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Condensed Matter Theory Seminar

Friday, April 15, 2016
9:00 am

Room A 450 / Theresienstr. 37, IV

Herbert Schoeller

RWTH Aachen

Dynamics of Open Quantum Systems I (Part II on April 22, 2016)

An open quantum system consists of a local quantummechanical system of fixed size coupled to infinitely large reservoirs in statistical equilibrium via a well-defined interaction.

The analysis of the time evolution of the reduced density matrix of the local system is of fundamental importance for nonequilibrium statistical mechanics. Of particular interest is the interplay of quantum coherence in the local quantum system and dissipation generated by the reservoirs. It is the purpose of this tutorial introduction to present a microscopic theory for the time evolution of open quantum systems, using a real-time renormalization group method which can cover systematically secular and logarithmic terms in the time evolution in all orders of perturbation theory. Examples are presented via the ohmic spin boson model, the interacting resonant level model, and the Kondo model.