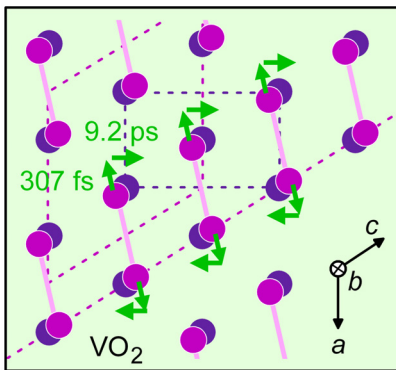


## Munich-Centre for Advanced Photonics (MAP)

Doktorarbeit / PhD Thesis

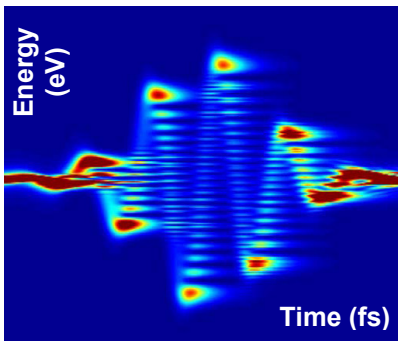
### Attosecond Auger-Electron Streaking



Baum, Yang, Zewail,  
*Science* 318, 788 (2007).

The length and time scales of atoms in motion are *picometer* and *femtoseconds*; electrons can move within *attoseconds*. Ultrafast electron diffraction provides direct a visualization of atomic-scale action in all four dimensions of space and time – a ‘movie’ of what happens during processes like phase transformations, chemical reactions, or electronic transitions in solids.

Our group aims at shortening the electron pulse duration into the regime of attoseconds. Hence we first need to find a way for measuring such extremely short durations. One approach is based on streaking in laser fields: The short electron pulses hit a surface and generate secondary Auger electrons, which are shifted in energy if they are “born” during the presence of a laser pulse. This provides 2D-spectrograms that allow reconstruction of, both, the laser’s electric field and the electron pulse duration.



Your task will be the improvement of such an existing setup and operation of this experiment. Besides characterizing electron pulses, this technique also promises insight into the physics and timing of secondary electron generation with attosecond resolution. The research is part of the excellence cluster “Munich Centre for Advanced Photonics” (MAP) and is located at MPQ and LMU in Garching. The position is available from January 2010.

We require enthusiasm for experimental work, experience with femtosecond lasers or electron beams, and excellent grades. Please contact us with a CV! (gerne auch auf deutsch)

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