CFEL SCIENCE

SEMINAR

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Zoom virtual meeting https://zoom.us/j/91567735184

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Imaging structure and dynamics of OCS

Imaging the ultrafast dynamics of molecules requires experimental methods that offer atomic spatial and femtosecond temporal resolution. The possibility to prepare cold, controlled molecular samples in the gas-phase, combined with elaborate methods to fix the molecules in space, are important prerequisites to image molecular dynamics directly in the molecule-fixed frame.

The first part of this talk will focus on ion-imaging experiments, where the results of very-high field-free molecular alignment and the recording of a molecular movie of coherent rotational wavepacket dynamics are presented. Furthermore, first results on time-resolved UV-initiated photodissociation of OCS will be shown and explained in terms of a simple physical picture.

In the second part, the laser-induced electron diffraction (LIED) self-imaging method will be introduced. It is shown that using LIED the equilibrium structure of OCS can be retrieved with few pm spatial resolution. The combination of the presented methods and results provides a promising route toward time-resolved imaging of the structure and dynamics of OCS in the molecule-fixed frame.

Host: Jochen Küpper/ CFEL Molecular and Ultrafast Science Seminar