Contribution ID: **22**   Type: **Presentation**

Digital Platform Reusability for Elettra 2.0 Systems

Monday, 23 March 2026 11:30 (25 minutes)

An FPGA-based platform has been developed in-house for the Electron Beam Position Monitor (eBPM) systems of Elettra 2.0, the ongoing upgrade of the Italian synchrotron toward a higher brilliance lightsource. Leveraging its modularity and high processing capabilities, this platform has been extended to various subsystems, including the Digital Low-Level Radio Frequency (DLLRF).

To maximize firmware and software reuse, a scaled-down version utilizing a lower-density FPGA was developed for less resource-intensive applications, such as Beam Loss Monitors (BLM) and Fast Beam Dump systems.

This paper discusses the advantages of this standardized framework, highlighting not only the increased development efficiency but also the benefits of a unified architecture. This approach enables the delivery of synchronous turn-by-turn data across all integrated units via a coherent data ecosystem, which then interfaces with the DPDK-based (Data Plane Development Kit) control layer.

Author: BRAJNIK, Gabriele (Elettra-Sincrotrone Trieste Scpa)

Co-authors: GAIO, Giulio (Elettra-Sincrotrone Trieste S.C.p.A.);   CAUTERO, Marco (Elettra-Sincrotrone Trieste);   COLJA, Matija (Elettra-Sincrotrone Trieste);   DE MONTE, Raffaele (Elettra-Sincrotrone Trieste S.C.p.A.)

Presenter: BRAJNIK, Gabriele (Elettra-Sincrotrone Trieste Scpa)

Session Classification: Session