## Mini-workshop on AMO physics on Tuesday, 11th of June.

Speaker: Ulf Saalmann, MPI-PKS, Dresden, Germany

C:368 14:00 - 14:30 + 15 min

Time delays: How to define and how to measure

In recent years time delays -- introduced decades ago in collision physics -- have been measured for atoms, molecules and solids by means of photo-ionization (a.k.a. "half collisions") with advanced attosecond pump-probe techniques. Here, fundamental issues of scattering time delays for anisotropic systems are discussed (paradigmatically in 1D). Furthermore, a condition, that photo-ionization delays from attosecond streaking agree with scattering delays, is given.

Speaker: Uwe Thumm, Kansas State University, USA

Rydbergsalen 15:15 - 15:45 + 15 min

Tracking the motion of atoms and electrons with ultra-short pulses of intense light: How atomic movies help us to unravel the interplay of light and matter at the basis of life

Modern spectroscopy with ultrashort intense light pulses allows the scrutiny of molecular dissociation and photo-ionization processes with atomic resolution in time and space. I will discuss how molecular dissociation pathways and the electronic dynamics in increasingly complex targets (atoms, surfaces, plasmonic nanoparticles) can be traced in "movies" of the nuclear and electronic dynamics in matter by recording fragment-kineticenergy and photoelectron spectra as functions of the adjustable delay between two laser pulses.

## Speaker: Daria Gorelova, CFEL, Hamburg, Germany

C:368 16:30 - 17:00 + 15 min

## Theoretical description of attosecond imaging and spectroscopy of electron dynamics with ultrashort *x*-ray pulses

We explore theoretically how electron dynamics in materials and molecules can be captured in real time and with atomic resolution. We describe signals from different attosecond and few femtosecond x-ray imaging and spectroscopy techniques to probe electron dynamics. I will discuss what information about electron dynamics one can reveal from such techniques.