Max-Planck-Institut für
Struktur und Dynamik der Materie
Max Planck Institute for the Structure and Dynamics of Matter

IMPRS UFAST Call for PhD applications 2020/2021

Attosecond Science in the Water Window

F. Kärtner-1

Title of PhD Project	**Attosecond Science in the Water Window**
Type	Experimental
Supervisor(s)	Prof. Franz X. Kärtner Dr. Giulio Rossi
Affiliation(s):	DESY
Number of positions:	1
Abstract:	We have developed an optical sub-cycle parametric waveform synthesizer that enables direct generation of attosecond XUV pulses. In this project we intend to expand the wavelength coverage of the generated attosecond pulses to cover the full spectral range of the water window, roughly 285 eV to 550 eV and use those pulses to understand the attosecond electron dynamics of important chemical processes related to energy conversion and water radiolysis. We seek candidates with strong background/experience in ultrafast nonlinear optics, atomic, molecular physics; experience in attosecond science, high-vacuum technology, programming/numerical skills (Matlab, C++, LabView) are highly advantageous. The successful candidate should be self-motivated and will work in a team with other PhD students and postdocs in a first-class scientific environment on cutting-edge topics at the current frontiers of laser technology and extreme light-matter interactions. Research is performed within international collaborations, e.g., with groups at MIT, Politecnico Milano and CFEL. G. M. Rossi et al., "Sub-cycle millijoule-level parametric waveform synthesizer for attosecond science," Nature Photonics 2020, https://doi.org/10.1038/s41566-020-0659-0
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