CARL VON OSSIETZKY universität OLDENBURG
Institut für PHYSIK

PHYSICAL COLLOQUIUM

INVITATION

Monday, 14.12.2020, 4.15 p.m.,
Video Conference: https://meeting.uol.de/b/anj-2vc-j6s-fwe

speaks

Jun. Prof. Dr. Giancarlo Soavi,

Ultrafast Optical Spectroscopy,

Friedrich Schiller University of Jena, Germany

about

"Ultrafast spectroscopy of 2D materials"

After more than fifteen years from the exfoliation of the first single layer of carbon atoms in 2004, atomically thin and layered materials still attract great attention for both fundamental and applied research. In large part, the technological interest for layered materials goes in the direction of photonic and opto-electronic devices enabled by strong linear and nonlinear light-matter interactions. In particular, layered materials are easy to integrate on standard photonic platforms (fibers, waveguides and microrings) and their optical properties can be widely tuned by external electric fields. A further advantage of layered materials is the possibility to tailor their optical and electronic properties by building on-demand heterostructures. For instance, this has very recently led to the study of superconductivity in twisted bilayer graphene or high temperature excitonic Bose-Einstein condensation and Moiré excitons in type II semiconducting heterostructures. Further, technological applications such as light-emitting-diodes, quantum cascade lasers, photodetectors, and photovoltaic devices are all governed by interlayer interactions in nanoscale-engineered heterostructures. In this seminar, I will present our activities on the fabrication of opto-electronic devices based on layered materials and related heterostructures and I will show few examples of electric-field tuning of their ultrafast electron and exciton dynamics and of their nonlinear optical response.

All interested persons are cordially invited.

Sgd. Prof. Dr. Caterina Cocchi