

# Using Quantum Metrology to Detect Quantum Correlations

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Time and frequency aspects of light are either carefully controlled or given for granted. In quantum optics, the latter has been more customary, but in recent years considerable interest has been raised on the control and verification of spectral properties. In this talk, we will discuss on some recent progress in how the frequency domain can impact on parameter estimation, by looking at how the Kramers-Kronig relations link the precision of energy-resolved phase and loss estimation. In addition, we will discuss the measurement of frequency itself by tackling the problem of ghost spectroscopy with nonparametric methods, as well as the possible use of compressive sensing for a full characterisation of photon pairs from down conversion.

All these results point in the direction that an exhaustive control of spectral properties of quantum light is a demanding, but not a daunting task. New technological capabilities could be at reach.