



*30th July 2014 – 2 p.m.*  
CFEL-bldg. 99, seminar room IV

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P. - G. Reinhard

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***"Photo-excitation of clusters –  
observables from electron emission"***

The talk presents theoretical simulations of the dynamics of atomic clusters following a short and intense laser pulse. Particular attention is paid to the detailed observables which can be measured from the electrons emitted in the process: net ionization, photo-electron spectra (PES), photo-electron angular distributions (PAD), and combinations thereof. Modeling is done in terms of time-dependent density-functional theory with self-interaction correction. Calculations are performed on three-dimensional coordinate-space grid which allows a particularly elegant sampling of PES and PAD. Free clusters in gas phase represent an isotropic ensemble of orientations and are sampled with additional orientation averaging. Examples are given for metal clusters, carbon chains, and C60. Amongst others, the following aspects will be addressed in particular: level depletion in dependence of laser frequency; smoothing of PES in dependence of laser intensity; impact of the Mie surface plasmon on the PES; trends of the anisotropy of PAD with system and laser parameters; alignment of PAD in dependence of photon number; thermal versus direct ionization and consequences for PAD.