Sondernsprechungsbereich 1277

Emergent Relativistic Effects in Condensed Matter - From Fundamental Aspects to Electronic Functionality

SFB 1277 / Festkörpertheorie-Seminar

Sprecher: Dr. Dmitry G. Polyakov
Karlsruhe Institute of Technology (KIT), Institute of Nanotechnology

Ort: PHY 5.0.21

Zeit: Donnerstag, 31. Januar 2019, 15.15 Uhr

Thema: Fermionic approach to kinetics of a $\nu=2/3$ quantum Hall edge

Abstract

I will discuss the transport properties of a “composite” quantum Hall edge (quantum Hall line junction) made up of two or more modes, when these correspond to different filling fractions. Asymmetry between the modes plays a conceptually important role in the problem, especially in the presence of disorder that mixes them up. One example of a composite edge, on which I will primarily focus, is that at the bulk filling fraction $2/3$. This is also a prominent example of quantum Hall edges possessing neutral modes.

We develop a fermionic approach to the problem, based on the representation of the edge in terms of fermions subject to disorder and a peculiar type of singular dynamic interactions. The fermionic kinetic framework provides a way to describe the strongly correlated edge at non equilibrium. Work done in collaboration with Y. Gefen and I. Gornyi.

Gastgeber: Prof. Dr. Ferdinand Evers