

# Towards Practical Quantum Optical Coherence Tomography

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Quantum Optical Coherence Tomography (QOCT) was proposed as a technique for determining the internal morphology of semi-transparent samples, e.g. biological, with some clear advantages over analogous techniques based on classical physics. QOCT is based on the use of photon pairs with quantum entanglement properties. It has been shown that an even-order dispersion cancellation phenomenon occurs and that the resolution is enhanced by a factor of two, for a given bandwidth, compared to an equivalent classical system. However, considering a series of technical difficulties, including low photon pair fluxes, QOCT has not become a practical technique usable, for example, in the context of biomedicine. In this talk, we present a series of advances, coming from our research group, aimed at the practical implementation of QOCT.

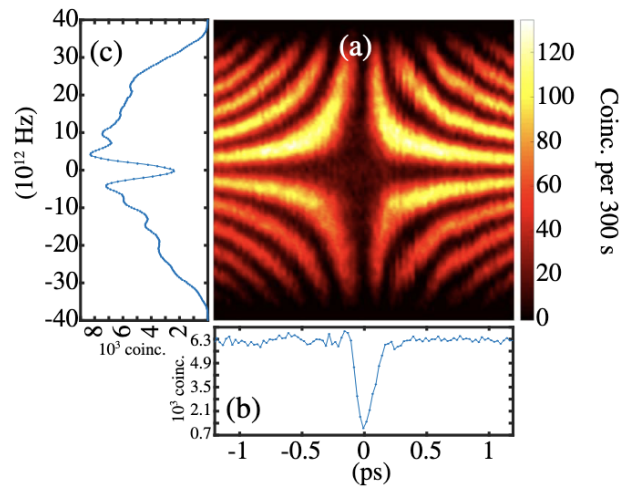


Figure 1: Two-dimensional HOM interferogram, with delay in the horizontal axis and resolved frequency in the vertical axis