



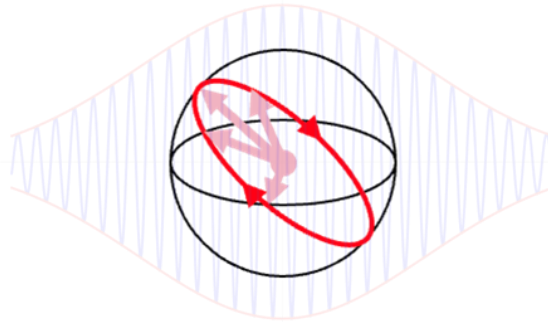
Physics Colloquium

Tuesday, 17 December 2024 at 16:30

Prof. Dr. Sebastian Diehl

University of Cologne

Driven open quantum matter: From micro- to macrophysics



In driven open quantum matter, coherent many-body quantum dynamics, drive, and dissipation play equally significant roles. These systems span a wide range of examples, including cold atomic gases, exciton-polaritons in solid state, and quantum devices designed for quantum information applications. These setups break the conditions of thermodynamic equilibrium on the microscopic scale, prompting questions about how this impacts macroscopic behavior, such as phases and phase transitions. We will examine two key points: First, we argue that drive and dissipation can be used constructively to maintain or even create fragile quantum mechanical correlations such as phase coherence, entanglement or topological order by carefully engineering the system. Second, we will showcase that a minor out-of-equilibrium perturbation on the microscopic level can lead to substantial macroscopic effects, including the emergence of novel non-equilibrium universality classes. This paves the way to active quantum matter scenarios in solid state physics.

Host: Prof. Dr. Klaus Kroy

Venue: Universität Leipzig, Faculty of Physics and Earth Sciences
04103 Leipzig, Linnéstraße 5, Small Lecture Hall

Everyone is welcome to a reception with coffee, drinks and cookies in the Aula following the talk.

For an up-to-date semester program, sign-up for the physics colloquium mailing list, and subscription to the digital calendars in CalDAV format, head to the colloquiums web page <https://www.physyes.uni-leipzig.de/fakultaet/veranstaltungen>.

