

Currently, the main impediment for more efficient multi-pair experiments in quantum imaging is the fact that the area integrated by the detector is very small. The fast improvement on the field of CCD detectors, both in readout time and in sensitivity, opens the possibility for an experiment with four or more multi-pixel detectors with largely increased genuine multi-pair detection signal [28].

Another direction of improvement is the expansion of the dimension of the logical basis from qubits to qudits. This can be implemented by increasing the number of slits and adjusting the quantum correlation control setup in an appropriate way. With a larger space, many interesting options become available, such as non-locality [30–32] and contextuality [33] tests.

Acknowledgements

The authors would like to thank CNPq, CAPES and FAPEMIG Brazilian funding agencies, as well as the INCT-IQ (Instituto Nacional de Ciência e Tecnologia para Informação Quântica) for the financial support. P.-L. would like to thank Prof. Nivaldo Speziali for providing the double slits used in this work. We acknowledge support from Italian-Brazilian (CNR-CNPq) Contract (Quantum information in a high dimension Hilbert space).