

PHYSICAL COLLOQUIUM

INVITATION

Monday, 21.01.2019, 4.15 p.m., W2-1-148

speaks

Prof. Dr. Stefanie Gräfe

Institute für Physikalische Chemie, Friedrich-Schiller-Universität Jena

about

**“Strong-field ionization of molecular model systems
by circularly polarized laser fields”**

The strong-field driven ionization dynamics of larger, non-diatomic molecules still constitutes a major challenge for the theoretical and numerical description. While a full numerical treatment of all electronic and nuclear degrees of freedom is computational prohibited, several approaches exist to model photoelectron spectra employing certain approximations. Among them are classical trajectory methods or the so-called strong-field approximation (SFA). In this talk, I will give a detailed overview into the strong-field ionization dynamics of simple, non co-linear triatomic model systems. Thereby, I will introduce quantum dynamical simulations, modified classical trajectory calculations, and extensions of the SFA in order to analyze the complex pattern of the photoelectron momentum distribution.

The aim is to disentangle the contributions of excited states and the long-range character of the potential. I will show that upon interaction with circularly polarized laser fields, the long-range character merely induces a small shift in the spectra, while the contribution of excited states is in several cases essential: in particular in near-infrared laser fields, compared to mid-infrared drivers, and for systems with larger internuclear distances, when excited electronic states are energetically closer. I will also discuss the effect of the carrier-envelope phase on the ionization dynamics, as well as the influence of molecular averaging.

All interested persons are cordially invited.
Sgd. Prof. Dr. Matthias Wollenhaupt