



Elettra Sincrotrone Trieste

Accelerator Physicist for Elettra 2.0

Deadline: 24 January 2025

Ref: CA/24/49

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.

Job description

Implementation of DLSR presents a series of critical accelerator physics and technology issues as a result of the reduced dynamic acceptance due to enhanced nonlinearities. DLSR are extremely sensitive to all sorts of imperfections and require extensive experimental and numerical studies. Moreover, the small vacuum chamber cross section and the strong magnetic fields of the lattice as compared with third generation storage rings enhance the impact of collective effects on beam dynamics and therefore stability. An additional aspect is related to the large number of various types of insertion devices, which have a notable impact on beam dynamics.

The successful candidate will join the staff of the machine physics team of the Accelerator Group and contribute to the optimization, maintenance and upgrade of the accelerator systems. In particular she/he will model insertion devices, their effect on electron beam optics and relative compensation, and participate in writing their technical specifications and/or in their acceptance tests. The successful candidate is also expected to give important contributions to all aspects of accelerator physics R&D, as well as being involved in developing the tools to be used during machine commissioning.

Qualifications

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A Master degree in Physics or Engineering or related fields followed by at least 1 year of proven experience with modeling of electron optics and beam dynamics in storage rings is required.

The following technical skills are expected:

coding capabilities, e.g., using Python, Matlab, and knowledge of simulation programs like Elegant, AT, MadX, for accelerator modelling and control.

A doctoral degree would be considered an additional asset.

The successful candidate should possess strong interpersonal skills to pursue collaborative research programs in a team-oriented environment and become part of existing research collaborations.

Good time management skills and ability to prioritize are expected, together with the ability to interact with project partners and work as part of a multidisciplinary team.

Good oral and written communication skills in English are essential. A working knowledge of Italian would be desirable.

Elettra - Sincrotrone Trieste S.C.p.A.

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General information

The appointment will be a fixed term contract with a duration of 24 months. The salary will be commensurate with previous experience and qualifications of the candidate.

Applications should include full curriculum vitae, contact information (including electronic mail) of at least two references.

The interviews may be held via video conferencing.

The deadline for the submission of the application is January 24, 2025.

Permanent employees of Elettra Sincrotrone Trieste S.C.p.A. and 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 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 (subsection 16ter) of Italian legislative decree no. 165/2001. We thank all applicants in advance.

For more information, please contact Simone Di Mitri (email: simone.dimitri@elettra.eu).

To apply for this position please visit the following link:

<https://www.elettra.trieste.it/it/about/careers/working-withus.html?id=4222>

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