TECHNISCHE UNIVERSITÄT DRESDEN

IFW

Announcement & Invitation

Lecture on

The Physics of 2D Quantum Materials

Alexey Popov, Axel Lubk, Uri Vool,
Joseph Dufouleur, Andreas Koitzsch, Andy Thomas

Where? **IFW Dresden, Helmholtzstraße 20, room D2E.27**

When? **Monday, 6. DS (16:40 – 18:10); First lecture: Oct. 13th**

OPAL: https://bildungsportal.sachsen.de/opal/auth/RepositoryEntry/46291255302

WHO? **Advanced bachelor or master students**

The lecture will be given in English.

When the available dimensionality of a system is reduced, its internal structure and physical response can change drastically. 2D materials behave completely differently from their 3D counterpart, and have given rise to a new class of semiconductors, insulators, metals, magnets and superconductors. These materials can be tuned in situ by electrical gating, and new materials can be created “by design” by stacking different material layers, sparking significant interest for fundamental study of condensed-matter physics and technological applications. This class will introduce this novel field of study, focusing on several central subclasses of 2D quantum materials:

- Graphene: massless electrons, ballistic transport, emergent effects in multilayers
- Transition metal dichalcogenides: layer dependence, spectroscopy, and topology
- 2D magnetism, antiferromagnets, and magnetic topological insulators
- 2D superconductivity: topological superconductivity and phase transitions