

Abstract Submitted
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Entanglement Elimination Before Particle Detections of the Entangled Particles-2 DOUGLAS SNYDER, None — An experiment has been proposed that should demonstrate entanglement elimination before photon detections are made in the case where the idler photon provides which way information to the paired signal photon and the idler photon is destroyed at the fixed ultrablack micropost located at the crossroads of the two possible idler photon paths before the signal photon reaches its detection screen. The expected result is interference in the signal photon intensity distribution without any correlation between detection events for the paired signal and idler photons. The fixed micropost does not allow for any “record” of a momentum transfer between the idler photon and the fixed micropost when the idler photon impacts the fixed micropost. If unexpectedly, a which way pattern in the signal photon intensity distribution is obtained instead of interference, then we would have a case where a signal photon is still affected by the paired idler photon even though the idler photon has already been destroyed and the entanglement eliminated. Given the break in logic underlying the second possibility (where the destroyed idler photon still provides which-way information to the paired signal photon), the latter result (which-way intensity distribution for the signal photons) is more unlikely than an interference intensity distribution for the signal photons. This experimental scenario can be contrasted with another where the idler photon is detected along a specific path rather than destroyed. In the latter scenario, the entanglement is maintained and the idler photon supplies which-way information to the paired signal photon. The result is a which-way intensity distribution for the signal photons.

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None

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