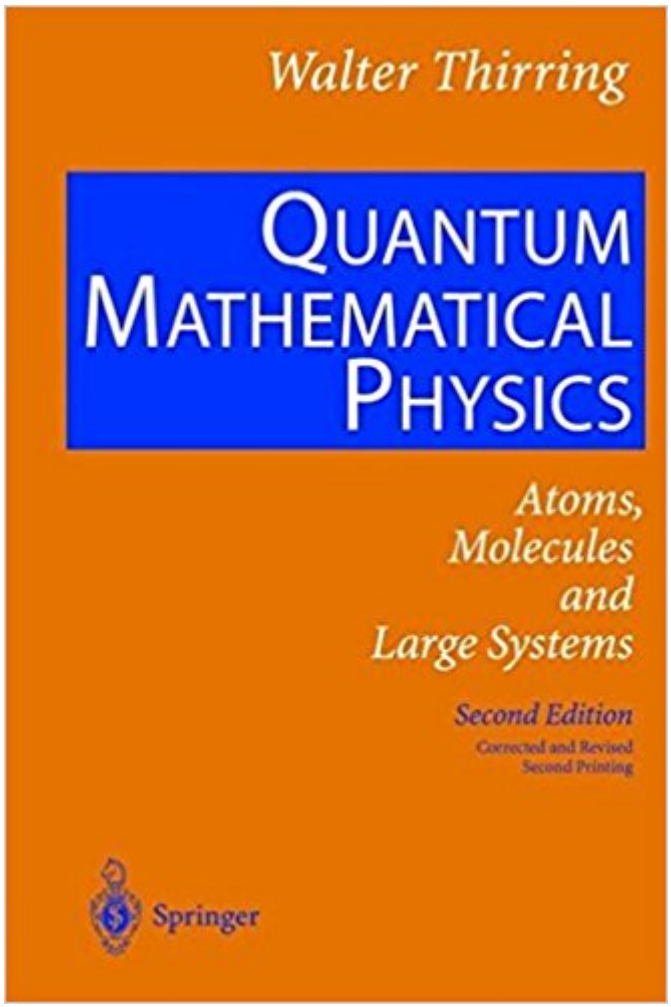
Quantum Mathematical Physics



Synopsis

This book is a new edition of Volumes 3 and 4 of Walter ThirringÃ¢â ¬â„¢s famous textbook on mathematical physics. The first part is devoted to quantum mechanics and especially to its applications to scattering theory, atoms and molecules. The second part deals with quantum statistical mechanics examining fundamental concepts like entropy, ergodicity and thermodynamic functions.

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Customer Reviews

From the reviews of the second edition: "Just as the general theory of relativity leads to many new mathematical advances and applications, the same is true of quantum mechanics. It is these mathematical advances that are the topic of this extensive volume, a volume which also delineates how these advances made possible the difficult transition from understanding hydrogen to understanding complex atoms, molecules, and Ã¢â ¬Ëœlarge systemsÃ¢â ¬â„¢. As such this volume will serve as an excellent source book for the mathematical basis of the many recent advances in quantum mechanics. It will also serve as an excellent text book for an advanced course in either quantum physics or applied mathematics." (Physicalia, 25/3, 2003) "This work is written uncompromisingly for the mathematical physicist Ã¢â ¬Â¦ . Thirring writes concisely but with a clarity that makes the book easy to read. Ã¢â ¬Â¦ There are extensive bibliographies, with references mostly to articles in journals Ã¢â ¬Â¦ . There are copious problems andÃ¢â ¬â œeven better-all the solutions. Ã¢â ¬Â¦ the volume would make a valuable addition to the library of Ã¢â ¬Â¦

a mathematical physicist." (Prof. A.I. Solomon, Contemporary Physics, Vol. 46 (4), 2005) "This volume will serve as an excellent source book for the mathematical basis of the many recent advances in quantum mechanics. It will also serve as an excellent textbook Ã¢â ¬Â¦ . Each chapter is chock full of mathematical derivations and proofs but perhaps the most interesting part of each proof is the following section entitled Ã¢â ¬ËœRemarksÃ¢â ¬â„¢ sections which are full of interesting details, ideas, drawbacks, comments, and references. Ã¢â ¬Â¦ As is usually the case with Springer-Verlag, this book has been beautifully produced Ã¢â ¬Â¦ ." (Fernande Grandjean and Gary J. Long, Physicalia, Vol. 25 (3), 2003)

This book is a new edition of Volumes 3 and 4 of Walter Thirring's famous textbook on mathematical physics. The first part is devoted to quantum mechanics and especially to its applications to scattering theory, atoms and molecules. The second part deals with quantum statistical mechanics examining fundamental concepts like entropy, ergodicity and thermodynamic functions. The author builds on an axiomatic basis and uses tools from functional analysis: bounded and unbounded operators on Hilbert space, operator algebras etc. Mathematics is shown to explain the axioms in depth and to provide the right tool for testing numerical data in experiments.

Thirring presents a logical mathematical foundation for quantum physics. This book is meant for theorists who desire a rigorous presentation and who already have a strong math background, especially in functional analysis. Naturally, much of the discussion centres on the properties of a Hilbert space (ie. a complete inner product space). Simpler texts in quantum mechanics might often state that the wavefunctions or operators reside in a Hilbert space, but really don't explore more the consequences. Whereas Thirring takes you much deeper into this realm.

The first part is devoted to quantum mechanics and especially to its applications to scattering theory, atoms and molecules. The second part deals with quantum statistical mechanics examining fundamental concepts like entropy, ergodicity and thermodynamic functions.Quantum Mathematical Physics: Atoms, Molecules and Large Systems

(Cambridge Monographs on Particle Physics, Nuclear Physics and Cosmology) Quantum Runes: How to Create Your Perfect Reality Using Quantum Physics and Teutonic Rune Magic (Creating Magick with The Universal Laws of Attraction Book 1) Quantum Thermodynamics: Emergence of Thermodynamic Behavior Within Composite Quantum Systems (Lecture Notes in Physics) The Quantum Mechanics Solver: How to Apply Quantum Theory to Modern Physics Quantum Systems, Channels, Information (de Gruyter Studies in Mathematical Physics) Dynamics, Information and Complexity in Quantum Systems (Theoretical and Mathematical Physics) Quantum Mathematical Physics Quantum Field Theory and Condensed Matter: An Introduction (Cambridge Monographs on Mathematical Physics) Quantum Field Theory in Strongly Correlated Electronic Systems (Theoretical and Mathematical Physics) Ultracold Quantum Fields (Theoretical and Mathematical Physics) Applied Functional Analysis: Applications to Mathematical Physics (Applied Mathematical Sciences) (v. 108) Quantum Physics: Beginner's Guide to the Most Amazing Physics Theories Mathematics of Classical and Quantum Physics (Dover Books on Physics) The Feynman Lectures on Physics, Vol. III: The New Millennium Edition: Quantum Mechanics: Volume 3 (Feynman Lectures on Physics (Paperback)) The Physics and Philosophy of the Bible: How Relativity, Quantum Physics, Plato, and History Meld with Biblical Theology to Show That God Exists and That ... Live Forever (The Inevitable Truth Book 1) Methods of Quantum Field Theory in Statistical Physics (Dover Books on Physics) Recent Advances in the Theory of Chemical and Physical Systems: Proceedings of the 9th European Workshop on Quantum Systems in Chemistry and Physics ... in Theoretical Chemistry and Physics) Boundary and Eigenvalue Problems in Mathematical Physics (Dover Books on Physics)