

# Laser Seminar / NCCR MUST Seminar

## Monday, January 25, 2016

Time	16.45
Location	ETH Zurich, Hönggerberg, <b>HPT C 103</b>
Speaker	<b>Thomas Pfeifer</b> , Max-Planck-Institut für Kernphysik, Heidelberg, Germany
Title	Fundamental dynamics of small quantum systems probed and controlled by low and high frequency (laser) interactions
Abstract	<p>Electrons bound in atoms and small molecules represent some of the most fundamental quantum systems. These systems are so well known and reliable that they serve as optical clockwork of the most precise clocks on the planet and even allow to test potential variations of physical constants.</p> <p>On the other hand, any exposure of such seemingly simple few-body quantum systems to strong electromagnetic fields completely changes their intrinsic properties and sets off dynamical processes that quickly challenge our understanding. Yet, the physical mechanisms behind these processes hold the key for engineering novel chemical reactions by light, and for using a single flash of intense x-rays to image a single molecule with free-electron lasers (FELs).</p> <p>In this talk, we discuss experiments on some fundamental dynamical motifs of atoms and molecules exposed to strong laser fields. As ionization commonly occurs in strong laser fields, here we specifically ask the questions as to what happens to an atom &gt;before&lt; it ionizes, and what happens to a small molecule &gt;after&lt; multiple ionization took place in an intense FEL pulse.</p> <p>Interestingly, the insights gained from such experiments in simple systems can, on the one hand, be mapped to applications in more complex targets, and, on the other hand allow new avenues for precision metrology in thus far uncharted (x-ray) areas.</p>
Host	Host: Ursula Keller, Ultrafast Laser Physics, IQE
More Info	<a href="http://www.ulp.ethz.ch/">http://www.ulp.ethz.ch/</a>



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