Laser Engineers
at Extreme Light Infrastructure – Nuclear Physics (ELI-NP)
Research Facility

Position Description and Candidate’s Profile

Context

Extreme Light Infrastructure – Nuclear Physics (ELI-NP) will be a new Center for Scientific Research to be built by the National Institute for Research and Development in Physics and Nuclear Engineering (IFIN-HH) in Bucharest-Magurele, Romania.

ELI-NP is a complex facility which will host two state-of-the-art machines of high performances:

- A very high intensity laser, where beams from two 10 PW lasers are coherently added to get intensities of the order of $10^{23} - 10^{24}$ W/cm$^2$;
- A very intense ($\sim 10^{13}$ $\gamma$/s), brilliant $\gamma$ beam, $\sim 0.1$ % bandwidth, with $E_{\gamma} > 19$ MeV, which is obtained by incoherent Compton back scattering of a laser light off an intense electron beam ($E_e > 700$ MeV) produced by a warm linac.

ELI-NP will consistently investigate a broad range of science domains, from new fields of fundamental physics, new nuclear physics and astrophysics topics, to applications in material science, life sciences and nuclear materials management.

Objectives of the ELI-NP

The ELI-NP project envisages the following main objectives:

- Building the infrastructure buildings (completion in 2015)
- Commissioning the two pieces of equipment – High Power Laser System (HPLS) and Gamma Beam System (GBS) (2013-2018)
- Preparing the Technical Design Reports (TDRs) for the experiments and auxiliary laboratories
- Ensuring the operation of the future infrastructure at optimal parameters
- Promoting the future multidisciplinary research opportunities for ELI-NP users
The technological implementation is made by a team of researchers, engineers and technicians, in charge with commissioning the equipment at ELI-NP, led by the Technical Director. The main objective of the technological implementation of the Project is to ensure the timely delivery and commissioning of the high power laser and gamma beam systems, the technical synchronization between them and their integration with the construction.

In the operational phase, the activity will be focused on maintaining the best performances of the ELI-NP systems. In this phase the engineers will provide technical support to prepare and develop the experimental setups.

Details regarding the ELI-NP project can be found on the project’s website www.eli-np.ro.

**Position Description**

In the implementation phase, ELI-NP engineers will provide technical support for ELI-NP in correlation with the technological strategy, focusing mainly on ensuring the commissioning of the infrastructure and its further operation.

In the operational phase, Laser engineers will ensure the operation of the lasers within the two major ELI-NP pieces of Equipment: the High Power Laser System or the Gamma Beam System.

**Main responsibilities:**

In the implementation phase:

- The engineers will gather the knowledge and experience necessary to ensure the operation of the infrastructure and of the related equipment. In this context, they will benefit from training provided by the suppliers of the equipment regarding the assembling, testing and commissioning of the equipment. Therefore, the candidates will have to be available to travel and work abroad for a determined period of time;
- Ensuring the best and efficient collaboration and dialogue between the research staff and the suppliers of the respective equipment and various services;
- Ensuring the conformity of the activities with the standards in the field.

In the operational phase:

- Maintaining the performances of the ELI-NP equipment and systems to the desired level;
- Actively participating in the technological development activities performed at ELI-NP;
- Providing the technical support for the experiments.
Main tasks:

- Participating in the preparation of Technical Design Reports (TDRs);
- Evaluating the technical offers for various Laser components;
- Monitoring the fulfilment of related contracts;
- Providing technical assistance upon delivery-taking of various deliverables;
- Participating in the installation and commissioning of the various Laser equipment;
- Supervising the operation of the equipment and of the buildings after commissioning;
- Ensuring the operation of the High Power Laser Beam Transport System;
- Actively and efficiently involving in dialogue and communication within the ELI-NP team and promoting a harmonious collaboration framework.

Competencies and experience:

- Bachelor’s Degree in Engineering/Physics, lasers major;
- Minimum 3 years of experience in technical support within research and development laboratories;
- Very good knowledge of the technologies relevant to ELI-NP;
- Experience in building, aligning and operating femtosecond pulse or high power laser systems;
- Experience in OPCPA, optical fibre lasers, optical synchronisation of laser oscillators and fs precision amplifiers or in computing pulse compressors represents an advantage.
- Experience in working with pump lasers and the alignment of the High Power Laser Beam Transport System;
- Fluency in English;
- Proven teamwork experience and efficient communication and collaboration skills.

Conditions of employment:

- Full-time position based in Bucharest–Magurele, Romania;
- Motivating salary depending on qualifications and experience.
Applications:

- Applications shall be accompanied by the documents requested in the Rules of Selection for this position.
- Applications shall be sent to the Human Resources Department at human.resources@eli-np.ro.