ID de Contribution: **14** Type: **Non spécifié**

Entropic Fluctuations in Quantum Two-time Measurement Framework

mardi 27 juin 2023 14:00 (35 minutes)

Non-equilibrium statistical mechanics has seen some impressive developments in the last three decades, thank to the pioneering works of Evans, Cohen, Morris and Searles on the violation of the second law, soon followed by the ground-breaking formulation of the Fluctuation Theorem by Gallavotti and Cohen for entropy fluctuation in the early nineties.The extension of these results to the quantum setting has turned out to be surprisingly challenging and it is still an undergoing effort. Kurchan's seminal work (2000) showed the measurement role has to be taken in account, leading to the introduction of the so called two-time measurement statistics (also known as full counting statistics). However introducing this frameworks leads to surprising phenomena with no classical counterpart. In this talk, I will present some work in progress, where we attempt to introduce a quantum equivalent of Gallavotti-Cohen (steady) entropic functional and compare it with the Evans-Searls (transient) entropic functional. We show that, due to the invasive measurement role, the situation differs considerably to its classical counterpart. We are able to obtain general results using functional and spectral analysis and operator algebras tools. Under more restrictive hypothesis, we can extend our analysis to the experimentally accessible indirect measurement framework (through an ancilla), using resonance analysis.

Joint work with T. Benoist, L. Bruneau, V. Jaksic, C.A.Pillet.

Orateur: PANATI, Annalisa (Université de Toulon)