



e-conversion



Seminarankündigung

**Dienstag, 16. November 2021
13:00 Uhr**

ONLINE via ZOOM

<https://tum-conf.zoom.us/j/69204802940>

Meeting-ID: 692 0480 2940

Kenncode: 138619

“Electron hydrodynamics in two-dimensional Dirac systems”

Graphene has recently emerged as a promising experimental platform for observing hydrodynamic electron transport. In this elusive transport regime, strong electron-electron interactions can give rise to a flow of electrons which follows a Navier-Stokes equation known from classical hydrodynamics. In our work, in an effort to elucidate to what extent quantum-mechanical features persist in this transport regime, we have extended this paradigm to systems featuring spin-orbit coupling or band structures with a nonzero Berry connection. Moreover, we have investigated two-dimensional electron systems with nontrivial geometries and increased electron flow velocities. We show that the non-linearity of the Navier-Stokes equation can give rise to shock fronts in this case, which could serve as a useful experimental signature, distinguishing hydrodynamic from ballistic or diffusive electron flow.

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