



Chair of Attosecond and Strong Field Physics

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

PhD position

Investigation of the continuum-continuum phase in photoionization.

Relevant Tasks

- Development of an optical parametric amplifier
- Data acquisition
- Data Analysis
- Construction of spectrometer
- Programming

What we offer?

- High impact physics project
- Access to state-of-the-art attosecond sources
- Participation to experiments at large scale facilities
- Salary level: 66% E13

Required skills

- PhD in Physics
- Solid background in atomic, molecular and optical physics.
- Curiosity and creativity

In the framework of the DFG project “Investigation of the continuum-continuum phase in attosecond time delays”, a PhD position is available in the field of attosecond science at the Albert-Ludwigs-University of Freiburg in Germany (<https://www.uni-freiburg.de/>).

The goal of the project is the first measurement of the continuum-continuum phase in photoionization. Towards this goal, the PhD student will develop an optical parametric amplifier (OPA) that will be combined with a train of attosecond pulses generated by an ultrafast laser amplifier (5 mJ at 1 kHz repetition rate). The attosecond pulses and OPA output will be used to photoionise noble gas atoms and the photoelectron spectra will be acquired using a velocity map imaging spectrometer. The analysis of the photoelectron spectra will give access to the continuum-continuum phase. Further information about the scheme to be developed are available in the following references:

P.K. Maroju et al. *Nature* **578**, 386-391 (2020).

P.K. Maroju et al. *New J. Phys.* **23** 043046 (2021).

P.K. Maroju et al. *Applied Sciences* **11**, 9791 (2021).

The project will focus on three aspects:

- Development of an optical parametric amplifier in the near infrared spectral range.
- Design and construction of an interferometric setup combining the output of the optical parametric amplifier with an attosecond pulse train.
- Acquisition and analysis of the photoelectron spectra generated by the attosecond pulses and optical parametric amplified pulses using a velocity map imaging spectrometer.

Deadline for application: **31.12.2021**

The position is available from **01.02.2022** for a period of four year.

Interested, please contact

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