IQST

IQST Seminar by Dr. Dominik Maile

Institute for Complex Quantum Systems, Ulm University, Ulm, Germany

Spin Chains from an Open Quantum System Perspective

Time: Thursday, 19 November 2026, 11:00
Location: University of Stuttgart
Pfaffenwaldring 57, Room 6.141

Abstract:

Coupled ensembles of two-level systems play a central role in quantum manybody physics, quantum thermodynamics, and emerging quantum technologies. In realistic settings, these systems inevitably interact with their environment, giving rise to decoherence and relaxation. Understanding the interplay between interactions, driving, and dissipation remains an important challenge, but also opens up interesting opportunities for controlling quantum many-body dynamics.
In this talk, I will give an introductory overview of dissipative spin systems from the perspective of open quantum systems, focusing on the role of environmental noise in adiabatic ground-state preparation. In particular, I will discuss whether dissipation, usually regarded as detrimental to quantum coherence, could instead become a useful resource for quantum optimization. Drawing on ideas from anomalous dissipation and dissipative quantum tunneling, I will outline how suitably engineered environments might influence tunneling between spin configurations and potentially facilitate ground-state preparation, even at zero temperature.

For more information, please contact Dr. Susanne Baumann at office@fmq.uni-stuttgart.de