



TECHNISCHE UNIVERSITÄT  
CHEMNITZ

# Institut für Physik Physikalisches Kolloquium



Mittwoch, 15.01.2020, **um 11:15 Uhr**

Ort: Reichenhainer Str. 90;  
Zentrales Hörsaal- und Seminargebäude,  
Raum 2/N013

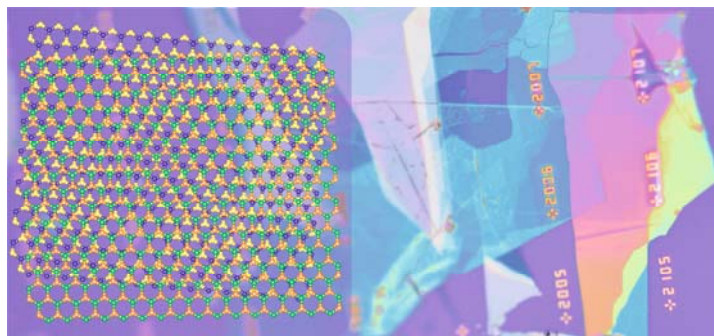
**Prof. Dr. Tobias Korn**

Universität Rostock, Institut für Physik

## Optical spectroscopy of two-dimensional crystals and van der Waals heterostructures

Following the discovery of graphene, many other layered materials have recently been studied in the limit of few or even single atomic layers. Among them, transition-metal dichalcogenides (TMDs) have garnered a lot of attention. While they are indirect-gap semiconductors in the bulk, monolayers are direct-gap semiconductors showing pronounced photoluminescence. Monolayer TMDs are characterized by a peculiar, multi-valley band structure and by tightly bound excitons, which are stable well beyond room temperature. I will present some recent results on valley dynamics and on observation of complex quasiparticles (trions and biexcitons).

Going beyond monolayers, two-dimensional crystals can be stacked into van der Waals heterostructures. By combining two different TMDs, a type-II heterostructure is formed, in which electron-hole pairs are separated into adjacent layers. These remain Coulomb-correlated and form interlayer excitons. I will present some recent results on the nature of interlayer excitons, their dynamics, exciton-exciton interactions and valley physics.



Alle Zuhörer sind ab 11:00 zu Kaffee und Tee vor dem Hörsaal eingeladen.



Informationen zum Vortrag erteilt:  
Prof. Dr. Ulrich T. Schwarz, Tel. 0371 531 30001

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