

The Extreme Light Infrastructure (ELI) project is an integral part of the European plan to build the next generation of large research facilities identified and selected by the European Strategy Forum on Research Infrastructures (ESFRI). ELI is the first infrastructure in the world able to investigate interactions between light and matter with the highest intensity, in the so-called ultrarelativistic range. It will greatly expand the range of activities in science and drive forward scientific technology. ELI will have a considerable impact on numerous fields of material sciences, medicine and environmental protection.

In particular, ELI-ALPS is committed to the advancement of attosecond science and technology to provide the scientific community with unprecedented tools for experimentation. Accessing the natural time scale of electronic motion, this field has seen vivid activity and an exponential growth in the past years with a hunger for ever more powerful attosecond sources.

A new Research Fellow position is available in the SYLOS GHHG Attosources Group of ELI-ALPS

We are looking for an enthusiastic and skilled researcher with expertise in high harmonic generation (HHG), attosecond physics, and atomic, molecular and optical (AMO) physics (or closely related disciplines) to participate in various projects managed by the SYLOS GHHG Attosources Group of ELI-ALPS. In addition to the operation and application of a beamline for in-house projects, the candidate will provide strong support to ensure the success of cutting edge user campaigns.

Description of the SYLOS GHHG Attosources Group

The SYLOS GHHG Attosources Group of ELI-ALPS maintains two gas-based high harmonic generation beamlines (COMPACT and LONG) driven by the two-cycle, 1 kHz, TW-class SYLOS laser. Both beamlines are in the phase of commissioning and are expected to enter user operation early 2022. The beamlines are dedicated to the study of nonlinear XUV processes by the XUV-XUV pump-probe technique with attosecond time resolution, which has so far been achieved only in a few laboratories worldwide. Furthermore, the LONG beamline has the ability to combine two additional pulses in the UV-IR range for the preparation of specific sample states. In addition to comprehensive diagnostics, the scientific equipment includes various time-of-flight spectrometers, a cold particle source and an ion microscope, and will soon be joined by a reaction microscope (ReMi or COLTRIMS) to enable the study of multi-photon many-body processes. The activities are conducted in strong collaboration with Lund University and FORTH IESL.

Duties and Responsibilities:

The work tasks of the Research Fellow to be hired in the SYLOS GHHG Attosources Group include but are not limited to the following:

- Operation, maintenance and further development of a GHHG beamline.

- Operation of associated scientific equipment for attosecond pulse generation and diagnostics. Application to scientific problems in ultrafast physics with an emphasis on XUV non-linear processes.
- Support of international user experiments during the preparation, execution and interpretation phase.
- Advancement of in-house research and development. It is expected that the candidate has a vision of projects that could be carried out using the available infrastructure.

Education and Experience:

The candidate should hold a PhD in physics, chemistry or any other related scientific field (applications of candidates on track to complete their PhD are also considered).

Skills and Abilities:

- Experience in GHHG, attosecond physics, AMO physics or related research fields.
- Ability to work independently towards the goals of the team.
- Good written and oral communication skills in English.

Additional preferred qualifications:

- Good programming skills (Python and other languages).
- Experience with ultrafast lasers and ultrafast optics.
- Passionate and diligent work ethics.
- Easy communication skills with people from different disciplines (physics, engineering, IT) and cultural backgrounds.

Job location:

Hungary, Szeged

If you are interested in the position, please upload your CV and motivation letter to our Career Site at <https://www.eli-alps.hu/en/Career>.