UNIVERSITÄT LEIPZIG

Faculty of Physics and Earth System Sciences
Prof. Dr. I. Sodemann
Prof. Dr. K. Taute

Physics Colloquium

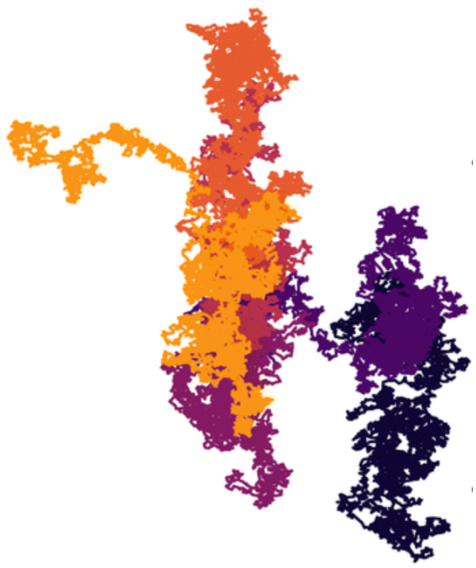
Tuesday, 13 Jan 2026 at 16:30

Prof. Dr. Aljaz Godec

University of Freiburg

Asymmetric thermal relaxation far from equilibrium

According to conventional wisdom, a macroscopic system placed in an environment with a different temperature relaxes (i.e., warms up or cools down) to the temperature of the surroundings. This relaxation is mediated by the flow of heat that is set only by the temperature difference. However, when rapid changes in temperature push a system far from thermodynamic equilibrium, thermal relaxation becomes asymmetric, which was predicted theoretically and confirmed experimentally. That is, under quite general conditions, heating is in fact faster than cooling. I will introduce and explain this curious relaxation asymmetry in reversible as well as driven, detailed-balance violating systems, highlighting that noisy systems generally do not relax by passing quasi-statically through local thermodynamic equilibria and that temperature is not meaningful or well defined.



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.physes.uni-leipzig.de/fakultaet/veranstaltungen.