Contribution ID: **27** Type: **Invited Talk**

Energy transport and symmetry breaking in a microscopic power grid

Thursday 29 November 2018 18:10 (25 minutes)

In this talk, I will discuss the role of emergent symmetries for energy transport through microscopic networks with active gain and loss sites. Despite its simplicity, such a network exhibits a range of anomalous transport phenomena, which arise from the competition between coherent and incoherent processes in combination with non-linear saturation effects. Specifically, I will show that such networks exhibit a non-equilibrium phase transition between a noise-dominated and a coherent transport regime. This transition is closely related to the phenomenon of PT-symmetry breaking in balanced gain-loss systems, but occurs more generally, even in systems where this symmetry is not reflected in the underlying equations of motion. Therefore, this mechanism has practical consequences for the distribution of energy over microwave, optical or phononic channels, in particular close to or at the quantum limit.

Content of the contribution

Theory

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