

28th June 2013 – 14:00
CFEL bldg. 99 , seminar rooms I-III

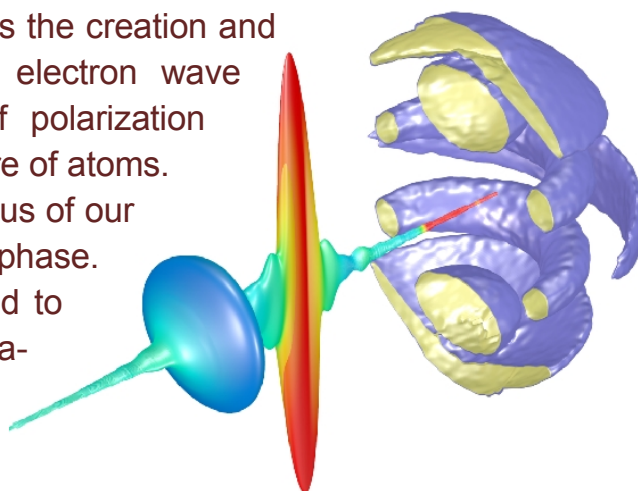
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Coherent control of bound and free electron dynamics

Ultrafast coherent laser control is a fascinating facet of femtochemistry as it seeks to steer any type of photophysical systems from an initial state to a predefined target state (traditionally) on the time scales of nuclear motion with the help of suitable polarization shaped femtosecond laser pulses¹. In addition direct control of valence electron dynamics in molecules is conveniently achieved with the help of state of the art pulse shaping devices having unprecedented temporal precision.

In this talk I will concentrate on our current experiments devoted to direct control of bound and free electron dynamics: First I will discuss the creation and tomographic reconstruction of 3D designer electron wave packets in the continuum with the help of polarization shaped laser pulses and the electronic structure of atoms. As an application I will present the current status of our approaches to chiral recognition in the gas phase. Finally I will highlight our experiments devoted to charge oscillation controlled molecular excitation.



1. Wollenhaupt, M. & Baumert, T.
Ultrafast laser control of electron dynamics in atoms, molecules and solids.
Faraday Discuss. **153**, 9-26 (2011).