Julius-Maximilians-
UNIVERSITÄT
WÜRZBURG

Kolloquium der Physikalischen und Theoretischen Chemie

Dienstag, 28.04.2015 **Hörsaal D, Chemiezentralgebäude, 17:15 Uhr**

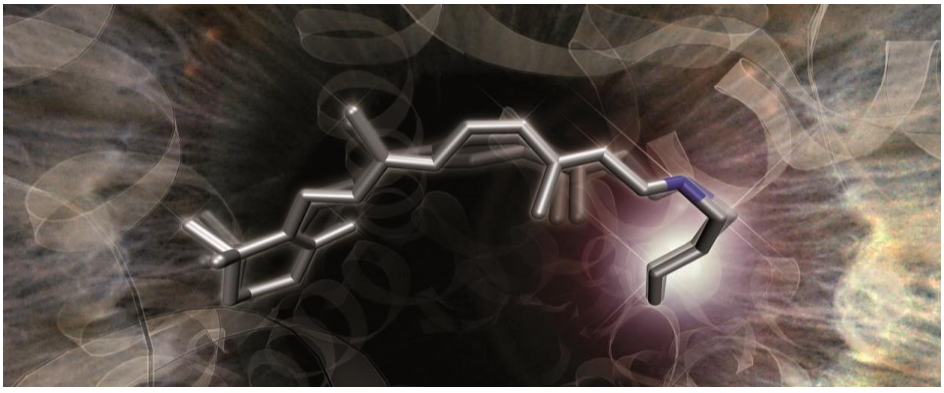
Sprecher: Giulio Cerullo

(Mailand, IT)

Titel: Snapshots of primary photoinduced events in biomolecules by tunable few-optical-cycle pulses

Abstract:

Many light-induced processes in biomolecules, such as energy relaxation, energy/charge transfer and conformational changes, occur on ultrafast timescales, ranging from 10^{-14} to 10^{-13} s. The speed of such elementary processes is intimately linked to their efficiency, making ultrafast optical spectroscopy an invaluable tool for their investigation. Pump-probe and the emerging multidimensional spectroscopies require short pulses, in order to observe fast dynamics, and broad frequency tunability, to excite a system on resonance and probe optical transitions occurring at different frequencies. Optical parametric amplifiers (OPAs) are ideal tools for such experiments, because they provide frequency tunability and support broad gain bandwidths, enabling the generation of pulses with duration down to a few optical cycles and tunability from the IR to the UV [1].
In this talk I will describe a state of the art system, based on two synchronized OPAs, providing sub-10-fs temporal resolution over a very broad spectral range, from 300 nm to 2 μm. After reviewing the pulse generation and characterization techniques, I will present selected examples of applications to the study of ultrafast processes, such as energy/charge transfer in natural and artificial light-harvesting complexes [2] and the isomerization of rhodopsin which triggers the primary event of vision [3].



[1] D Brida *et al.*, J. Opt. **12**, 013001 (2010).
[2] S.M. Falke *et al.*, Science **344**, 1001 (2014).
[3] D. Polli *et al.*, Nature **467**, 440 (2010).

Organisation: T. Hertel

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Weitere Informationen unter:
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