Contents	Preface to the Berkeley Physics Course v Preface to Volume IV v ii Acknowledgments ix Notes for Teaching and Study x i
	Chapter 1 Introduction 1
1-7 8-19 20-26 27-40 41-46 47-55	The Scope of Quantum Physics 2 Atoms and Elementary Particles 5 The Limits of Applicability of Classical Theory 14 The Discovery of Planck's Constant 18 The Photoelectric Effect 28
	Chapter 2 Magnitudes of Physical Quantities in Quantum Physics 43
19-32 33-39 40-43	Units and Physical Constants 44 Energy 49 Magnitudes Characteristic of Atomic and Molecular Physics 56 The Most Basic Facts of Nuclear Physics 66 Gravitational and Electromagnetic Forces 73 Concerning Numerical Work 75
	Chapter 3 Energy Levels 93
1-13 14-26 27-42 43-46 47-56	Term Schemes 94 The Finite Widths of Energy Levels 104 Further Discussion of Levels and Term Schemes 111 Doppler Broadening and Collision Broadening of Spectral Lines 127 Advanced Topic: On the Theory of Electromagnetic Transitions 130 References for Further Study 136 Problems 137

	Chapter 4 Photons 141	
1-17 18-30 31-50	The Photon as a Particle 142 The Compton Effect: Bremsstrahlung; Pair Creation and Annihilation 152 Can Photons Be "Split"? 162 References for Further Study 174 Problems 175	
1-15 16-22 23-27 28-35 36-46 47-54	Chapter 5 Material Particles 179 The de Broglie Waves 180 Theory of Diffraction in a Periodic Structure 191 There Is But One Planck's Constant 196 Can Matter Waves Be Split? 200 The Wave Equation and the Superposition Principle 205 Advanced Topic: The Vector Space of Physical States 211 References for Further Study 216 Problems 217	
1-19 20-40 41-49 50-56 57-61	Chapter 6 The Uncertainty Principle and the Theory of Measurements 221 Heisenberg's Uncertainty Relations 222 Measurements and Statistical Ensembles 234 Amplitudes and Intensities 249 Can the Outcome of Every Measurement Be Predictable in Principle? 254 Polarized and Unpolarized Light 259 References for Further Study 262 Problems 262	4
1-18 19-36 37-48 49-51	Chapter 7 The Wave Mechanics of Schrodinger 267 Schrödinger's Non-Relativistic Wave Equation 268 Some Simple "Barrier Problems" 279 Theory of Alpha-Radioactivity 292 Advanced Topic: Normalization of the Wave Function 304 References for Further Study 307 Problems 307	
1-26 27-41	Chapter 8 Theory of Stationary States 311 Quantization as an Eigenvalue Problem 312 The Harmonic Oscillator. Vibrational and Rotational Excitations of Molecules 328	

42-48 49-58	Hydrogen-like Systems 339 Advanced Topic: The Position and Momentum Variables in the Schrödinger Theory 344 References for Further Study 350 Problems 350
	Chapter 9 The Elementary Particles and their Interactions 357
1-18 19-31 32-46 47-55 56	Collision Processes and the Wave Picture 358 What Is Meant by a Particle? 372 Basic Ideas of Quantum Field Theory 382 Pions and Nuclear Forces 393 Concluding Remarks 400 References for Further Study 401 Problems 401
÷	Appendix 405
A B C	General Physical Constants 406 The Most Stable Elementary Particles 408 The Chemical Elements 410

Index 413