



Contribution ID: 110

Type: Poster

Unravelling-Dependent Statistical Features in Open Quantum Systems via Quantum Trajectories

The quantum trajectory approach provides a powerful framework for simulating open quantum systems under continuous monitoring, with a Lindblad master equation governing the dynamics. A key feature of this approach is the non-uniqueness of the trajectory ensemble, known as an unravelling, with each choice corresponding to a different measurement scheme. In this work, we show how physically relevant statistical quantities—such as spectral densities and correlation functions—depend on the choice of unravelling. Focusing on a two-level system, we show that different monitoring schemes can lead to distinct statistical features, even though they reproduce the same ensemble-averaged dynamics. This highlights that statistical observables extracted from quantum trajectories are not solely determined by the Lindblad evolution, but can carry signatures of the underlying measurement process, which has important implications for the interpretation of continuously monitored quantum systems and for the extraction of physical information from trajectory-based simulations.

Primary authors: QUEVEDO, Fabian (Universidad Nacional de Colombia); Prof. VIVIESCAS, Carlos (Física Unal)

Presenter: QUEVEDO, Fabian (Universidad Nacional de Colombia)

Session Classification: Poster session

Track Classification: Statistical Physics