

The picture book of quantum mechanics

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Abstrak

The aim of this book is to explain the basic concepts and phenomena of quantum mechanics by means of visualization. Computer-generated illustrations in color are used extensively throughout the text, helping to establish the relation between quantum mechanics, wave functions, interference, atomic structure, and so forth, and classical physics, point mechanics, statistical mechanics, and wave optics. Even more important, by studying the pictures in parallel with the text, readers develop an intuition for such notoriously abstract phenomena as, the tunnel effect, excitation and decay of metastable states, wave-packet motion within a well, systems of distinguishable and indistinguishable particles, free wave packets and scattering in 3 dimensions, angular-momentum decomposition, stationary bound states in various 3-dimensional potentials, hybrid states, Kepler motion of wave packets in the Coulomb field, and spin and magnetic resonance. Illustrations from experiments in a variety of fields, including chemistry, and molecular, atomic, nuclear, and particle physics, underline the basic as well as the practical importance of quantum mechanics.