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FACHBEREICH PHYSIK

Allgemeines Physikalisches Kolloquium

Donnerstag, 15.12.2022 um 16 Uhr c.t.

Prof. Saskia Fischer

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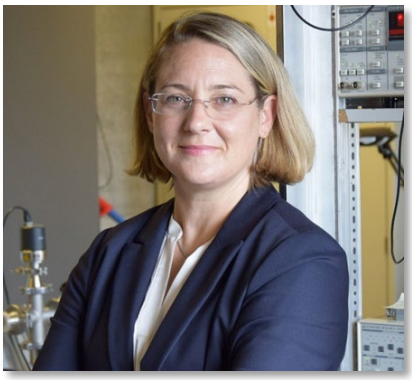

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Why size matters: Charge and heat transfer in electronic materials

Understanding of charge and heat transfer in electronic materials is important for developing routes, both, for energy materials such as solar cells, batteries, low- and high-power electronics as well for future quantum electronic applications. In particular, dimensionality and size control may be advantageously introduced into material and device design. Commonly, charge and heat flow are considered to be well-understood by taking into account established transport material parameters for the bulk, such as the electrical and thermal conductivity. However, considerable deviations in electron-phonon and phonon-phonon interactions may occur when surfaces and interfaces effects come into play. Examples of the influence of size effects on material parameters will be given. Challenges for measurement techniques at the nanoscale will be discussed and recent progress demonstrated.

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