Elettra Sincrotrone Trieste

Postdoctoral Research Associate Position at the EIS-TIMER Beamline

Deadline: 30 June 2025
Ref: DB/25/17

Background

Elettra Sincrotrone Trieste is an international multidisciplinary research center operated as a user facility, featuring a 2.0/2.4 GeV, third-generation synchrotron light source (Elettra), a new free-electron laser light source (FERMI) and a variety of support laboratories. The extremely high quality of the machines and beamlines has set new performance records and has been producing results of great scientific and technological interest. In order to allow the laboratory to remain competitive in the next 20 years, an entirely new source - Elettra 2.0 - belonging to the new generation of storage rings (DLSR or Diffraction Limited Storage Ring) is being developed. The new source will exhibit a major increase in the brilliance and coherence fraction of the photon beams. The Elettra 2.0 optics is based on our enhanced symmetric six bend achromat structure (S6BA-E) with a 12-fold symmetry and an emittance of 200 pm-rad at 2.4 GeV. The new structure creates also straight sections in the arcs permitting the installation of additional insertion devices, thus increasing the number of beamlines. Existing beamlines will have to be upgraded and new beamlines developed to take full advantage of the characteristics of Elettra 2.0. The new machine is scheduled for commissioning in the second half of 2026. See http://www.elettra.eu for more information.

Beamline/Activity/Project description

The EIS-TIMER beamline, located at the FERMI FEL, is designed primarily for transient grating (TG) experiments in the extreme ultraviolet (EUV) and soft x-ray range, with the aim of investigating condensed matter dynamics at the nanoscale and developing a broader set of soft x-ray four-wave mixing (XFWM) spectroscopies. At present the main topics are ultrafast magnetic dynamics, phonons and thermal transport at the nanoscale. The beamline staff and user community have a strong record of publishing high profile scientific results. Comprehensive information on the beamline can be found at: www.elettra.eu/lightsources/fermi/fermi-beamlines/eis-timer/eis-timer.html .

Job description

The postdoctoral position at the EIS-TIMER beamline offers a unique opportunity for researchers aiming to make significant contributions to the understanding of condensed matter dynamics at the nanoscale and the development of soft x-ray XFWM spectroscopies. Future research projects, recently started via explorative EUV TG measurements include the development of self-diffraction spectroscopy, the study of the nonlinear mechanical response of surfaces and thin films and the exploitation of nanoscale gratings of light polarization.

The role demands a proactive approach to supporting beamline users through every phase of their activity at the beamline, from preparing the experimental set-up to conducting complex data analysis and writing scientific manuscripts. Active participation in the maintenance and upgrade of the beamline and experimental end-stations is expected. In addition, the postdoctoral researcher is expected to develop his/her own original research projects, mainly based on (but not limited to) EUV TG.

Qualifications

A Ph.D. in Physics, Chemistry or a related discipline is required. The candidate must not have more than 6-years of total postdoctoral experience in academic institutions or private companies. Applications will be considered also from candidates who have completed a doctoral course of studies and for whom the defense has been scheduled. In any case, the Ph.D. must be awarded by the end of September 2025.

A solid background in FEL or synchrotron radiation experimental methods, EUV/x-ray instrumentation, or table-top ultrafast methods based on optical lasers, supported by a publication record commensurate with career advancement, is expected.

Any of the following qualifications will be considered as an additional asset (please indicate relevant publications or

thesis):

- Research experience in the fields of transport processes, non-linear optics, magnetism, strongly correlated materials (including device physics) or amorphous solids.
- Use and basic maintenance of pulsed laser systems and optical setups.
- Participation in experimental campaigns at synchrotron/FEL user facilities.
- Programming skills in Python or Matlab, including interfacing of instruments.
- Demonstrated ability in computational physics or data processing.

The successful candidate should possess strong interpersonal skills favoring collaborative research programs in a team-oriented environment.

Good time management skills and ability to prioritize are expected, together with the ability to interact with the facility staff and international users at all levels, and to work as part of a multi-disciplinary team.

Good oral and written communication skills in English are essential.

General information

The appointment will be a fixed-term employment contract of an initial duration of 12 months, extendable by agreement of both parties, in accordance with the legal provisions in force, currently up to a maximum of 36 months. The salary will be commensurate with previous experience and qualifications of the candidate.

Applications should include the candidate's full curriculum vitae, the names and contact information (including electronic mail) of up to two persons who have agreed to provide references.

The deadline for the submission of the application is June 30, 2025.

Employees or former employees of Elettra Sincrotrone Trieste S.C.p.A. or temporaryand staff leasing employees or former employees with working experience atthe companywill be excluded from the present selection procedure. Employees or former employees of any Italian Public Entity who have exercised authority over Elettra Sincrotrone Trieste S.C.p.A. or have negotiated with Elettra - Sincrotrone Trieste S.C.p.A. within the last three years, will also be excluded from the present selection procedure, in accordance with the provisions of article 21 of the Italian legislative decree no. 39/2013 and in conjunction with article 53 (subsection16ter) of Italian legislative decree no. 165/2001.

We thank all applicants in advance.
For more information, please contact Filippo Bencivenga (email: filippo.bencivenga@elettra.eu).

To apply for this position please visit the following link:
https://www.elettra.trieste.it/it/about/careers/working-withus.html?id=4255