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Study of Preparation and Measurement of Spatial Modes of Light in Different Bases NATHANIEL RISTOFF, F. ELOHIM BECERRA, University of New Mexico, Center for Quantum Information and Control — Transmission of light carrying information in the transverse profile of the field through multimode fibers can provide a path for increasing capacity in communications and for distributing high dimensional entanglement. However, cross talk between spatial modes in the fiber makes maintaining and retrieving the encoded information challenging. Moreover, while the selection of encoding basis for these spatial modes is arbitrary, there may be particular bases that are preferred for different processes generating correlated photons. We investigate a method previously used to characterize few-mode fibers to study the preparation and measurement of light with many spatial modes. We study the differences between Laguerre (LG) and Hermite (HG) Gauss modes for encoding information and investigate the potential of this method to reverse intermodal crosstalk in optical fibers.

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