

## **Pierre Rouchon: Towards generic adiabatic elimination for bipartite open quantum systems**

*mardi 6 juin 2017 11:45 (1 heure)*

This joint work with R. Azouit, F. Chittaro and A. Sarlette consider a composite quantum system consisting of a fast dissipative subsystem coupled to a slow one. Using the time-scale separation, we develop an adiabatic elimination technique to derive at any order the reduced model describing the slow subsystem. The method, based on an asymptotic expansion and geometric singular perturbation theory, ensures the physical interpretation of the reduced second-order model by giving the reduced dynamics in a Lindblad form and the state reduction in Kraus map form. We give explicit second-order formulas for Hamiltonian or cascade coupling between the two subsystems. These formulas can be used to engineer, via a careful choice of the fast subsystem, the Hamiltonian and Lindblad operators governing the dissipative dynamics of the slow subsystem.