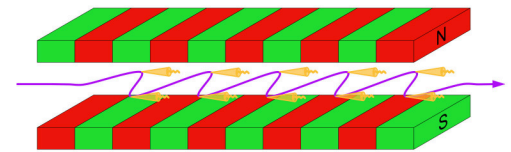


Who are we and what are we doing?

The division **Quantum Dynamics & Control** at the Max-Planck institute for Nuclear Physics (MPIK) in Heidelberg investigates the evolution of quantum systems under the influence of intense ultrashort laser pulses. These range from the terahertz to the x-ray spectral domain and are as short as a few femtoseconds ($1\text{fs} = 1\text{e-}15\text{ s}$) and even down to several hundred attoseconds ($1\text{as} = 1\text{e-}18\text{ s}$) in special cases.

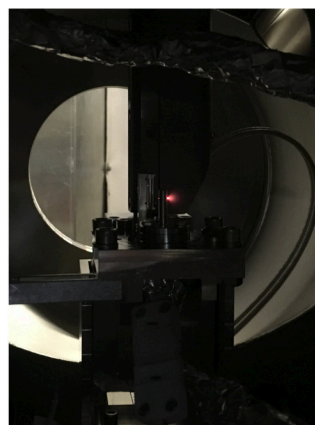
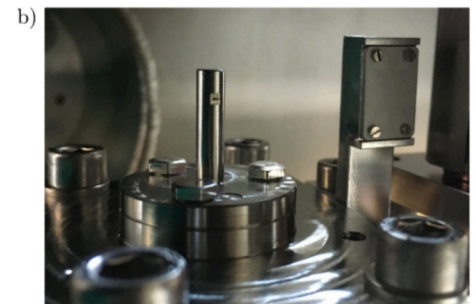
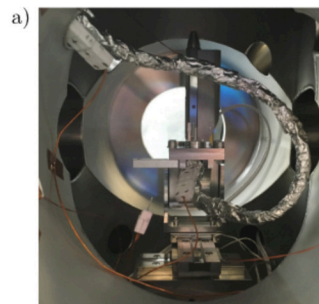
We offer several **Master projects** in the group of Dr. Christian Ott connected to research with free-electron lasers (FELs). Here, instead of using a tabletop laser system, we perform experiments at large-scale FEL facilities around the world. The available projects are connected to a permanent endstation we have set up at DESY in Hamburg.



The experiment consists of an interferometric mirror system to generate ultrashort XUV-pump and XUV-probe pulses from the highly intense FEL beam, a reaction microscope (REMI) for the detection of electrons and ions, as well as a photon spectrometer for the detection of the absorption signal that is induced in a target.

Tasks:

- Redesign of extreme-ultraviolet (XUV) spectrometer for FEL experiments
- Setup and commissioning of the spectrometer at DESY Hamburg (~1 week)
- Possibility of future beamtime campaigns at DESY Hamburg (~1-2 weeks)
- Evaluation of existing experimental data: Interaction of intense XUV/x-ray light with atoms and molecules



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