

## PHYSIKALISCHES KOLLOQUIUM

### Wintersemester 2022/23

Das Kolloquium findet (soweit nicht anders angegeben) **jeweils montags um 17:15 Uhr in Präsenz im Röntgen-Hörsaal des Physikalischen Instituts, Hubland Campus Süd, Universität Würzburg und online via Zoom statt.**

Link zum Zoom-Raum:

<https://go.uniwue.de/physkolloqzoom>



**24.10.2022**

Prof. Dr. Glenn Solomon

University of Adelaide, Department of Physics and Institute for Photonics and Advanced Sensing (IPAS)

### **Chiral transport of hot carriers in graphene in the quantum Hall regime**

#### **Abstract**

Quantum Hall systems traditionally study 2D electrons in a perpendicular magnetic field using near-equilibrium transport measurements as a characterisation tool. The field is of broad interest as it covers low-dimensional quantum systems, strong charge correlations, and topological physics.

An interesting special case is the integer quantum Hall effect in graphene, where the gapless, relativistic band structure has unique consequences, such as anharmonic Landau level (LLs) energy spacing and the simultaneous presence of both carrier types. Here [1], we photo-excited electrons and holes to high LLs and use photocurrent measurements to measure the relaxation dynamics of the carriers in a regime important for carrier multiplication. Our results lead to a solid understanding of the relaxation processes in graphene over different magnetic field strength regimes, including indications of a sizable carrier multiplication.

[1] B. Cao, T. Grass, et al., Chiral transport of hot carriers in graphene in the quantum Hall regime, arXiv:2110.01079, Accepted for publication in ACS Nano (2022).

Für die Dozentinnen bzw. Dozenten der Fakultät

PD. Dr. Meyer, Prof. Dr. Assaad, Dr. Feichtner und Hr. Kögel