

# Single photon quantum walk with adjustable coin operations

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We present a robust implementation of a coined quantum walk over 14 steps using only passive optical elements. At the core of our realization is a fiber optical network loop which allowed to keep the amount of required resources constant as the walkers position Hilbert space is increased. We have observed a non-Gaussian distribution of the walkers final position, thus characterizing a faster spread of the photon wave packet in comparison to the classical random walk. The walk is realized for many different coin settings and initial states, necessary for future implementation of quantum-walk-based search algorithms.