (ii) The desired equation should be close to the reference equation. (iii) The time interval on which the analysis is performed should be small. In this chapter you are guided to learn a very useful method: time-independent perturbation theory for bound states.

《量子力学简明教程》

编辑推荐

《量子力学简明教程(英文)》是由浙江大学出版社出版的。

《量子力学简明教程》

精彩短评

1、还可以，就是看起来有点旧，有点灰
2、书收到了，帮别人买的，速度还算快吧
3、Too many math, too little physics, but anyway it's clear and not very difficult to understand.
4、呵呵，呵呵，呵呵，呵呵，呵呵，呵呵，呵呵，呵呵，呵呵，呵呵，呵呵，呵呵。
5、简直是糟糕。唯一的优点是简略，但是一点也不简明啊。好多问题并没有说清楚，需要参考别的书才能懂。

《量子力学简明教程》

版权说明

本站所提供下载的PDF图书仅提供预览和简介，请支持正版图书。

更多资源请访问:www.tushu000.com