



Elettra Sincrotrone Trieste

Scientific Computing Specialist

Deadline: 26 March 2024

Ref: IA/24/12

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 staff of the IT Group performs a wide range of tasks, from system administration and software acquisition to database management, algorithm development for data analysis, service support, as well as research and development.

The Scientific Computing team of the IT Group is focused on the complete lifecycle of scientific data, including database systems and novel analysis methods. They aim at providing relevant services to Elettra and FERMI beamlines while contributing to various aspects of the Elettra 2.0 upgrade.

Typical activities of the Scientific Computing team include data analysis, computational imaging, AI topics, data compression methods, code optimisation, mathematics and algorithm development to address the needs of the beamlines and laboratories of Elettra and FERMI.

Job description

The successful candidate will actively contribute to the activities of the Scientific Computing Team of the IT Group. These include research and development for scientific data analysis with focus on computational imaging and spectroscopy.

The selected candidate will be directly involved in activities focused on X-ray microscopy. He/she is expected to develop reconstruction algorithms for ptychography, relevant mathematical concepts and assist their integration in beamline operation, especially in preparation for Elettra 2.0.

Qualifications

Required:

- PhD in Computer Science, Physics, Engineering, Mathematics or a related field.
- Minimum 5 years of experience in software engineering for scientific computing.
- Demonstrated expertise in X-ray ptychography.
- Strong proficiency in Python and familiarity with GNU/Linux.
- Knowledge of computational imaging and synchrotron imaging techniques.

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- Familiarity with data compression methods.
- Understanding of AI and ML applications in imaging.

Additional useful qualifications:

- Experience in research institutions and involvement in related projects.
- Experience and knowledge of electronics and detectors, particularly in their integration with acquisition systems.

Good oral and written communication skills in English are essential.

Good time management skills together with the ability to interact with staff and facility users and to lead a multi-disciplinary team is expected.

General information

The appointment envisioned is a permanent position. The salary will be commensurate with previous experience and qualifications of the candidate.

Applications should include a full curriculum vitae, together with the names and contact information (including electronic mail) of at least two references.

The deadline for the submission of the application is March 26, 2024.

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, 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. We thank all applicants in advance.

For more information, please contact Roberto Pugliese (email: roberto.pugliese@elettra.eu) or Fulvio Bille` (email: fulvio.bille@elettra.eu).

To apply for this position please visit the following link:

<https://www.elettra.trieste.it/it/about/careers/working-withus.html?id=3901>

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