



Sonderforschungsbereich 1242

Nichtgleichgewichtsdynamik kondensierter
Materie in der Zeitdomäne

UNIVERSITÄT
DUISBURG
ESSEN

Offen im Denken

**10.07.2018 / 10 Uhr c.t., Raum MG 272
Campus Duisburg**

Ultrafast nanoscale dynamics mapped by ultrashort electron pulses

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Ultrafast transmission electron microscopy (UTEM) is a promising technique for imaging femtosecond and picosecond dynamics on nanometer length scales. In UTEM, ultrashort electron pulses are utilized to stroboscopically probe optically triggered processes. Dynamics in structural, electronic and spin degrees of freedom are generally accessible in UTEM by utilizing the versatile imaging and diffraction capabilities of state-of-the-art electron microscopes. Whereas time-resolved electron microscopy techniques already have a long tradition, substantial progress in UTEM has been made in recent years, based on the development of high-coherence light-triggered electron sources.

In this talk, I will give an overview on current UTEM experiments, with examples on diffractive mapping of ultrafast nanoscale strain dynamics, imaging of magnetic dynamics and the coherent control of electron pulses by intense optical near-fields.

Für diese Zeit steht eine Kinderbetreuung nach vorheriger Anmeldung zur Verfügung.

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