

Contribution ID : 55

Type : Oral

## New applications of twin beams: from quantum reading to quantum conformance test

martedì 12 ottobre 2021 10:30 (25)

We present quantum reading [3] realisation, describing theoretically and experimentally, as that quantum advantage is obtained by practical photon-counting measurements combined with a simple maximum-likelihood decision [4], demonstrating that quantum entanglement and simple optics are able to enhance the readout of digital data. Then we consider [5] a protocol on conformance test. We formulate the problem in the context of quantum hypothesis demonstrating that quantum resources, namely twin beams [1,2], and a simple receive are able to outperform any classical strategy in recognizing whether or not a certain quantum channel conforms to a reference one. [1] M.Genovese, J.Opt.18 (2016) 073002. [2] M.Genovese, arXiv2101.02891 [3] S. Pirandola, PRL106, 090504 (2011). [4] G.Ortolano et al. Sci.Adv.(2021) 7, eabc7796. [5] G.Ortolano et al.arXiv:2012.15282

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Session Classification : Session 3