

EINLADUNG

zum Vortrag
von

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Electronics at the pace of light: Measurement and control of attosecond dynamics

Abstract:

Investigating the structure of matter and observing its temporal evolution is one of the fundamental tasks in physics and chemistry. Chemical events – generally perceived as bond breaking and bond creation – proceed on time-scales ranging from tens of femtoseconds to microseconds. These processes, however, are preceded and ultimately determined by the much faster intra-molecular electron dynamics that proceed on an attosecond time-scale. To access this time-domain the electric field oscillation of a strong, short laser pulse can be used as a reference process. In this talk I will show how this scheme can be used for tracing a valence wavepacket in an atom during its creation with a sub-10-attosecond resolution. In molecules the additional nuclear motion leads to still more complicated dynamics. As an example I will show how coupled electronic and nuclear motion in polyatomic molecules may lead to highly charged ionic complexes and the complete fragmentation of molecules. I will furthermore show that with a fully determined laser electric field it becomes possible to move from observing to controlling the motion of electrons. I will present first results of experiments that exploit this possibility for the control of bond-breaking processes in polyatomic molecules.

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Dienstag, 12. Juni 2012, um 17:30 Uhr

Ort: Ort: Lise-Meitner-Hörsaal, Fakultät für Physik, Universität Wien,
1090 Wien, Strudlhofgasse 4 / Boltzmannngasse 5, 1. Stock

Barrierefreier Zugang: Boltzmannngasse 5, Lift, 1. Stock rechts über den Gang zum Hintereingang des Hörsaals

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