Complex spin and anti-spin dynamics: A generalization of de Broglie–Bohm theory to complex space

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Abstract
To be consistent with the complex spacetime formulation of the E(∞) theory, we generalize the de Broglie–Bohm (dBB) theory to a complex domain and show that the complex-extended dBB trajectories solved from the plain Schro"dinger equation without any relativistic correction unambiguously demonstrate the existence of spin-1/2 dynamics in the ground-state hydrogen atom. It is the first time in the literature to reveal that to each spin solution to the Schro"dinger equation, there is an accompanying anti-spin solution such that the spin and anti-spin solutions constitute a complete solution to the Schro"dinger equation. The complex equations of motion indicate that the electrons in the spin and anti-spin solutions have equal angular momentum planck constant over two pi/2 anti-parallel to each other.

Article Outline

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