



PHYSIKALISCHES KOLLOQUIUM

Vortrag: **Prof. Dr. Ronny Thomale**
Theoretische Physik I,
Julius-Maximilians-Universität Würzburg



Thema: **Topoelectric circuits - the drosophila for synthetic topological matter**

Zeit und Ort: Dienstag, 27.4.2021, 16:40 Uhr
Online-Meeting: BBB / Zugang mit Browser (Firefox oder Chrome)
- Teilnehmende mit ZIH-Login über folgenden Link:
<https://selfservice.zih.tu-dresden.de//link.php?m=110723&p=d7e7a814>
- Teilnehmende ohne Hochschul-Login über folgenden Link:
<https://selfservice.zih.tu-dresden.de/link.php?m=110723&p=f604b73b>

Leitung: Prof. Dr. Matthias Vojta

Kurzfassung: Pioneered by topological insulators and semimetals, topological states of matter have shaped a significant part of contemporary condensed matter physics, and have largely branched out into adjacent fields such as photonics, mechanics, and other metamaterial setups. Recently, the frontier has shifted to topological systems which embody enrichments imposed by Floquet theory, non-Hermiticity, and non-linearity. In analogy to the paradigmatic example of the drosophila as the biological system most amenable to studies of genetic functionality, we establish electric circuit networks as the canonical platform for the study of topological states of matter. We explore the topological functionality of circuit networks realizable through the plethora of available electronic components, which have been perfected through decades of industrial refinement. Approaching topology from different angles involves circuit network realizations of periodic driving, gain and loss, non-reciprocity, and synthetic dimensions. The combination of node-resolved measurability, flexibility of boundary conditions, and local as well as non-local defect tunability ensures a large scope of diagnostic settings. The outstanding accessibility and scalability of electric circuit metamaterials will provide a new laboratory for topological matter.

Biographie: Ronny Thomale studied physics and computer science at the University of Karlsruhe and University of California, Berkeley (2002-2005). After a PhD in Karlsruhe in 2008, he pursued his postdoctoral stages at Princeton University as a Feodor Lynen Fellow and Stanford University as an SITP Fellow, before accepting a tenure track professorship at the EPF Lausanne in 2012. In 2013 he moved to the Julius-Maximilian University Würzburg where since 2016 he holds the chair for theoretical physics 1 (TP1).

