

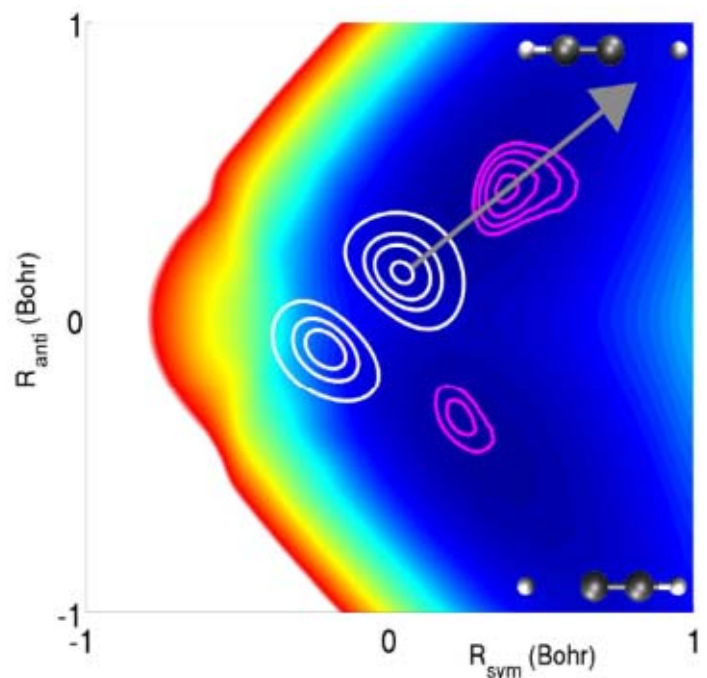
4th April 2014 - 14:00
CFEL, Building 99 - seminar room I-III

Matthias Kling

Department of Physics, LMU Munich, Germany

Imaging of the strong-field control of electron and nuclear dynamics in molecules and nanostructures

The talk will cover recent activities on imaging the control of ultrafast electron and nuclear dynamics in molecules and nanostructures with strong laser fields with defined waveform. These include imaging the field-free orientation of polar molecules in two-color laser fields and the observation of the transition between two mechanisms for the field-free orientation as a function of the laser intensity [1]. As a demonstration for the ability to control strongly coupled electron-nuclear dynamics in molecules, recent results on the carrier-envelope phase control of the dissociative ionization of hydrocarbons will be shown, which are interpreted with a novel phase-control mechanism [2]. Last but not least, we will show, how few-cycle light pulses can be used in the momentum to real-space mapping of nanolocalized fields near dielectric nanospheres exploiting the complex multi-electron dynamics in strong fields [3].



[1] I. Znakovskaya et al., Phys. Rev. Lett., in press; [2] A. Alnaser et al., submitted; [3] F. Süßmann et al., in preparation.