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## Job openings for one **Early Stage Researcher** and one **Research Fellow** position in **Surface Plasma Attosources (SPA) Group** within the **Secondary Sources Division** at **ELI-ALPS**

### **ELI-ALPS: the Attosecond Light Pulse Source (ALPS)**

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.

ELI-ALPS, one of the three ELI-pillars, is located in Szeged, Hungary. It 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.

### **The surface plasma attosources (SPA) group:**

Major research activities of SPA group include understanding the ultrafast dynamics of intense laser interaction with dense plasma under extreme conditions of light intensity and pressure. At very high intensities the interacting matter becomes an ionized optically reflective or transmissive plasma medium. In both the scenarios the ensuing relativistic interaction can generate coherent XUV radiation, X-rays and accelerated charge particle bunches. Such a generation process offers a synergy of photonics, matter in dense form and relativistic plasma physics. The SPA group is in charge of the ongoing implementation of two state of the art solid high harmonic generation development beamlines (see <https://www.osapublishing.org/josab/abstract.cfm?uri=josab-35-5-A93>) and one versatile experimental end station for relativistic high field physics. We would provide the unique opportunity to explore relativistic optics with few-cycle, kHz SYLOS laser and also the PW-class HF laser.

Within this scope of the SHHG development beamlines we would merge state of the art technology with scientific understanding to develop a parameter space that is not accessible till date. The primary goal of the SPA group is to implement these SHHG development beamlines and undertake the necessary scientific R&D activity that leads to its further development as an attosource. As part of their training the candidates would also get chance to gain insight in project management, handle state of the art diagnostics and get knowledge to advanced metrology schemes as well as theoretical modelling.

### **The potential candidates profile:**

The candidate should have background and experience in laser-matter interaction metrology and experiments in gas, liquid or solid phase targets (must for post doctoral candidates). Experience in working in big collaborative environment would be valued.

The SPA group is looking forward to two highly motivated self-driven candidates. The applicants must have good written and verbal English communication skills. A solid academic foundation in the related optics and photonics fields is expected. Experience in programming languages Matlab, Mathematica, Labview etc. would be given due weightage and familiarity with ray tracing packages, Fortran/Python/C++ languages is additional advantage. Experience with hydrodynamic and/or PIC simulations would be appreciated.

For early stage researcher position: the candidate is expected to pursue a PhD program as part of their job duty. PhD students working in relevant research fields or engineers with work experience and looking for a scientific career are both welcome.

For research fellows: Scientists or engineers with PhD degree (or submitted PhD thesis) and experience in relevant research field are encouraged to apply. Scientists with post doctoral experience with good publication record would be preferred. The position grade would depend on level of experience and career achievement of the successful applicant.

The work tasks of the Research Fellow to be hired in the SPA Group include (but are not limited to) the following:

- Operation, maintenance and further development of the laser plasma based instruments/beamlines.
- Operation of associated scientific equipment for attosecond pulse generation and diagnostics. Application to scientific problems in ultrafast physics with an emphasis on relativistic processes.
- Support of international user experiments during the preparation, execution and interpretation phase.
- Advancement of in-house research and development. The candidate is expected to have a vision of projects that could be carried out using the available infrastructure.

**The application should contain:**

- A motivation letter
- A Europass curriculum vitae or detailed scientific curriculum vitae
- Full list of publications – highlighted the list of articles published in refereed journals and containing the following data:
  - h-index
  - cumulative impact factor (calculated by summing of impact factors of journals characteristic for the year of publication each articles)
  - number of citations without self-citations
- The name of two scientific supervisors or professors, who could give expert opinion about the candidate's skills
- The candidate's postal address and other contact data (phone, fax, e-mail)

**Schedule:**

- Application deadline: continuous, valid until withdrawn
- Foreseeable date of the interview for selected candidates: within 4-8 weeks of application submission

For further scientific elaboration and informal discussion on these two positions please contact Dr. Subhendu Kahaly at [subhendu.kahaly@eli-alps.hu](mailto:subhendu.kahaly@eli-alps.hu) with your CV and letter of motivation.

If you are interested in any of these positions and meet the required criteria, please fill in our Career Site with your professional data at <http://www.eli-alps.hu/career/>. Please use "Early Stage Researcher: SPAG" or "Research Fellow: SPAG" in the subject of your e-mail.