

<<量子力学中的数学概念>>

图书基本信息

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## &lt;&lt;量子力学中的数学概念&gt;&gt;

## 前言

The first fifteen chapters of these lectures ( omitting four to six chapters each year ) cover a one term course taken by a mixed group of senior undergraduate and junior graduate students specializing either in mathematics or physics. Typically, the mathematics students have some background in advanced analysis, while the physics students have had introductory quantum mechanics. To satisfy such a disparate audience, we decided to select material which is interesting from the viewpoint of modern theoretical physics, and which illustrates an interplay of ideas from various fields of mathematics such as operator theory, probability, differential equations, and differential geometry. Given our time constraint, we have often pursued mathematical content at the expense of rigor. However, wherever we have sacrificed the latter, we have tried to explain whether the result is an established fact, or, mathematically speaking, a conjecture, and in the former case, how a given argument can be made rigorous. The present book retains these features. Prerequisites for this book are introductory real analysis ( notions of vector space, scalar product, norm, convergence, Fourier transform ) and complex analysis, the theory of Lebesgue integration, and elementary differential equations. These topics are typically covered by the third year in mathematics departments. The first and third topics are also familiar to physics undergraduates. Those unfamiliar with Lebesgue integration can think about Lebesgue integrals as if they were Riemann integrals. This said, the pace of the book is not a leisurely one and requires, at least for beginners, some amount of work.

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### 内容概要

The first fifteen chapters of these lectures ( omitting four to six chapters each year ) cover a one term course taken by a mixed group of senior undergraduate and junior graduate students specializing either in mathematics or physics. Typically , the mathematics students have some background in advanced analysis , while the physics students have had introductory quantum mechanics. To satisfy such a disparate audience , we decided to select material which is interesting from the viewpoint of modern theoretical physics , and which illustrates an interplay of ideas from various fields of mathematics such as operator theory , probability , differential equations , and differential geometry. Given our time constraint , we have often pursued mathematical content at the expense of rigor. However , wherever we have sacrificed the latter , we have tried to explain whether the result is an established fact , or , mathematically speaking , a conjecture , and in the former case , how a given argument can be made rigorous. The present book retains these features.

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书籍目录

1 Physical Background 2 Dynamics 3 Observables 4 The Uncertainty Principle 5 Spectral Theory 6  
Scattering States 7 Special Cases 8 Many-particle Systems 9 Density Matrices 10 Perturbation Theory:  
Feshbach Method 11 The Feynman Path Integral 12 Quasi-classical Analysis 13 Mathematical Supplement: The  
Calculus of Variations 14 Resonances 15 Introduction to Quantum Field Theory 16 Quantum Electrodynamics  
of Non-relativistic Particles: The Theory of Radiation 17 Supplement: Renormalization Group 18 Comments on  
Missing Topics, Literature, and Further Reading References Index

## <<量子力学中的数学概念>>

### 章节摘录

插图：

## <<量子力学中的数学概念>>

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