

23rd May 2014 - 14:00
CFEL, Building 99 - seminar room I-III

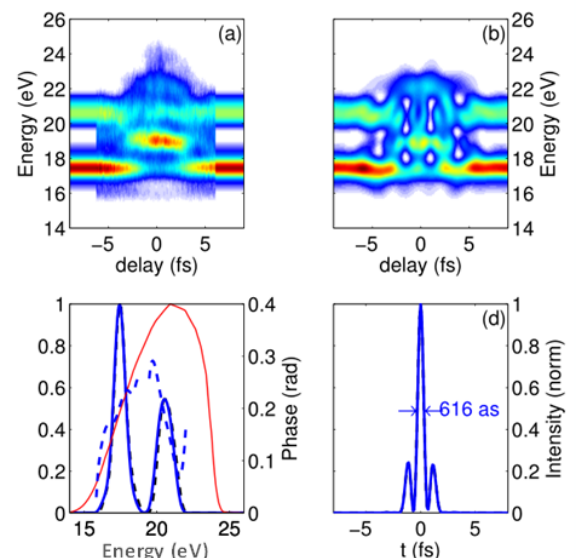
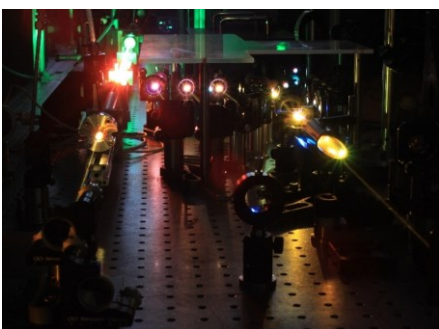
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The generation and application of few-cycle and attosecond light pulses

This talk will describe recent efforts at Imperial College London to develop new sources for ultrafast and attosecond science, including attosecond pulses in the challenging VUV range, spectrally isolated attosecond pulses from resonantly enhanced high harmonic generation (HHG) in plasma plumes, and enhanced HHG driven by sculpted waveforms formed by multi-color field synthesis. Underpinning many of these sources is the process of few-cycle pulse generation by hollow fibre pulse compression. Recent results on the energy scaling and carrier-envelope phase stability of hollow fibre pulse compression will be discussed. Our ability to produce complex optical waveforms is outstripping our ability to characterize them. To address this, we have demonstrated an all-optical technique using HHG to characterize arbitrary femtosecond waveforms,

which will be described. Some applications of the attosecond light sources will be discussed, including new attosecond streaking measurements of photoelectrons from non-crystalline surfaces.



VUV sub-femtosecond pulse measured by attosecond streaking.