

Operational Experience with the LLRF System of the FERMI@Elettra S-Band RF Plants

FERMI@Elettra is a single-pass linac-based FEL user-facility covering the wavelength range from 100 nm (12 eV) to 4 nm (310 eV) and is located next to the third generation synchrotron radiation facility Elettra in Trieste, Italy. The first FEL line in operation (FEL-1) has been opened to users at the end of 2012, while the second FEL line (FEL-2) covering the shorter wavelength down to 4 nm is in commissioning. The 1.5 GeV S-band linac is composed of fifteen 3 GHz 45 MW peak RF power plants powering the gun, sixteen accelerating structures and the RF deflectors. The requirements on beam quality impose tight specifications on the stability of the electromagnetic fields, which can be achieved only installing high reliable and high performance state of the art LLRF systems. This paper provides an overview of the performance of the system, discussing the achieved results, the strategies adopted to assure them and possible upgrade paths to increase the operability of the system.

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