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Measuring the Polarization State of a Beam of Individual Photons CODY MCKENZIE, PRESTON ALEXANDER, R. SETH SMITH, Francis Marion University — During the past three years, a quantum optics laboratory was constructed and tested at Francis Marion University. A spontaneous parametric downconversion source was used to create pairs of correlated photons for use in single photon tests of quantum mechanics. In this project, coincidences were detected between pairs of single photons and this data was used to determine the polarization state of a beam of individual photons, including all of the coefficients that describe the quantum state of the photons. This experiment was performed for linear, circular, and elliptical polarization states. The theory, experimental setup, procedure, and results will be presented.

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