ID de Contribution: **11** Type: **Non spécifié**

Heisenberg scaling in parameter estimation for quantum Markov dynamics

jeudi 14 mars 2024 09:30 (1 heure)

The estimation of an unknown parameter in quantum mechanical systems is a fundamental task for practical applications regarding quantum technologies. In the typical metrological scenario the unknown parameter is encoded in the state of n probes via local unitary operators; if the initial state is suitably engineered, one can estimate the parameter with a mean square error of the order of 1/n^2 (which improves the standard scaling of 1/n corresponding to initial uncorrelated states) and this is what is known as Heisenberg scaling. However, the achievement of the Heisenberg scaling is usually hindered by the presence of noise due to the interaction between the probes and the environment. In our talk we are going to discuss whether and under which conditions the Heisenberg scaling is restored in the case where the parameter to estimate is encoded by a Markovian dissipative dynamic, distinguishing the situation in which we can perform an arbitrary measurement, or we can only measure either the system or the environment. The talk is based on ongoing joint work with Madalin Guta.

Orateur: GIROTTI, Federico (Politecnico Milano)