

Webinar

Tackling the photonic state preparation problem for quantum computation

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Quantum computation using continuous-variable systems is a promising route to universal quantum computation. One of the main challenges is photonic state preparation. Optical nonlinearities are weak compared to other physical platforms and therefore, it requires new techniques. Focussing on one application to a gate teleportation protocol, our new optical gadget that relies on photon-number-resolving detectors, improves existing photon subtraction methods by four orders of magnitude. The state preparation device can be used to generate other non-Gaussian states with applications to communication, fault-tolerance, and metrology.

Reference:

1. K. K. Sabapathy, H. Qi, J. Izaac, and C. Weedbrook, Production of photonic universal quantum gates enhanced by machine learning, Phys. Rev. A 100, 012326 (2019)

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