



Quantum Photonics for Computer Security and other Applications

Philip Walther

Stanford University

The precise quantum control of single photons, together with the intrinsic advantage of being mobile make optical quantum system ideally suited for delegated quantum information tasks, reaching from well-established quantum cryptography to quantum clouds and quantum computer networks.

Here I present that the exploit of quantum photonics allows for a variety of quantum-enhanced data security for quantum and classical computers. The latter is based on feasible hybrid classical-quantum technology, which shows promising new applications of readily available quantum photonics technology for complex data processing. As outlook I will discuss technological challenges for the scale up of photonic quantum computers, and our group's current work for addressing some of those.