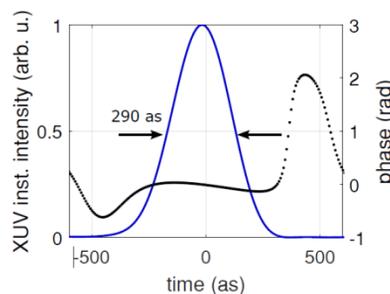
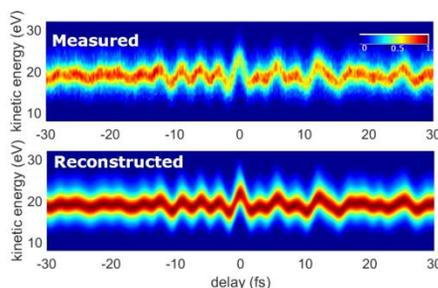


BACHELOR THESIS/ HIWI Job

Complete phase- reconstruction of broadband isolated attosecond pulses



The ultrafast optics and X-rays division led by Prof. Franz X. Kärtner at CFEL/DESY investigates on the advancement of ultrafast laser technologies and their application to ultrafast sciences. Laser sources delivering sub-cycle pulses in the visible and infrared spectral range are developed to explore attosecond and femtosecond phenomena during light-matter interaction.



We are seeking motivated students, interested in **ultrafast laser physics** and its application onto **attosecond science**. A **waveform synthesizer** delivering **infrared** (0.65 – 2.2 μm), ultrashort pulses with durations shorter (< 4 fs) than their oscillation period (**sub-cycle pulses**) with mJ-level energies and capable of generating broadband extreme ultraviolet and soft X-ray **isolated attosecond pulses (IAPs)** has been recently built in our lab. The investigation of methods to **characterize the spectral phase** of such broadband attosecond pulses remains as an active field of research. **Attosecond streaking** measurements are the current workforce for attosecond pulse characterization. By understanding the physics underlying the streaking technique, your job will be to **extend and improve** an existing state-of-the-art code that uses such measurements as input to reconstruct the attosecond pulses.

Besides a basic knowledge in linear, nonlinear and strong field optics, a good practice in English for daily communication would be helpful. If you can code in C++ is even better.

Interested? Please contact

Miguel A. Silva

miguel.toledo@desy.de

Fabian Scheiba

fabian.scheiba@desy.de

Prof. Franz X. Kärtner

Ultrafast Optics and
X-Rays group

CFEL/DESY

Notkestraße 85

22607 Hamburg

Building 99

(1) Rossi, G.M., Mainz, R.E., Yang, Y. *et al.*, Nat. Photonics **14**, 629–635 (2020).

(2) P. D. Keathley *et al.*, New J. Phys. **18** 073009 (2016)

Other topics in ultrafast laser science and high harmonic generation are available as well.