

6<sup>th</sup> June 2013 – 10:00 a.m.

CFEL-bldg. 99, seminar room I and II (EG.076/078)

## Antoine Moulet

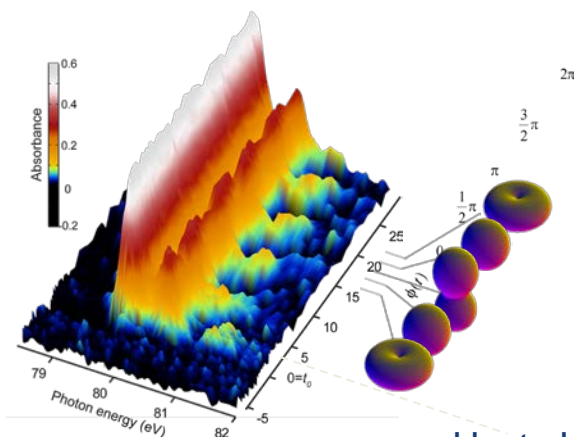
Max-Planck-Institut für Quantenoptik, Garching, Germany

### Synthesized light transients probe electronic dynamics in real time

Light field synthesis now allows the control of a continuous spectrum spanning two octaves (250 nm – 1100 nm). It naturally yields subcycle optical pulses, concentrating a large fraction of their energy in a single half-cycle of light.

Attosecond transient absorption spectroscopy using a synthesized transient as pump and an XUV attosecond pulse as probe has proven to be very insightful for the time-resolved study of the strong-field ionization of Krypton atoms. The ionization has been confined to a single half-cycle of light, thus generating an electronic wavepacket with an unprecedented degree of coherence.

Dynamic spectral distortions revealed a phase shift of the absorption dipole due to the instantaneous polarization of the electronic system by a varying electric field, often referred to as AC-Stark shift. Current experimental efforts aim at taking advantage of the apparatus unprecedented temporal resolution and use these spectral features to shed light on core-shell excitation decoherence processes.



Host: Jochen Küpper, CFEL Molecular Physics Seminar