accidental counts. The spectral filter helps in matching the signal and idler modes and in suppressing unwanted modes, but it does cause loss to the dominant squeezed mode. Careful engineering of the filter might allow the dominant mode to pass with high transmissivity while also achieving our mode matching goals. The measured $g^{(2)}$ values fit the theoretical predictions of single-mode outputs (thermal and squeezed vacuum) very well. All of these results give evidence that we have successfully created entangled squeezed signal and idler beams with nearly identical, factorizable, spatio-temporal modes. They also show that very little squeezed light is created in unwanted modes that are also collected by our photon detectors. We have employed advanced photon-counting techniques based on superconducting detectors (SNSPDs and TESs) to characterize the single-mode character of two-mode and single-mode squeezed states. These techniques are useful tools for investigating the spatial-mode properties of the squeezing. In the near future, we plan to map the local oscillator mode-matching characteristics and the squeezing purity of this source using homodyne detection.

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