



TECHNISCHE UNIVERSITÄT  
CHEMNITZ

# Institut für Physik Physikalisches Kolloquium



Mittwoch, 30.01.2019, um **15:00 Uhr**

Ort: Reichenhainer Str. 90;  
Zentrales Hörsaal- und Seminargebäude,  
**Raum 2/N113**

**Prof. Dr. S. Mehdi Vaez Allaei**

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## Phononic heat transport and thermal rectification in low dimensional structures

Manufacturing nanoscale electrical, thermal and mechanical devices, has motivated deep understanding of heat transport in low dimensional systems, specifically for heat management and thermoelectric purposes. In phonon dominated thermal transport, phonons can be manipulated for controlling heat transport at all temperatures [1], and for example, the thermal counterpart of electrical diodes corresponding a better thermal conductance in one direction rather than the opposite one can be obtained [2-8]. Due to types of interactions between components in nanoscale heterostructures such as layered mthe different edia, the transport is more complicated [9]. Here, using molecular dynamics simulations as well as DFT calculations, asymmetric and anisotropic thermal transport in different nanostructures, including functionalized and/or layered nanostructures will be discussed. In particular, transport through and across interface and grain boundaries, specially in asymmetric layered media [5,7-10], and the important of anisotropy in the structure of 2D systems, e.g. arsenene [11], will be addressed.

### References

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Alle Zuhörer sind **ab 14:45** zu Kaffee und Tee vor dem Hörsaal eingeladen.

Informationen zum Vortrag erteilt:  
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