

Abstract Submitted
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Choosing at a Distance an Overall Distribution Exhibiting Either Which-Way Information or Interference Using a Single Optical Microcavity DOUGLAS SNYDER, None —

Choosing at a distance either an overall distribution exhibiting ww information or instead no ww information is based on a delayed choice whether or not to keep the entanglement between paired photons where an idler photon provides which way information to a paired distant signal photon. The choice depends on either losing an idler photon passing through the apparatus in many other similar photons or not losing the idler photon. Initially both of the photons in a pair have ww info, but due to device setup the ww info for the signal particle is quickly lost. One example is Kim where the photon pairs are created at one of two “slits”. Ww info is quickly lost for the signal photon since it travels a two slit setup after creation. Ww info is preserved for the idler photon since the two “slits” are followed by a prism that associates each “slit” with one of two widely separated paths. The result is the idler photon provides ww info to the distant entangled signal photon. If the idler photon is not lost in many other similar photons, the signal photons show an overall ww distribution. If the idler photon is lost before the signal photon is detected, the signal photons show a distribution exhibiting interference. Ultrafast switches for single entangled photons can be used to change the path/s for the idler photon while the idler photon is in flight so that an idler photon either is detected at one of two detectors on different idler photon paths (ww info) or instead enters an optical microcavity filled with photons similar to the idler photon and situated where two idler photon paths overlap (no ww info).

Douglas Snyder
None

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