Open quantum systems: models, limits and simulation

Wednesday 20th February - h 14:30
Polo Ferrari 1 – room A108

Abstract:

Most quantum systems are open, in the sense that they are suffering dissipation and decoherence due to the interaction with their environment or bath. The dynamics of such open quantum systems (OQS) has been successfully described in some cases, like for single or few-body OQSs that are weakly coupled to the bath. Nevertheless, as I will discuss in this talk much less is known about other cases, like many-body open systems, strong system-environment coupling, or systems coupled to anharmonic or strongly correlated environments. While the progress of quantum technologies requires an understanding of such situations, both numerical and theoretical tools become more involved and less efficient. In this context, I will finally (and very briefly) discuss the idea of using ultra-cold atoms to explore the dynamics of OQS in a variety of configurations and regimes that are not reachable otherwise.