

Graz Advanced School of Science
PHYSICS COLLOQUIUM OF THE UNIVERSITY OF GRAZ AND
THE GRAZ UNIVERSITY OF TECHNOLOGY

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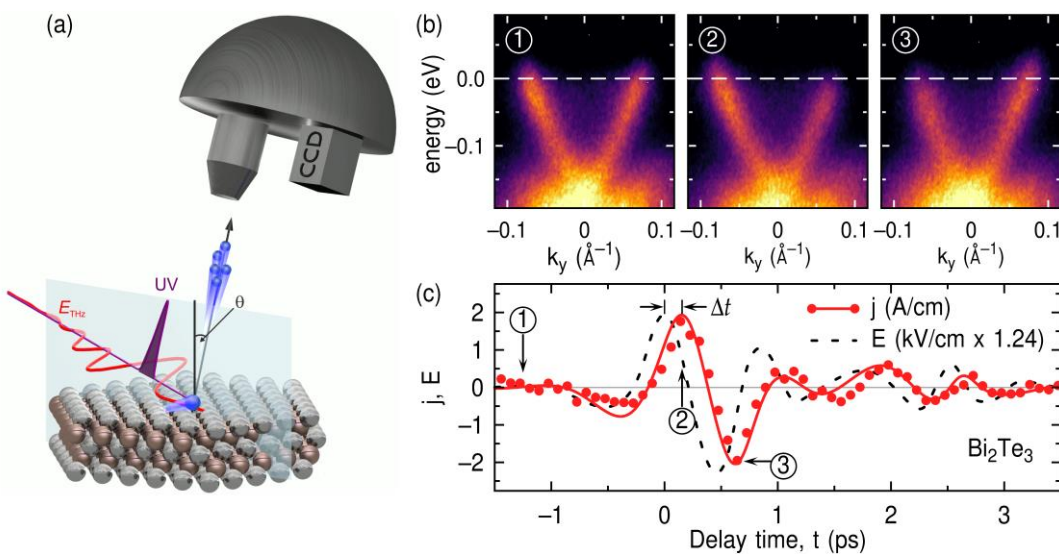
Momentum-Space Movies of Electrons at Interfaces and in 2D Semiconductors

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.*, arXiv:2012.11385 (2020).



Subcycle time-resolved THz-ARPES of Dirac currents in the topological surface state of Bi_2Te_3

Date: Tuesday, 11 May 16:15 talk and discussion

Location: <https://zoom.us/j/95934563456?pwd=RW5lLzgvU2VoOXEyZHpCVUdGREg4dz09>

Meeting-ID: 959 3456 3456

Kenncode: 128856

Host: Peter Puschnig