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Heralding single photons with cascaded downconversion DENY HAMEL, PATRICK POITRAS, Universite de Moncton, EVAN MEYER-SCOTT, University of Paderborn — Heralded single photon sources are an enabling resource for several important quantum technologies such as secure communication and randomness generation. They are commonly implemented employing photon pairs from spontaneous parametric downconversion by using the detection of photon to herald the presence of this partner, but the quality of such sources is constrained by detector dark counts and double pair emission. In this work, we investigate whether photon precertification, which has recently been implement with cascaded downconversion, could help mitigate these limitations by providing an additional trigger signal confirming the arrival of the single photons. We find that, for certain regimes of detector performance, our method produces higher purity single photons as quantified by the second order correlation function. We expect these results to be of particular interest for applications where the purity of single photons, rather than the count rate, is paramount.

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