



e-conversion



# Seminarankündigung

**Donnerstag, 27. Juni 2019  
11:00 Uhr**

**WSI, Seminarraum S 101**

## **“Control of light-matter interaction in van der Waals materials”**

Two-dimensional (2D) van der Waals materials have emerged as a very attractive class of optoelectronic material due to the unprecedented strength in its interaction with light. In this talk I will discuss approaches to enhance and control this interaction by integrating these 2D materials with microcavities, and metamaterials. I will first discuss the formation of strongly coupled half-light half-matter quasiparticles (microcavity polaritons) [1] and their spin-optic control [2] in the 2D transition metal dichalcogenide (TMD) systems. Following this I will discuss the formation of polaritons using excited states (Rydberg states) to enhance the nonlinear polariton interaction. Recent results on electrical control [3] and realization of a polariton LED based on 2D TMDs will also be presented. Finally, I will talk about strain activated room temperature single photon emission from hexagonal boron nitride (hBN) [4] which can be integrated with microresonators on silicon photonic platform.

### **References:**

- [1] X. Liu, et al., *Nature Photonics* **9**, 30 (2015)
- [2] Z. Sun et al., *Nature Photonics* **11**, 491 (2017)
- [3] B. Chakraborty et al., *Nano Lett.* **18**, 6455 (2018)
- [4] N. Proscia, et al., *Optica* **5**, 1128 (2018)

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