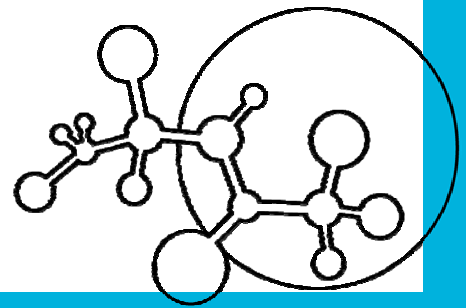




FRIAS

FREIBURG INSTITUTE FOR ADVANCED STUDIES
ALBERT -LUDWIGS -UNIVERSITÄT FREIBURG
SCHOOL OF SOFT MATTER RESEARCH



Quantum Efficiency Seminar and Colloquium

Joachim Ullrich

Max Planck Institut für Kernphysik ,Heidelberg

Free Electron Lasers: Dynamics and structure towards femtosecond time and nanometer spatial resolution

The talk will highlight the working principles of Free Electron Lasers (FELs) and the performance of the first machines operational worldwide, the FLASH in Hamburg, the SCSS in Japan and the LCLS in Stanford. Exploiting the capabilities of a new instrument, the **CFEL-ASG Multi Purpose (CAMP)** end-station [1] that allows the simultaneous momentum resolved detection of electrons, ions, scattered as well as of fluorescence photons, pioneering results of in atomic, molecular and cluster physics have been achieved pointing to the rich future potential. Can we record “the molecular movie”, i.e., follow in time the motion of atoms and the rearrangement of electrons, e.g., at transition states during chemical reactions, for light-harvesting molecules and will it be possible to realize the vision determining the structure of single biomolecules – proteins, viruses – or nanoparticles in gas or liquid phases without the need of crystallization?

[1] L. Strüder et al., *Nucl. Instrum. Meth. Phys. Res. A* **614**, 483 – 496 (2010).

Date: Tuesday, May 24th, 2011 2:15 pm

Location: FRIAS Seminar Room, Albertstr. 19, Freiburg

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