Elettra Sincrotrone Trieste

Postdoctoral Research Associate Position at the DiProI Beamline of FERMI

Deadline: 9 March 2026
Ref: DB/26/6

Background

Elettra Sincrotrone Trieste is an international multidisciplinary research center offering international users access to synchrotron and free-electron laser radiation for the characterization and processing of matter. The extremely high quality of the light sources 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 synchrotron radiation source - Elettra 2.0 - belonging to the new generation of storage rings (DLSR or Diffraction Limited Storage Ring) is being installed and will join the already operating free-electron laser (FEL) source FERMI in the second half of 2026. 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 are being upgraded and new beamlines constructed to take full advantage of the characteristics of Elettra 2.0. Seehttp://www.elettra.eufor more information.

Beamline/Activity/Project description

Diffraction and Projection Imaging (DiProI) is one of the five beamlines operating in the EUV/soft X-ray spectral range at the FERMI seeded free-electron laser (FEL). The end station enables scattering and diffraction experiments in both transmission and reflection geometries, fully exploiting the FEL's high transverse and longitudinal coherence, variable polarization, and wavelength tunability.

The scientific activities of the beamline are primarily focused on ultrafast spin dynamics, as well as on the development of advanced scattering and imaging methodologies that leverage the unique capabilities of the FERMI FEL. DiProI is equipped with a non-collinear split-and-delay unit for optically probed four-wave-mixing experiments, along with dedicated instrumentation for ptychographic imaging using spiral zone plates to generate beams carrying orbital angular momentum.Comprehensive information about the beamline and scientific main achievements are available at:

https://www.elettra.eu/lightsources/fermi/fermi-beamlines/diproi/diproihome.html .

Job description

The selected candidate will join the DiProI beamline staff in designing and performing advanced time-resolved EUV/soft X-ray imaging and scattering experiments. In particular, a recent in-house research program has demonstrated the strong sensitivity of XUV diffuse scattering to surface phonon dynamics, making this approach especially promising for the study of exfoliated few-monolayer quantum materials. The selected candidate is expected to develop original research activities and to collaborate actively with external users and the FERMI research staff and may also be involved in selected research projects carried out at other FERMI end stations, in particular EIS-TIMEX and MagneDyn. He/she will be involved in technical upgrades of both the DiProI beamline and the end station.

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 April 2026.

A solid background in at least one of the following fields, supported by a publication record commensurate with career advancement, is required:

- Coherent diffraction imaging or holography or small-angle X-ray scattering.
- Characterization and preparation of low dimensional quantum systems.
- Time-resolved experiments with free electron lasers or conventional laser sources.

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

- Research experience in the fields of nonlinear optics, or transport phenomena, or magnetism dynamics, or time-resolved X-ray photon spectroscopy.
- Experience in the construction/development of instrumentation used in time-resolved experiments at conventional laser source and/or in large scale facilities.
- Experience in low temperature and high magnetic field set-ups.
- Demonstrated ability in programming and data processing, particularly in Python or MATLAB, including interfacing of instruments.
- Demonstrated ability in data processing and analysis.

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. 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 March 9, 2026.

Employees or former employees of Elettra Sincrotrone Trieste S.C.p.A., as well as current or former personnel provided by temporary work agencies will 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 Flavio Capotondi (email: flavio.capotondi@elettra.eu).

To apply for this position please visit the following link:
https://www.elettra.trieste.it/it/about/careers/working-withus.html?id=4283