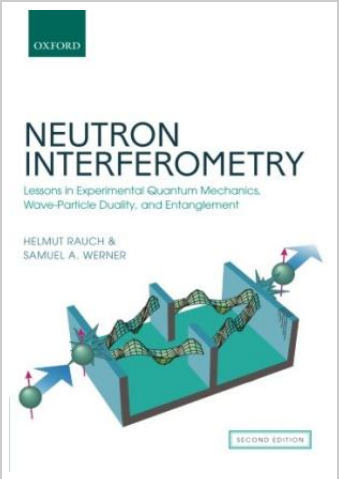

Neutron Interferometry: Lessons in Experimental Quantum Mechanics, Wave-Particle Duality, and Entanglement (Paperback)

By Helmut Rauch, Samuel A. Werner

Oxford University Press, United Kingdom, 2018. Paperback. Condition: New. 2nd Revised edition. Language: English. Brand new Book. The quantum interference of de Broglie matter waves is probably one of the most startling and fundamental aspects of quantum mechanics. It continues to tax our imaginations and leads us to new experimental windows on nature. Quantum interference phenomena are vividly displayed in the wide assembly of neutron interferometry experiments, which have been carried out since the first demonstration of a perfect silicon crystal interferometer in 1974. Since the neutronexperiences all four fundamental forces of nature (strong, weak, electromagnetic, and gravitational), interferometry with neutrons provides a fertile testing ground for theory and precision measurements. Many Gedanken experiments of quantum mechanics have become real due to neutron interferometry.Quantum mechanics is a part of physics where experiment and theory are inseparably intertwined. This general theme permeates the second edition of this book. It discusses more than 40 neutron interferometry experiments along with their theoretical motivations and explanations. The basic ideas and results of interference experiments related to coherence and decoherence of matter waves and certain post-selection variations, gravitationally induced quantum phase shifts, Berry`s geometrical phases,spinor symmetry and spin superposition, and Bell's inequalities are all discussed...

Reviews

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