



Lectures on Quantum Mechanics

By Steven Weinberg

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Nobel Laureate Steven Weinberg combines his exceptional physical insight with his gift for clear exposition to provide a concise introduction to modern quantum mechanics. Ideally suited to a one-year graduate course, this textbook is also a useful reference for researchers. Readers are introduced to the subject through a review of the history of quantum mechanics and an account of classic solutions of the Schrödinger equation, before quantum mechanics is developed in a modern Hilbert space approach. The textbook covers many topics not often found in other books on the subject, including alternatives to the Copenhagen interpretation, Bloch waves and band structure, the Wigner-Eckart theorem, magic numbers, isospin symmetry, the Dirac theory of constrained canonical systems, general scattering theory, the optical theorem, the 'in-in' formalism, the Berry phase, Landau levels, entanglement and quantum computing. Problems are included at the ends of chapters, with solutions available for instructors at www.cambridge.org/9781107028722.

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Editorial Review

Review

Review of previous edition:

"Lectures on Quantum Mechanics must be considered among the very best books on the subject for those who have had a good undergraduate introduction. The integration of clearly explained formalism with cogent physical examples is masterful, and the depth of knowledge and insight that Weinberg shares with readers is compelling."

Mark Srednicki, Physics Today

Review of previous edition:

"Steven Weinberg, a Nobel Laureate in Physics, has written an exceptionally clear and coherent graduate-level textbook on modern quantum mechanics. This book presents the physical and mathematical formulations of the theory in a concise and rigorous manner. The equations are all explained step-by-step, and every term is defined. He presents a fresh, integrated approach to teaching this subject with an emphasis on symmetry principles. Weinberg demonstrates his finesse as an excellent teacher and author."

Barry R. Masters, Optics and Photonics News

Review of previous edition:

"Perhaps what distinguishes this book from the competition is its logical coherence and depth, and the care with which it has been crafted. Hardly a word is misplaced and Weinberg's deep understanding of the subject matter means that he leaves no stone unturned: we are asked to accept very little on faith ... it is for the reader to follow Weinberg in discovering the joys of quantum mechanics through a deeper level of understanding: I loved it!"

Jeff Forshaw, CERN Courier

Review of previous edition:

"An instant classic ... clear, beautifully structured and replete with insights. This confirms [Weinberg's] reputation as not only one of the greatest theoreticians of the past fifty years, but also one of the most lucid expositors. Pure joy."

The Times Higher Education Supplement

About the Author

Steven Weinberg is a member of the Physics and Astronomy Departments at the University of Texas, Austin. His research has covered a broad range of topics in quantum field theory, elementary particle physics and cosmology and has been honored with numerous awards, including the Nobel Prize in Physics, the National Medal of Science and the Heinemann Prize in Mathematical Physics. He is a member of the US National Academy of Sciences, Britain's Royal Society and other academies in the US and abroad. The American Philosophical Society awarded him the Benjamin Franklin medal, with a citation that said he is 'considered by many to be the preeminent theoretical physicist alive in the world today'. His books for physicists include Gravitation and Cosmology, the three-volume work The Quantum Theory of Fields, and most recently, Cosmology. Educated at Cornell University, the University of Copenhagen and Princeton University, he also holds honorary degrees from sixteen other universities. He taught at Columbia University, the University of California, Berkeley, Massachusetts Institute of Technology and Harvard University - where he was Higgins Professor of Physics - before moving to Texas in 1982.

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