

Abstract Submitted
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The Substitution of a Super Black Fixed Micro-Object for an Optical Microcavity in a Delayed Choice Experiment to Send Information Immediately Between 2 Paired Particles: Simplifying the Experiment

DOUGLAS SNYDER, None — An experiment has been described that relies on a delayed choice for an idler photon that immediately affects the signal photon with which it is at least initially entangled and for which the idler photon provides which-way information. The delayed choice concerns whether to maintain or eliminate the entanglement before any measurements are made. In one option of the delayed choice, the entanglement can be eliminated because the relevant state of the idler photon related to its entanglement is eliminated when the idler photon enters an optical microcavity filled with photons with the same mode as the incoming idler photon. The microcavity is located at the crossroads of two possible idler photon paths. The relevant state of the idler photon characterizes the particular path taken by the photon and this information is eliminated when the particle enters the cavity. Over a number of runs with this choice, the distribution of the paired signal photons shows interference. If the entanglement is maintained, the distribution of the paired signal photons shows which-way information. This experiment can be simplified by using a super black material (e.g., Vantablack) affixed to a fixed micro-object located at the crossroads of the two possible idler photon paths instead of the optical microcavity. The photon would be absorbed by the material and there would be no way to detect from which direction it came. Objects such as fixed mirrors in a Mach Zehnder interferometer do not provide ww information. The super black fixed micro-object should not either.

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None

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