

**Thursday, 25.06.2026  
12:10 – P1-02-110**

## **Floquet engineering of open systems**

**André Eckardt**

*Institut für Physik und Astronomie, Technische Universität Berlin,  
D-10623 Berlin, Germany.*

In recent years, we have seen tremendous progress in the control of quantum systems by means of time-periodic driving. This includes the realization of effective time-independent Hamiltonians with interesting properties, such as artificial magnetic fields coupling to the motion of charge neutral particles in quantum simulators (e.g. ultracold atoms in optical lattice or photons in superconducting circuits). Another paradigm of controlling quantum systems is reservoir engineering. Here a system is coupled to a controlled environment that is designed to either cool the system or to stabilize a non-equilibrium steady state of interest. I will talk about how to combine both approaches, Floquet and reservoir engineering, for the preparation and stabilization of interesting states of matter (or light).

I will start with an introduction to isolated Floquet systems, Floquet engineering and Floquet heating. The latter necessarily occurs in generic driven many-body systems and spoils Floquet engineering. I will then describe the interplay of periodic driving and dissipation in open Floquet systems. Finally, I will discuss concrete applications. This includes how to employ engineered baths for the preparation of equilibrium-like fermionic topological insulators in Floquet topological band structures. I will, moreover, discuss the dissipative preparation and stabilization of gapped ground states of effective Floquet Hamiltonians in interacting systems, such as bosonic Mott insulators and topologically ordered fractional Chern insulators.