UNIVERSITÄT DUISBURG ESSEN

PHYSIK E=

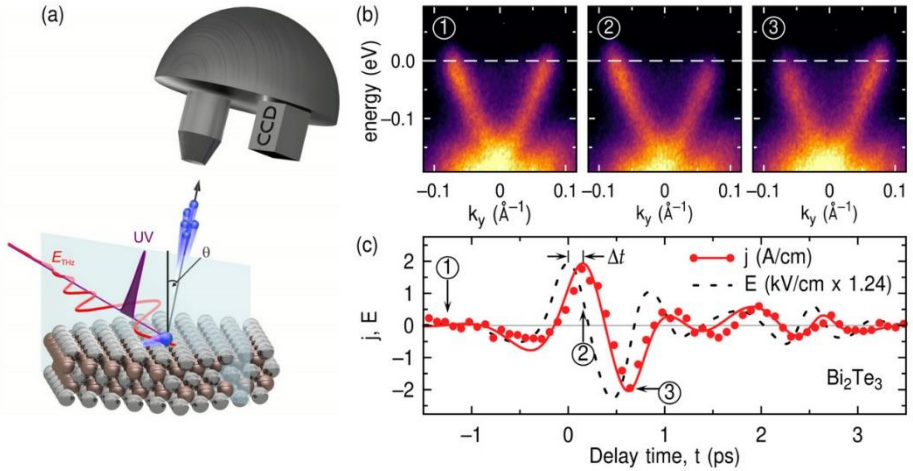
Physikalisches Kolloquium

Mittwoch, 02.02.2022
13:00 Uhr
Nur per Zoom

Nur als Zoom-Meeting! https://uni-due.zoom.us/j/65292783312?pwd=Umd1NGNFRmx2RTg1ZUFhRkpXWnZ6dz09

Momentum-Space Movies of Electrons at Interfaces and in 2D Semiconductors

Prof. Dr. Ulrich Höfer, Philipps-Universität Marburg



Time-resolved photoemission combines femtosecond pump-probe techniques with angle-resolved photoelectron spectroscopy (ARPES). New opportunities for this powerful technique arise in combination with THz excitation on one hand and ultrashort XUV probe pulses on the other hand. I will present three examples and explain how THz-ARPES can be used to measure current transport in the Dirac surface state of a three-dimensional topological insulator in a contact-free fashion and with femtosecond time-resolution [1, Figure], discuss how time-resolved photoemission orbital tomography can access ultrafast electron transfer processes at metal/organic contacts [2], and finally reveal the formation of dark excitons in a two-dimensional semiconductor a few 10 fs after optical excitation [3].

[1] J. Reimann et al., Nature 562, 396 (2018).
[2] R. Wallauer et al., Science 371, 1056 (2021).
[3] R. Wallauer et al., Nano Letters 13, 5867 (2021).