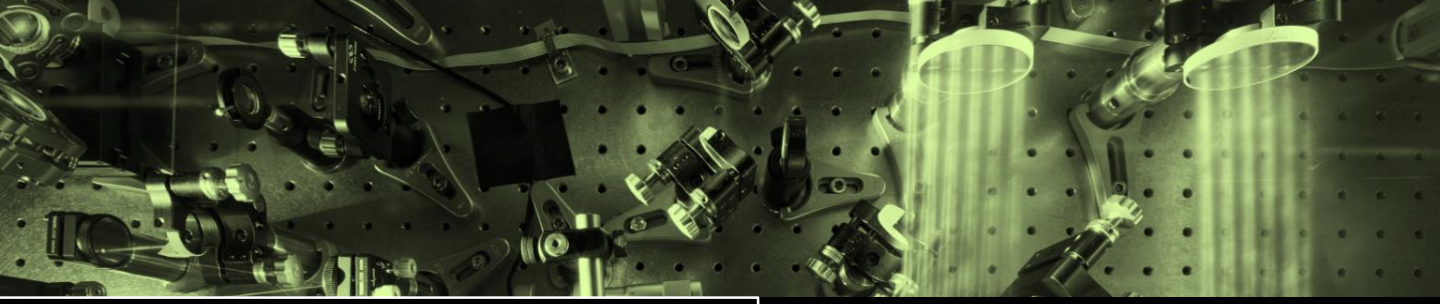
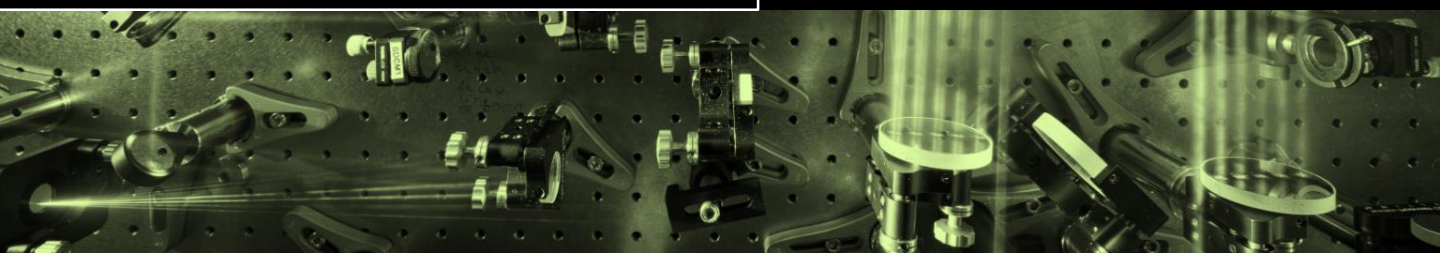


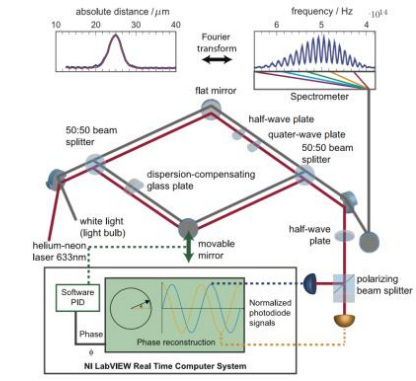
BACHELOR/MASTER THESIS

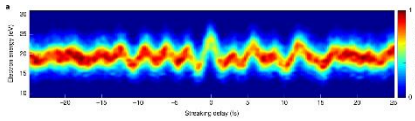
Phase-stabilization of an attosecond beamline



CFEL SCIENCE
Ultrafast Optics and X-Rays

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 **experimental attosecond science**. Experimental investigations on **electronic dynamics** happening on **attosecond time scales** (~10^{-18} s) call for highly stable experimental pump-probe setups. Nevertheless, intrinsic noise sources limit the stability of optical components and can introduce, for instance, timing jitter between pump and probe pulses. You will characterize the stability of an existing **attosecond beamline** and investigate, as well as implement methods to **actively-stabilize** it. In this research project, you will optimize the temporal resolution and stability of our apparatus, and contribute to the realization of pioneering **time-resolved experiments with soft X-ray attosecond pulses**.

Besides a basic knowledge in linear, nonlinear and strong field optics, a good practice in English for daily communication and a good experimental practice with interest in high-speed electronics would be helpful.

Interested? Please contact

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(1) Rossi, G.M., Mainz, R.E., Yang, Y. *et al.*, Nat. Photonics **14**, 629–635 (2020).
(2) M. Huppert, Review of Scientific Instruments **86**, 123106 (2015)

Other topics in ultrafast lasers and attosecond science are available as well.