Implications for a spatially discrete transition amplitude in the twin-slit experiment

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Abstract

A discrete path integral formalism is used to obtain the transition amplitude between 'sources' (slits and detector) in the twin-slit experiment of quantum mechanics. This method explicates the normally tacit construct of dynamic entities with temporal duration. The resulting amplitude is compared to that of standard wave mechanics in order to relate 'source' dynamics and spatial separation. The implied metric embodies non-separability, in stark contrast to the metric of general relativity. Thus, this approach may have implications for quantum gravity.

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