



# Sonderforschungsbereich 1242

Nichtgleichgewichtsdynamik kondensierter  
Materie in der Zeitdomäne

UNIVERSITÄT  
DUISBURG  
ESSEN

Offen im Denken

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Campus Duisburg**

## **Femtosecond carrier relaxation dynamics probed by broadband optical time-resolved spectroscopy**

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Studying time- and spectrally-resolved changes of both transmission and reflectivity of a thin film excited by a femtosecond optical pulse provides direct access to the temporal evolution of the complex dielectric function over a broad spectral range. Analyzing the data using standard models of optical spectroscopy provides access to the time-evolution of the low energy electronic structure in solids. I will first illustrate the method by addressing the electron thermalization dynamics in copper. Here, broadband time-resolved spectroscopy provides access to the time-evolution of the electronic distribution function, and to the electron-phonon coupling strength. As the second example, I will address photodoping phenomena in the Mott insulator  $\text{La}_2\text{CuO}_4$ , the parent compound of the La-based cuprate high temperature superconductor.

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

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