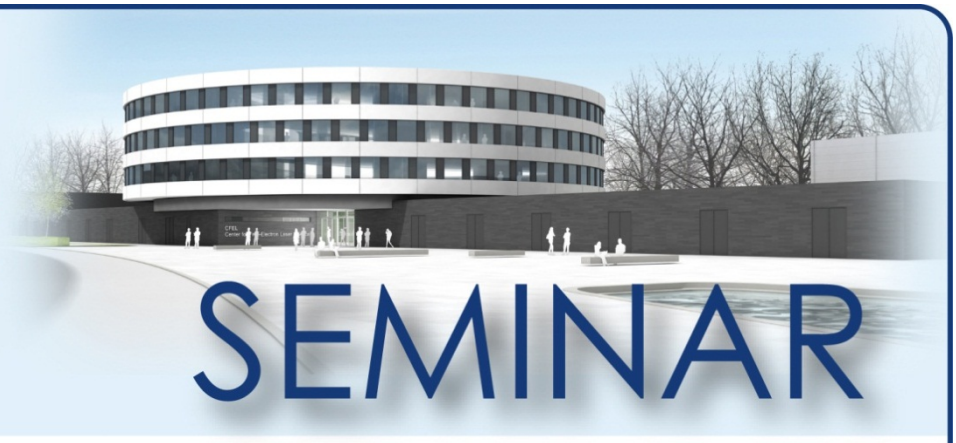
CFEL SCIENCE



SEMINAR

30th November, 2016 – 10:00 am
CFEL-bldg. 99, seminar room IV (O1.111)

Emma Kueny

Université Paris Sud

Intensity dependence of high-order harmonic wavefronts

High-order harmonics are used in a wide range of applications as a tabletop source of XUV radiation. They are produced by nonlinear interaction of an intense infrared laser with gas atoms, and are characterized by a broadband spectrum containing only odd harmonics of the fundamental wavelength with a constant intensity over a large spectral region. In order to achieve a high intensity when focusing the harmonics, their wavefront need to be flattened, and thus its formation understood. This master thesis presents single-shot high-order harmonics wavefronts recorded with a Hartmann XUV wavefront sensor, and aims at making a step forward the comprehension of this wavefront by first analyzing its dependence on the infrared intensity, then by looking at three individual harmonics. These first results mostly show an evolution of the divergence. Finally, these measurements permitted to optimize the refocusing optics to improve the wavefront, therefore obtaining a smaller and more intense focal spot for the applications using the harmonics.

Host: Franz Kärtner, CFEL UX Seminar