



Call 2019

ShoQC





Short-Range Quantum Connections

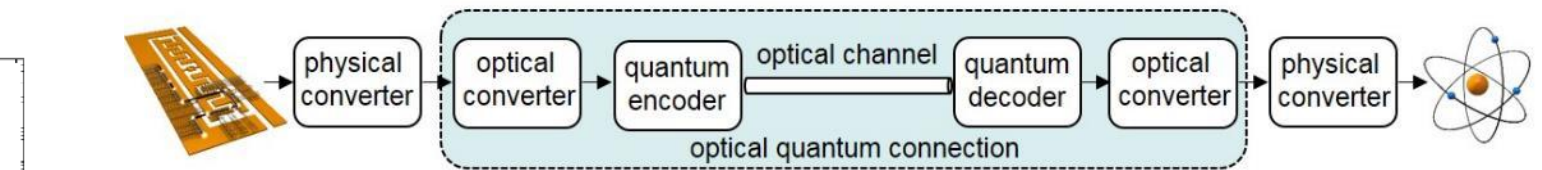
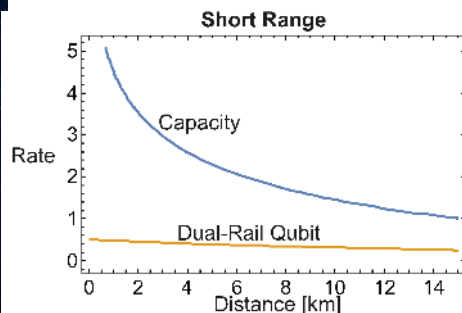
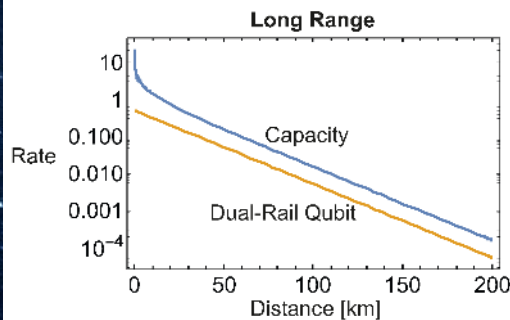
Peter van Loock (Mainz University)

<https://shoqc.uni-mainz.de>



PROJECT PROGRESS (highlights)

-  **CHALLENGE** – Bridging the two encoding paradigms: CV and DV
-  **SOLUTION** – An optical qubit encoding converter
-  **IMPLEMENTATION** – Heralded implementation, no postselection
-  **HURDLES** – Efficiencies of multiple non-Gaussian resources



Experiment:

$$c_0|0\rangle + e^{i\theta} c_1|1\rangle$$

Single-photon qubit

$$c_0|cat +\rangle + e^{i\theta} c_1|cat -\rangle$$

CV cat-state qubit

Theory:
 Non-classicality,
 Non-Gaussianity,
 Cat/GKP codes
 (various public.)



T. Darras et al. (SU), under review, pending patent

IMPACT (RRI aspects)



GENDER: fostering gender balance in research teams:

Main responsible researcher below PI is female in the group of 3 of 7 partners



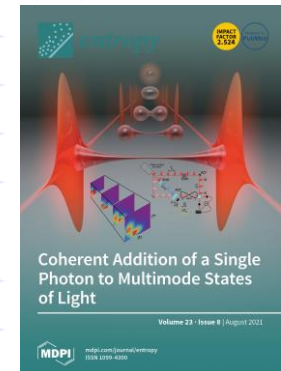
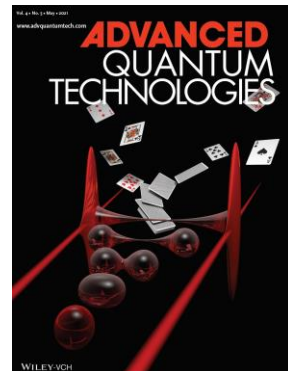
SCIENCE EDUCATION: making science education and careers attractive for your people:

Big emphasis at the partners' academic institutions to educate undergraduate students in quantum technology



OPEN SCIENCE: promoting transparency and reproducibility of research, increasing and widening the diffusion of knowledge:

Several publications of the consortium have been published as OpenAccess ...





QUANTERA

ERA-NET Cofund in Quantum Technologies



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