# DS 27: Invited – D'Agosta

Time: Wednesday 10:15–11:00 Location: GER 37

**Invited Talk** DS 27.1 Wed 10:15 GER 37
**Stochastic approach to electronic and spin thermal transport**
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The theory of open quantum systems aimed at describing the interaction of a thermal bath with a quantum mechanical system is a field of intense research activity.

In this talk, I will present some recent developments in this area used to investigate the thermal transport both in electronic and spin systems. Especially at the nanoscale, the *standard* approaches based on the Fourier law or the Landauer formalism have been put under serious scrutiny and it has been shown that they can be in contrast with both analytical and numerical results.

After a brief introduction to the field, I will discuss the differences between the two main approaches, the stochastic Schroedinger equation (SSE) and the reduced density matrix formalisms, and show how the SSE can be used to describe the dynamics of a spin chain or an electron system coupled to an external thermal bath. I will discuss how the coupling with the environment might induce correlation between the states of the system and how we can explore the dynamical approach to thermal steady states.