Einladung zum **SONDERKOLLOQUIUM**

Es spricht: **Dr. Artem Mishchenko**
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über: „New Physics in van der Waals heterostructures“

**Zeit und Ort:**
Donnerstag, 05.07.2018
Hörsaal H 34, 10.00 Uhr

**Abstract:**
The concept of heterostructures based on atom- or molecule-thick crystals reveals numerous exciting physical phenomena, some of which will be presented in the lecture. One of the topics will be on lateral superlattices, where the moiré periodicity of graphene aligned with boron nitride enabled the observation of elusive Hofstadter butterflies, the detection of topological currents and the discovery of novel quantum oscillations. Another part will be touching the possibility of positioning 2D crystals in very close but controlled proximity to one another, which allows studying, for example, tunnelling, where the use of semiconducting monolayers leads to the creation of optically active heterostructures. As the new physics in van der Waals heterostructures allowed for a demonstration of vertical tunnelling transistors and diodes with negative differential conductance, photovoltaic devices, and even nanometre-thick light-emitting diodes, we will be discussing some of the applications as well. Importantly, the range of functionalities of van der Waals heterostructures is expected to grow much further with increasing the number of available 2D crystals and improving their electronic quality.