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Quantum-limited estimation of continuous spontaneous localization

Thursday, 25 May 2017 14:45 (30 minutes)

In this talk I will apply the formalism of quantum estimation theory to extract information about potential collapse mechanisms of the continuous spontaneous localisation (CSL) form. The strength with which the field responsible for the CSL mechanism couples to massive systems is estimated through the optomechanical interaction between a mechanical resonator and a cavity field. In particular I will focus on all-optical measurements, such as homodyne and heterodyne measurements, given their practical feasibility. The performances of such strategies are also compared with those of a spin-assisted optomechanical system, where the estimation of the CSL parameter is performed through time-gated spin-like measurements.

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