



e-conversion



Seminarankündigung

**Dienstag, 27. Oktober 2020
13:00 Uhr**

ONLINE via ZOOM

“Nanoscale materials: Influence of size effects on electron-phonon and phonon-phonon interaction”

Nanoscale and 2D materials are building blocks of today's electronics and will contribute to future energy and quantum applications. In my group, we design and perform experiments to investigate transport properties at the nanoscale, i.e. for single nanowires, thin films, and quantum structures. On one hand, the material parameters from bulk, such as the electrical and thermal conductivity or the Seebeck coefficient, need to be reconsidered when size effects come into play. On the other hand, size control may be applied for future applications. From the fundamental point of view, size effects may influence the electron-phonon and phonon-phonon interactions. In this presentation, I will provide an overview of our experimental approaches to characterize charge and heat transport in nanoscale materials and exemplify size effects as observed for metals (Ag), half-metals (Bi_2Te_3), semiconductors ($\beta\text{-Ga}_2\text{O}_3$) and low-dimensional electron gases (AlGaAs/GaAs). Recent progress hints towards the prospect of standardization in the measurement techniques, which will improve the scientific data and exchange.

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