

MCQM PhD Lecture: Stefano Marcantoni (Université Côte d'Azur, LJAD)

Wednesday, 13 December 2023 11:30 (1 hour)

Title: Introduction to the theory of open quantum systems

Abstract: In this lecture, I will introduce the framework commonly used to describe the dynamics of open quantum systems. This is based on completely positive dynamical maps and markovian master equations in GKSL (Gorini-Kossakowski-Sudarshan-Lindblad) form. I will discuss the general structure of the latter for an N-level system and present some simple examples. Among them, I will focus on the so-called "Davies generator" induced by the interaction with a thermal Bose field, whose rigorous derivation was originally given by Davies in the van Hove scaling limit and has been recently improved by Merkli uniformly in time. Finally, I will also mention a few directions of current research and point to some relevant literature.