

Contents

Preface	<i>page</i> v
Acknowledgements	vi
Note	ix
PART I	
1. Introduction: basic ideas	3
2. Ket vectors, vector spaces	6
3. Elementary quantum mechanics	10
4. Simple examples: discrete systems (bases)	14
5. Infinite and continuous bases	24
6. The Schrödinger equation and ‘wave mechanics’	32
7. Time dependence: Schrödinger and Heisenberg ‘pictures’	34
PART II	
8. Examples and applications	41
8.1 Introduction	41
8.2 The harmonic oscillator: discrete case	42
8.3 The harmonic oscillator: continuous case	46
8.4 The planar rotator: discrete case	48
8.5 The planar rotator: continuous case	49
8.6 The diatomic molecule: discrete case	51
8.7 The diatomic molecule: continuous case	52
8.8 The hydrogen-like atom: general	55
8.9 The hydrogenic atom: continuous case	57
8.10 The hydrogenic atom: discrete case	59
8.11 Discussion and some concluding remarks	66
9. Parity, particle interchange, and statistics	67
9.1 Parity	67
9.2 Particle interchange	69
9.3 Statistics	70
9.4 Final remarks	71

Appendix I. The Heisenberg uncertainty principle	<i>page</i> 73
Appendix II. Two critical experiments for quantum mechanics	77
Problems	82
Bibliography	84
Index	85