Elettra Sincrotrone Trieste

Scientist for the Coherent Diffraction Imaging (CDI) beamline

Deadline: 15 April 2026
Ref: DB/26/11

Background

Elettra Sincrotrone Trieste is an international multidisciplinary research centre 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 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. See http://www.elettra.eu for more information.

Beamline/Activity/Project description

To take full advantage of the high brilliance and low emittance of the upgraded Elettra 2.0, a new Coherent Diffraction Imaging (CDI) beamline with multimodal capabilities in the energy range 350-4000 eV is under construction. The beamline and its experimental station have been designed to address a broad spectrum of scientific cases by performing soft/tender X-ray scattering and imaging experiments in different modes and geometries on a rich variety of samples; as such, it will represent a unique experimental facility worldwide, providing enhanced capabilities for Bragg ptychography, diffractive imaging, Fourier transform holography, scanning X-ray nanodiffraction and X-ray photon correlation spectroscopy. The experimental station is based on a fully UHV-compatible diffractometer. A liquid-helium cooled sample manipulator enables access to the most intriguing phases of novel superconductors and electronic materials. Scanning nano-actuators are used to position the pinholes and the set-up comprising the zone plate and order-sorting aperture. The high-efficiency, fast X-ray detectors (both pixelated and area-integrating) installed on the moveable diffraction arms will be precisely aligned relative to the sample and will provide the possibility to image in transmission, reflectivity and Bragg geometries, as well as giving time-domain access for the investigation of collective ordering dynamics.

Job description

The successful candidate will be engaged in the development and operation of the CDI beamline at Elettra 2.0. Initially, he/she will oversee all aspects of testing and commissioning of the new experimental station and beamline, conducting and supervising acceptance tests and installations. This responsibility includes evaluating the overall performance of the experimental apparatus in collaboration with physicists and engineers.

He/she will be expected to play a pivotal role in guiding the research activities and fostering collaborative initiatives, while also being actively involved in the day-to-day operation of the beamline including maintenance. A key responsibility will be to broaden and strengthen the user community, partly through active outreach, by promoting the realization of users' research, supporting proposal submission, assisting users with experiment execution and data analysis, and consistently providing high-quality support.

In addition, he/she is expected to develop his/her own line of research, which exploits the unique capabilities of the CDI beamline and, where possible, further expands them. This will involve submitting proposals to relevant funding agencies, actively participating in collaborative projects, and leveraging a broad professional network to ensure the scientific success of the beamline and to plan future upgrades beyond Elettra 2.0.

Qualifications

A Ph.D. in Physics or related discipline is required. The candidate must not have more than 10 years of total postdoctoral experience, whether in academic institutions or private companies, with a track record commensurate with career

advancement. The following qualifications are required:

- Demonstrated experience in X-ray Absorption Spectroscopy /spectromicroscopy.
- A solid background in ultra-fast magnetism.

Expertise in the following areas will be considered an advantage:

- Design, construction and commissioning of advanced scientific instrumentation.
- Programming skills (Matlab and Python).
- Data acquisition and analysis (e.g., LabVIEW, Origin, Igor Pro) or simulation software (e.g., micro-magnetic simulations).
- Familiarity with OAM related research.

Preference will be given to candidates with demonstrated experience in Coherent diffraction imaging (CDI) at synchrotrons radiation or FEL sources.

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 envisioned is a permanent staff position, with a three-month trial period and employment starting date in September 2027.

The salary will be commensurate with the previous experience and qualifications of the selected 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 interviews may be held via video conferencing.

The ranking of suitable candidates resulting from this selection process may be used within the following 24 months.

Permanent employees of Elettra Sincrotrone Trieste S.C.p.A. 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.

The deadline for the submission of the application is April 15, 2026.

We thank all applicants in advance.
For more information, please contact Tevfik Onur Mentes (email: tevfik.mentes@elettra.eu).

To apply for this position please visit the following link:
https://www.elettra.trieste.it/it/about/careers/working-withus.html?id=4288