Path Entangled Quantum Networks

Rob Thew

Group of Applied Physics, University of Geneva, Switzerland
Robert.thew@unige.ch

We will discuss how path entanglement is not only one of the simplest forms of entanglement, but also, one of the most important for entanglement-based quantum networks. This will start with the basic ideas about how we generate this and a novel approach to its measurement. We will briefly talk about some of the photonic building blocks we have developed for exploring these questions. Along the way we will also present several approaches to certifying this, along with discussing some of the challenges of certifying large multipartite networks. We will briefly present several experimental results in this context as well as recent work on using heralded photon amplifiers to overcome loss when distributing entanglement. Finally, we will present ongoing work dealing with many of the practical issues of distributing entanglement in real world networks.

References

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