

Speaker: Moritz Ferdinand Richter

Title: Witnessing non-Markovianity by quantum quasi-probability distributions

Place: Seminar room (915)

Abstract:

The talk will address the question of how to quantify quantum non-Markovianity, i.e. memory effects caused by the dynamics of an open quantum system, in case of continuous variable (CV) systems. The first part of the talk will present a notion of quantum non-Markovianity based on the information flow between system and environment as well as how to quantify the backflow of information from the environment to the system by the means of the trace distance between two quantum states as a measure of distinguishability. The second part will explain the structure of CV systems, introduce the important class of coherent states and discuss how to represent a given quantum state by so called quasi probability distributions over the systems phase space. In the final part of the talk a new method is presented demonstrating how one can use this quasi-probability distributions to witness non-Markovianity in CV systems. It will be shown that this witness works particularly efficient in the regime of high entropy and thus, for scenarios where the usual trace-distance based approach is especially demanding to compute.