

Einladung
zum
Physikalischen Kolloquium
Montag, 16.01.2017
16:15 Uhr in N24/H13

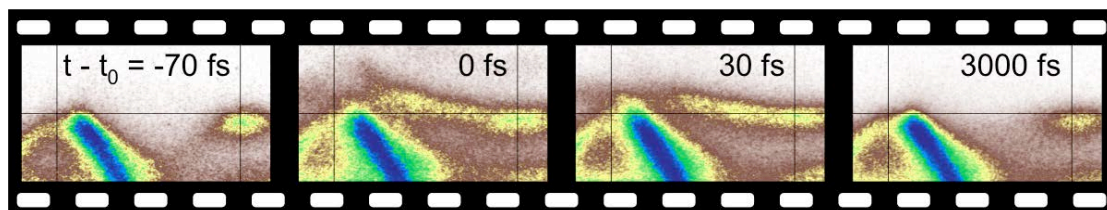


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Femtostroboscopic nanospectroscopy of complex materials

The recent development of ultrashort-pulsed photon sources operating in the extreme ultraviolet to hard x-ray regime, namely laboratory-based high-harmonic-generation (HHG) sources and kilometer-scale free-electron lasers (FELs), has opened broad avenues in the study of molecular and materials dynamics on the time scales of fundamental atomic and electronic processes. One exceedingly popular approach is to take stroboscopic diffraction patterns of molecules and crystals, thus capturing the motion of atoms in reciprocal space in real time. This is often referred to as molecular movie making. Yet, an at least equally fascinating idea is to shoot electronic structure movies, i.e., to directly observe what the electrons are doing on the femtosecond to picosecond time scale. Here the method of choice is time-resolved pump-probe photoemission spectroscopy.

A particular allure of this technique is that it can provide novel direct insight into the microscopic dynamics of complex materials—materials in which strong electron-electron and electron-lattice interactions lead to emergent phenomena such as (high-temperature) superconductivity, metal-insulator transitions, or density-wave formation. In this talk, after an introduction to the concepts and technology of electronic structure movie making, I will present exemplary results obtained from a selection of complex materials with a particular focus on layered transition-metal dichalcogenides.



Ab 16.00 Uhr Kaffee, Tee und Kekse vor dem Hörsaal H13

Organisation: Prof. Dr. F. Jelezko, Tel. 23750, Host: Prof. Dr. U. Kaiser, Tel. 22950, off.: 22951