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The Uncertainty Principle with a Twist

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Karl Popper, a philosopher, had found the entanglement of particles fascinating. He wanted to test the standard interpretation of quantum mechanics since he believed that knowledge of one of the entangled particles should not affect the properties of the other entangled particle, as well as investigating the presence of a non-local influence in these systems. The behaviour of a quantum entangled particle passing through a physical slit differs from that of a quantum entangled particle passing through a virtual/ghost slit. For an entangled particle passing through a slit of an infinitesimally narrow width, it would be predicted by the Copenhagen interpretation of quantum mechanics that the uncertainty in momentum will approach an unbounded value. I will present the experiment which we conducted whereby the vertical slits are replaced by angular slits and orbital angular momentum is measured instead of linear momentum. It can be concluded from the results that an entangled particle passing through an infinitesimally narrow slit has its momentum spread being limited by the initial momentum produced by the source.

Apply to be considered for a student ; award (Yes / No)?

Yes

Level for award;(Hons, MSc, PhD, N/A)?

MSc

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