

Abstract Submitted
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Optical entanglement by frequency upconversion¹ MARK SAFFMAN, University of Wisconsin Madison, OO-KAW LIM, University of Wisconsin - Madison — We demonstrate theoretically and experimentally that continuous variable entangled light beams can be created by frequency upconversion. The experiment uses a cavity which has two output ports for the second harmonic. The two output beams share a common pump beam which serves to create correlations between the beams. We demonstrate the presence of these correlations by showing that the measured non-classical intensity correlation is larger than the amplitude squeezing of each beam. We also demonstrate experimentally that the beams are inseparable according to the criterion of Duan, Giedcke, Cirac, and Zoller. We expect that this new approach to entanglement generation may be useful for experiments in quantum enhanced lithography.

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