

Abstract Submitted  
for the MAR13 Meeting of  
The American Physical Society

**Measurement of the joint spectrum of entangled photons using rotary dispersion** DANIEL JONES, TODD PITTMAN, University of Maryland, Baltimore County — We report a new method of observing the spectral entanglement of photons generated in spontaneous parametric down-conversion (PDC). In contrast to previous methods based on spatial or temporal dispersion, our method is based on rotary dispersion and polarization measurements. Our experiment utilizes a variation of the Sénarmont compensator in order to rotate the polarization state of the entangled signal and idler photons. By passing the photons through several stages of these “rotators,” we essentially create a Lyot filter in which we can directly correlate an analyzer measurement after the rotators with a specific wavelength, within a resolution defined by the theory. This method is fundamentally different than previous experiments to measure the joint spectrum of PDC photons because of the periodicity of using analyzers as the measurement devices. The periodicity of the analyzers causes a trade-off between the resolution of the device and the maximum bandwidth of the entangled photons that can be measured.

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Date submitted: 09 Nov 2012

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