

**PHYSICAL COLLOQUIUM**  
**INVITATION**

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Monday, 19.11.2018, 4.15 p.m., W2-1-148

speaks

**Prof. Dr. Frank Jahnke**

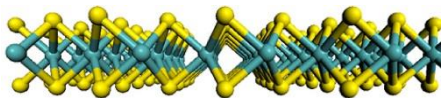
**Institute for Theoretical Physics**

**University of Bremen, Bremen, Germany**

about

**" Atomically thin semiconductors  
as a novel active material for nanoscale devices"**

Atomically thin layers of transition metal dichalcogenides have emerged in the wake of graphene as new class of optically active materials. After the initial observation of strongly enhanced photoluminescence in monolayer materials, the use as active material in lasers or single-photon emitters is presently explored. New and exciting optical properties are the result of the two-dimensional carrier confinement and a particularly strong Coulomb interaction due to reduced dielectric screening.



Example of an atomically thin layer with Mo atoms (indigo) and S atoms (yellow). The MoS<sub>2</sub> monolayer forms a direct band-gap semiconductor with strong photoluminescence in the visible spectral range.

During the talk, electronic and optical properties of this new material class are reviewed. We discuss that structural properties and morphology alone do not explain the optical properties. It is rather the interaction effects of excited carriers, which determine many experimental results.

All interested persons are cordially invited.

Sgd. Prof. Dr. Christoph Lienau / Dr. Antonietta des Sio