

The ELI (Extreme Light Infrastructure) Project is an integral part of the European plan to build the next generation of large research facilities. ELI-Beamlines is a cutting-edge laser facility that is currently being constructed in Dolní Břežany (on the southern border of Prague); its commissioning is scheduled for end of 2017. ELI will be delivering ultra-short, ultra-intense laser pulses lasting typically a few tens of femtoseconds (up to 150 fs) with peak power projected to reach 10 PW. It will make available time synchronized laser beams over a wide range of intensities for multi-disciplinary applications in physics, medicine, biology, material science etc. The high laser electric field intensities of the laser pulse will be also used for generating secondary sources of e⁻ and p⁺ and high-energy photons.

Experimental team focused on laser-driven ion acceleration is looking for new colleague:

Junior Researcher

laser driven ion acceleration – non-destructive heritage testing

We require:

- university degree with a focus in one or more of the following: physical engineering, experimental physics, dosimetry, plasma physics, material sciences etc.
- PhD. in relevant area will be an advantage
- there is possibility to write a dissertation on the offered topic
- willingness to travel abroad (e.g. 3 months in Sicily (Catania) for training is planned)
- good working knowledge of English (written and verbal)

We offer:

- take part in the commissioning of measuring instruments designed for accelerating particles by laser
- gaining the experience with unique laser measuring apparatus for laser-driven ion acceleration; the first task will be the set-up for non-destructive heritage testing by laser-driven protons (cooperation with e.g. National Gallery (Prague, CR), The city of Prague museum, Institute of Archaeology of the CAS (Prague, CR) and INFN LNS in Catania (Sicily, IT))
- contract for 30 months with possibility of continuing collaboration
- career growth, professional education
- 5 weeks of holidays and other employee benefits
- pleasant work environment

Job position available: from March 2019

Job overview:

Laser-driven ion and proton acceleration is a broad topic that is currently supported in the field of modern science with a wide range of applications. Thanks to the newly acquired project, we will also focus on this topic at the newly established European laser center ELI-Beamlines (Dolní Břežany), the Institute of Physics of the CAS.

The new project offers the opportunity to exclusively participate in the design, construction and commissioning of a future end station for non-destructive heritage testing by laser accelerated protons (2-30 MeV), which is a new, world-unique approach. In total, two methods will be introduced with a laser-driven proton source - PIXE (Proton Induced X-ray Analysis for surface analysis) and PAA (Proton Activation Analysis for analysis of deeper layers). The station will use Laser 3 - HALPS (1 PW, 30 J, <30fs, 10 Hz) at ELI-Beamlines and the implementation itself will be preceded by the INFN LNS experimental tests in Catania (Sicily, IT) where both methods are already used with a conventional particle source (e.g. Pompeii coins analysis). The cooperation and provision of subjects to be tested are agreed with the National Gallery in Prague, the Institute of Archaeology of the CAS and The City of Prague Museum.

The new worker's task will be to familiarize him/herself with established PIXE and PAA methods with a conventional source (measurement, data analysis, etc.) and then with colleagues to design, to assemble and to set up a small station for both of these methods but with a laser-driven source in ELI-Beamlines. The work also includes experiments with conventional sources (INFN LNS, Catania). Thus, at least two three-month trainings in Catania, or more shorter trainings/travels over two and a half years, are expected.

Applications, containing CV, cover letter, contacts of references, and any other material the candidate considers relevant, should be sent to Mrs. Jana Ženíšková (jana.zeniskova@eli-beams.eu, +420 601 560 322).