

Abstract Submitted
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Information-efficient phase imaging with heralded single photons REIHANEH SHAHROKSHAH, NIRANJAN SRIDHAR, OLIVIER PFISTER, Department of Physics, University of Virginia, SAIKAT GUHA, JONATHAN HABIF, Raytheon-BBN, AARON MILLER, Department of Physics, Albion College, ADRIANA LITA, BRICE CALKINS, THOMAS GERRITTS, ANTIA LAMAS-LINARES, SAE WOO NAM, National Institute of Standards and Technology — We report progress toward the experimental realization of information-efficient quantum imaging, here at two bits per photon. A heralded single-photon source ($g^2(0) < 0.08$) is used as the input to a 4x4 multiport interferometer, compactly implemented using both polarization and spatial degrees of freedom. The interferometer can be used to read out all 4 Hadamard phase codes with a single photon. We investigate the use of cavity-enhanced spontaneous parametric downconversion for the coherent source of heralded photons. The photon-number-resolving ability of high-quantum-efficiency transition edge sensors is used for the heralding and detection.

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