

1. Record Nr.	UNINA9910153097503321
Autore	McIntyre David H.
Titolo	Quantum mechanics // McIntyre, Manogue, Tate
Pubbl/distr/stampa	Harlow, England : , : Pearson, , [2014] ©2014
ISBN	1-292-03408-4
Edizione	[First edition, Pearson new international edition.]
Descrizione fisica	1 online resource (616 pages) : illustrations
Collana	Always learning
Disciplina	530.12
Soggetti	Quantum theory
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Includes index.
Nota di contenuto	Cover -- Table of Contents -- 1. Stern-Gerlach Experiments -- Problem Set (1/e): Stern-Gerlach Experiments -- 2. Operators and Measurement -- Problem Set (1/e): Operators and Measurement -- 3. Schrodinger Time Evolution -- Problem Set (1/e): Schrodinger Time Evolution -- 4. Quantized Energies: Particle in a Box -- Problem Set (1/e): Quantized Energies: Particle in a Box -- 5. Quantum Spookiness -- Problem Set (1/e): Quantum Spookiness -- 6. Unbound States -- Problem Set (1/e): Unbound States -- 7. Angular Momentum -- Problem Set (1/e): Angular Momentum -- 8. Hydrogen Atom -- Problem Set (1/e): Hydrogen Atom -- 9. Harmonic Oscillator -- Problem Set (1/e): Harmonic Oscillator -- 10. Perturbation Theory -- Problem Set (1/e): Perturbation Theory -- 11. Hyperfine Structure and the Addition of Angular Momenta -- Problem Set (1/e): Hyperfine Structure and the Addition of Angular Momenta -- 12. Perturbation of Hydrogen -- Problem Set (1/e): Perturbation of Hydrogen -- 13. Identical Particles -- Problem Set (1/e): Identical Particles -- 14. Time-Dependent Perturbation Theory -- Problem Set (1/e): Time-Dependent Perturbation Theory -- 15. Periodic Systems -- Problem Set (1/e): Periodic Systems -- 16. Modern Applications of Quantum Mechanics -- Problem Set (1/e): Modern Applications of Quantum Mechanics -- 17. Appendix: Physical Constants -- 18. Appendix: Integrals -- 19. Appendix: Matrices -- 20. Appendix: Waves and Fourier Analysis -- 21. Appendix: Separation of Variables -- 22. Appendix: Complex Numbers -- 23. Appendix: Probability -- 24. Useful Definitions and Equations --

Sommario/riassunto

This innovative new text approaches Quantum Mechanics in a manner more closely aligned with the methods used in real modern physics research. Most texts start with a bit of history and then move directly to wave-particle problems with the incumbent heavy mathematical analysis; McIntyre, Manogue, and Tate aim to ground the student's knowledge in experimental phenomena and use a more approachable, less intimidating, more powerful mathematical matrix model.

Beginning with the Stern-Gerlach experiments and the discussion of spin measurements, and using bra-ket notation, Quantum Mechanics introduces students to an important notational system that is used throughout quantum mechanics. This non-traditional presentation is designed to enhance students' understanding and strengthen their intuitive grasp of the subject, and has been class tested extensively.

The text takes advantage of the versatile SPINS software, which allows the student to simulate Stern-Gerlach measurements in succession.

This interaction gets to the heart of Quantum Mechanics, and introduces the student to the mathematics they will be using throughout the course. A solid alternative to the classical texts currently available, it is designed for junior- to senior-level Quantum Mechanics courses taken by physics majors.
