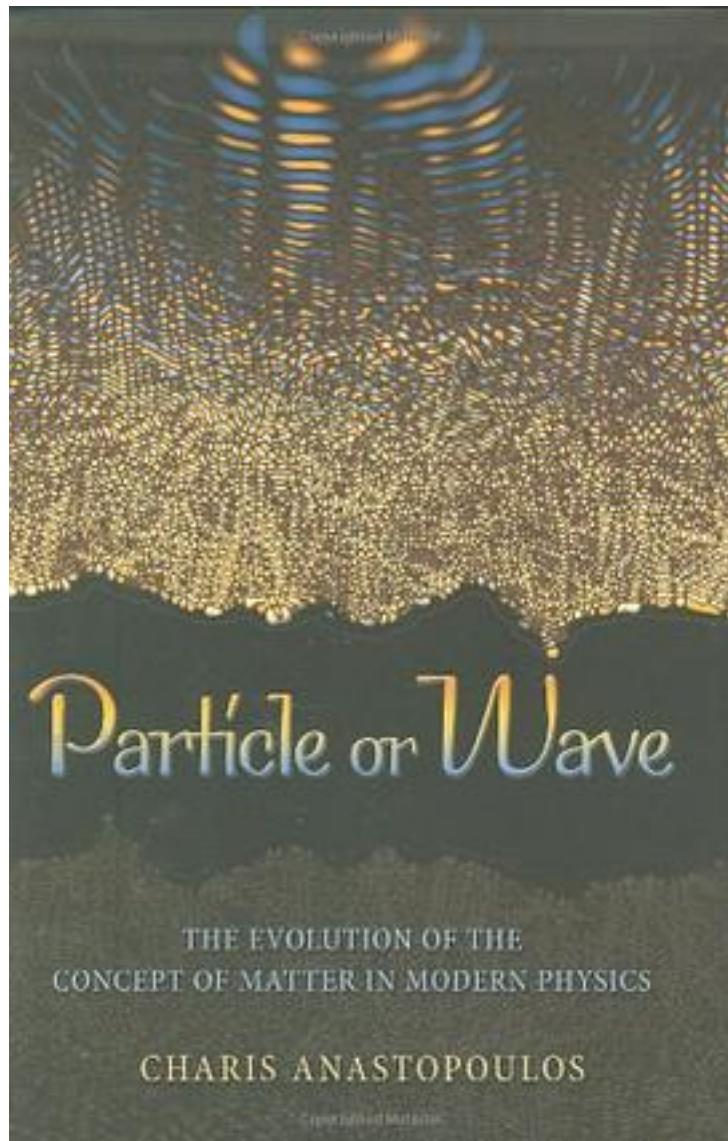


Particle or Wave



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著者:Anastopoulos, Charis

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"Particle or Wave" is the first popular-level book to explain the origins and development of modern physical concepts about matter and the controversies surrounding them. The dichotomy between particle and wave reflects a dispute - whether the universe's most elementary building blocks are discrete or continuous in nature - originating in antiquity when philosophers first speculated about the makeup of the physical world. Charis Anastopoulos examines two of the earliest known theories about matter - the atomic theory, which attributed all physical phenomena to atoms and their motion in the void, and the theory of the elements, which described matter as consisting of the substances earth, air, fire, and water. He then leads readers up through the ages to the very frontiers of modern physics to reveal how these seemingly contradictory ideas still lie at the heart of today's continuing debates. Anastopoulos explores the revolutionary contributions of thinkers like Nicolas Copernicus, Isaac Newton, and Albert Einstein. He shows how Einstein's ideas about relativity, unify opposing concepts by identifying matter with energy, and how quantum mechanics goes even further by postulating the coexistence of the particle and the wave descriptions. Anastopoulos surveys the latest advances in physics on the fundamental structure of matter, including the theories of quantum fields and elementary particles, and new cutting-edge ideas about the unification of all forces. This book reveals how the apparent contradictions of particle and wave reflect very different ways of understanding the physical world, and how they are pushing modern science to the threshold of new discoveries.

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