UNIVERSITÄT LEIPZIG

Fakultät für Physik und Geowissenschaften

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Physics Colloquium

Tuesday, 26 January 2021 at 17:15

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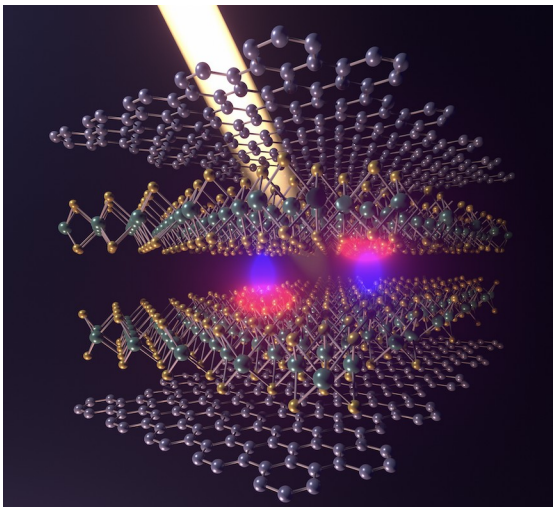
CNRS-Toulouse University, France

Atomically thin semiconductors for photonics and spintronics

The physical properties of atomic monolayers often change dramatically from those of their parent bulk materials. Prime examples are monolayers of graphite (graphene) and MoS_2, as their ultimate thinness makes them extremely promising for applications in electronics and photonics. They also give access to new degrees of freedom of the electronic system such as the valley index or interactions between quasi-particles such as excitons (Coulomb bound electron-hole pairs) exploring new quantum states.

Different layered semiconductors, insulators and magnetic materials can be stacked manually to form van der Waals heterostructures with atomically sharp interfaces. This results in unique control of electronic, optical and spin properties on a monolayer scale. In this seminar we introduce the optical properties and spin dynamics of these emerging layered materials, with focus on transition metal dichalcogenides, and outline future research opportunities in this multidisciplinary field.



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