



# SFB1242

Nichtgleichgewichtsdynamik kondensierter  
Materie in der Zeitdomäne

UNIVERSITÄT  
DUISBURG  
ESSEN

*Open-Minded*

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## **Time resolved photoelectron spectroscopy of quantum materials**

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The recent developments of femtosecond photon sources from the THz to ultraviolet spectral range have largely enriched the methods to probe condensed matter on ultrafast timescales. Among the possible approaches, time and angle resolved photoelectron spectroscopy is the only one capable of visualizing the temporal evolution of electronic excitations in reciprocal space. I will review the basic principles of this experimental method and discuss some of our recent results in quantum materials. First I will discuss about semiconducting materials with interesting optoelectronic applications. In the case of hybrid perovskites, we explicitly discriminate the initial thermalization of the electrons from slower dynamical processes. The Anderson localization of the excited electrons in degraded samples is consistent with the progressive reduction of photoconversion efficiency in operating devices. In the second part of the talk I will move to the carriers dynamics in high correlated materials. Our analysis show that fluctuations are essential in order to model the photoinduced melting of the superconducting gap in the cuprates.

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

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