Carl von Ossietzky
Universität
Oldenburg
Institut für PHYSIK

PHYSICAL COLLOQUIUM

INVITATION

Monday, 22.11.2021, 4.15 p.m.,
video conference: https://meeting.uol.de/b/anj-2vc-j6s-fwe

speaks

Ass. Prof. Stéphane Kéna-Cohen,
Department of Engineering Physics, Polytechnique Montréal,
Montréal, Québec, Canada

about

"Manipulating Light and Matter in van der Waals-bonded Semiconductors"

Light-matter interaction is at the heart of most optical phenomena that we are familiar with such as absorption, emission and scattering. We normally treat these by assuming that light does not significantly modify the underlying electronic states of the material it interacts with. The extreme case where light-matter interaction is so strong that this assumption fails has been coined the strong-coupling regime. In this regime, new half-light, half-matter quasiparticles called polaritons emerge. We will describe some of the fascinating new physics that occur in this regime such as how polaritons can be used to create room-temperature analogs to Bose-Einstein condensates and superfluid He using light instead of atoms. The talk will focus on polaritons in van der Waals-bonded materials such as molecular thin films and two-dimensional semiconductors, which allow for polaritonic physics to occur at elevated temperatures. If time permits, we will also talk about some of our applied work using these material sets including the demonstration of record-efficiency near-infrared organic light-emitting diodes and the first mid-infrared light-emitting diodes based on 2D materials.

All interested persons are cordially invited.

Prof. Dr. Christian Schneider