



Elettra Sincrotrone Trieste

Firmware Engineer for the Elettra 2.0 Radio Frequency System

Deadline: 1 September 2024

Ref: GA/24/40

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 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

The Elettra 2.0 electronic beam is accelerated thanks to a 500 MHz continuous wave radiofrequency (RF) signal in the hundred kilowatt power range that feeds the resonant accelerating structures. The RF digital feedback system is under development by a multidisciplinary team. The candidate will join the team to take part in this project from its development to the final verification. In particular, the successful candidate will support the design, development and maintenance of the firmware required by the RF digital feedback system. She/he will write the firmware of the digital FPGA system that implements the feedback control of the RF signal used to drive the RF power amplifier that accelerates the electron beam. She/he will also participate to the future development of other RF diagnostics based on the digital platforms to improve the performance of Elettra 2.0.

Qualifications

A Master degree in Electrical Engineering or related field is required together with a deep knowledge of Verilog HDL programming languages and a minimum of one year of experience in programming FPGA platforms, SoCs and digital logic circuits. A Ph.D. in the same academic field would be considered a plus.

The following technical skills are also required:

- good knowledge of Quartus multiplatform environment for FPGA design;
- good knowledge of LabVIEW, Matlab and Python programming language;
- good knowledge of electronic, embedded systems and circuit analysis;
- microwave technical expertise relevant to the job description.

Basic knowledge of the research infrastructure hosting multidisciplinary laboratories and particle accelerators would be considered a plus.

Good oral and written communication skills in English and in Italian language are required.

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

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

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Iscritta al Registro delle Imprese di Trieste
Società di interesse nazionale
ai sensi dell'art. 10, comma 4,
L. 19 ottobre 1999 n. 370

CERTIFIED
MANAGEMENT SYSTEM



UNI EN ISO 9001:2015
UNI ISO 45001:2018
UNI CEI EN ISO 50001:2018



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General information

The deadline for the submission of the application is September 1, 2024.

The appointment will be a fixed term contract with an initial duration of 36 months, subject to a trial period of 3 months, in accordance with the National Metalworkers Collective Labour Agreement and the Company Agreement, ex. art. 8 of the Decree Law 138/2011, dated 28th March 2024.

The salary will be commensurate with the previous experience and qualifications of the candidate.

Applications should include full curriculum vitae, a reference letter and contact information (including electronic mail) of the referee.

The interviews may be held via video conferencing.

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 Cristina Pasotti (email: cristina.pasotti@elettra.eu).

To apply for this position please visit the following link:

<https://www.elettra.trieste.it/it/about/careers/working-withus.html?id=4213>

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