Attosecond and Strong Field Physics

https://www.atto.uni-freiburg.de/de

PhD Thesis

Investigation of correlated electronic dynamics by nonlinear attosecond spectroscopy (NONLINEARATTO)

In the framework of the project NONLINEARATTO, one PhD position is available in the field of attosecond science at the Albert-Ludwigs-University of Freiburg (https://www.uni-freiburg.de/).

The main goal of the project is the investigation of the role of electronic correlation in the dynamics of fundamental systems, such as helium and molecular hydrogen by nonlinear extreme ultraviolet spectroscopy.

The experiments will be based on the pump-probe scheme, exploiting high-intensity extreme ultraviolet attosecond pulses generated by high-order harmonic generation. Information about the electronic dynamics will be gained by measuring in coincidence the photoelectron(s) and photoion(s) generated by the interaction of the attosecond pulses with the system.

The experiments will be realized at the laser facility ELI-ALPS (Extreme Light Infrastructure Attosecond Light Pulse Source) in Hungary (https://www.eli-alps.hu/), which offer unique laser sources in terms of repetition rate, pulse duration and average power. Thanks to these sources nonlinear investigations on the attosecond timescale will be available for the first time.

The project will focus on three aspects:

- Simulation, design and construction of photoelectron/photoion coincidence spectrometer (Reaction Microscope).
- Design of the data acquisition system and
- Participation to commissioning and experimental beamtimes at ELI-ALPS.

The candidate will learn about the fundamental properties of generation of extreme ultraviolet radiation, laser-matter interaction under intense XUV and infrared fields, and about electronic dynamics occurring on the attosecond timescale.

The position is available from **01.12.2020** for a period of three years.

Relevant Tasks

- Data acquisition
- Data Analysis
- Simulation
- Construction of spectrometer
- Programming

What we offer?

- High impact physics project
- Access to state-of-the-art facilities
- State of the art equipment
- Salary level: 66% E13

Required skills (preferred)

- Master in Physics or Engineering
- Solid background in atomic, molecular and optical physics.
- Willingness to work in groups
- Curiosity and creativity

Interested, please contact

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