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【432】 Counter-propagating spontaneous parametric down-conversion source

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Lithium niobate on insulator is a promising platform for integrated quantum photonics. Its strong nonlinear coefficient and electro-optic effect allow the integration of photon pair sources and fast reconfigurable interferometers for boson sampling. The photons are generated via spontaneous parametric down-conversion (SPDC). Two key aspects of the photon pairs are their bandwidth and the possibility to split them deterministically. Here we present a new source type where the generated photons travel in opposite directions and feature a narrow bandwidth of 5 nm. The reduction of bandwidth and the separability are big advantages over the type-0-SPDC sources. The counter-propagating source efficiency outperforms the well-known type-2-SPDC sources.

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