Senior Researcher
at Extreme Light Infrastructure – Nuclear Physics (ELI-NP)

Competency profile

Context

Extreme Light Infrastructure – Nuclear Physics (ELI-NP) will be a new Center for Scientific Research to be built by the National Institute of 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 (~10^{13} γ/s), brilliant γ beam, ~ 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

ELI-NP project envisages the following main objectives:

- Building the facility (expected to start at the beginning of 2013 and expected to be completed at the end of 2014).
- Purchasing the two major pieces of Equipment (two high power lasers and the gamma beam system) as a result of public procurement procedures according to the applicable legislation. Their construction is expected to start in the first part of 2013 and the final commissioning in the first part of 2017.
- Preparing the Technical Design Reports for the experiments and auxiliary laboratories.
- Promoting the future multidisciplinary research opportunities of ELI-NP

to users.

- Implementing the human resources strategy conceived for securing the necessary workforce in terms of quality and quantity.
- Defining and implementing the conditions necessary for the future operation.

The main objective of the implementation phase of the Project is to ensure the timely delivery and the commissioning of the high power laser and gamma beam systems, the technical synchronization between them and their integration with the construction. In addition, the design and development of the ELI-NP experimental areas will be performed.

In the operational phase, the activity will be focused on pursuing the scientific program of ELI-NP and maintaining the best performance of the systems.
The main research activities will be grouped in the following directions: (1) High-Power Laser System, (2) High-Brilliance Gamma Beam, (3) Nuclear Physics with High-Power Lasers, (4) Nuclear Physics and Applications with high-brilliance gamma-beams, (5) Fundamental Physics with combined laser and gamma beams.

Details regarding the ELI-NP project can be found on the project's web site www.eli-np.ro.

Position description

The Senior Researcher will perform scientific experiments and technological development in one of the above mentioned directions, create and lead scientific working groups, guide junior researchers and PhD students.

Each of the research directions, lead by a coordinator (Head of Research Activities), will gradually evolve during the implementation of the project in terms of expertise, needs and development.

Main responsibilities:

During the implementation phase, Senior Researchers will:

- collaborate with the Heads of Research Activities for building-up the research teams and defining the scientific topics;
- participate to the decision process regarding the scientific strategy of ELI-NP;

- elaborate the TDRs for experiments and participate in the development of the experimental set-ups;

During the operational phase, Senior Researchers will:

- lead the research teams in performing the research experiments;
- foster the collaboration with external research teams;
- identify topics of scientific interest, correlating the knowledge and experience in the fields of ELI-NP and shaping the main directions of research;
- contribute to the creation of a new pool of specialists in a unique field of research which is at the top border of the knowledge and science.

Main tasks:

- Proposing topics of research relevant for ELI-NP;
- Advising the Head of Research Activity on the specific research field(s) within their expertise areas;
- Coordinating the activity of PhD students;
- Participating at the scientific strategy meetings of ELI-NP, and at scientific events;
- Participating with leading roles in the elaboration of the Technical Design Reports (TDRs) for the experimental areas of ELI-NP;
- Maintaining and enhancing the existing scientific collaborations and establishing new ones;
- Leading teams of researchers and engineers in measuring the equipment's parameters and assess the fulfillment of the requirements.

Professional background:

- PhD degree in fields related to research activity at ELI-NP;
- At least 10 years of experience in laser or nuclear physics;
- Excellent references in research;
- Proven team leadership;
- Excellent proficiency in English;

Working arrangements/Conditions of employment

Full time position, based in Bucharest - Magurele, Romania.

Motivating salary, based on qualifications and experience.

Applications:

The applications shall be accompanied by curriculum vitae and other relevant information bearing the candidates qualification for this position. The candidates shall demonstrate the achievements and experience in scientific research activities.

The applications / letters of intent will be addressed to the Human Resources Department at raluca.stoicea@eli-np.ro.