

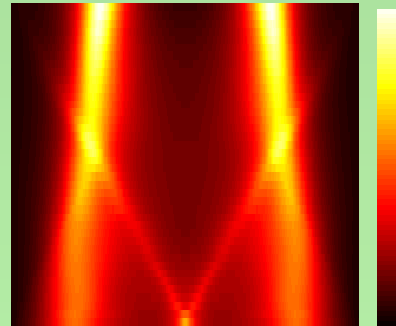
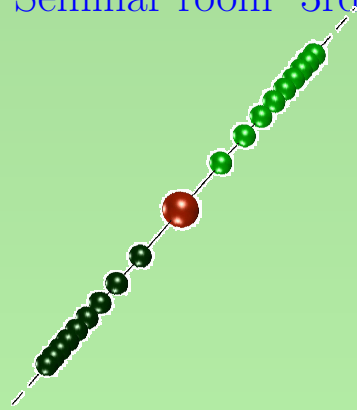
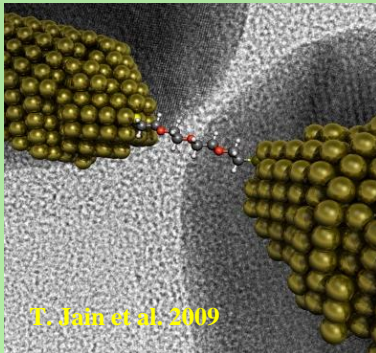
Open Quantum Systems

NAWI Master Module „Quantum Many Body Physics“

Prof. E. Arrigoni

Introductory lecture Tue, Oct 1.th 2019 at 1:15 PM

TU Graz, Seminar room 3rd floor (PH03104)



In a quantum mechanical system the **interaction with the environment** has more drastic consequences than in the classic case, the most important one being the **loss of coherence**. This aspect is particularly important in modern quantum optics and **quantum computer / quantum information**.

The (in principle exact) approach to treat system and environment as a single quantum state is unpracticable. The appropriate description deals with the dynamics of the system's **reduced density matrix**.

In this lecture I will discuss common and modern methods to study the dynamics of open quantum systems, focussing on ways to include the effects of the environment via so-called **Master Equations**. I will also introduce recent development in this field which are connected to the **current research activity** carried out at our Institute, and could be a **basis for a Master thesis work**.

The course consists of a **highly interactive class lecture** whereby the **presentation is alternated by exercises** and tasks carried out by the participants in order to achieve an optimal comprehension of the subject.

See also: <https://itp.tugraz.at/~arrigoni/vorlesungen/open/public/open.html>