Abstract Submitted
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Remote phase shifting of an interferometer using entangled-state correlations.[1] ENRIQUE GALVEZ, MEHUL MALIK, BRAD MELIUS, Colgate University — We describe an experiment involving polarization-entangled photon pairs where one photon of a pair is sent to a Mach-Zehnder interferometer and the other one to a geometric-phase shifter. The interferometer is configured to interfere two Bell states via the arms of the interferometer [1]. The phase shifter introduces a Pancharatnam-Berry phase between the product states that make up the entangled states. Polarizers placed after the interferometer project the state of the pairs such that the remote phase adds to the dynamical phase of the interferometer. Thus, the phase and amplitude of the interference pattern is determined by actions on the path of the photons not going through the interferometer. Experimental results confirm the theoretical predictions. [1] M.J. Pysher et al. Phys. Rev. A 72, 052327 (2005).

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