FERMI: the first externally seeded Free Electron Laser

in the extreme ultraviolet and soft X-ray spectral regions

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FERMI is a seeded Free Electron Laser (FEL) user facility at the ELETTRA-Sincrotrone laboratory in Trieste. We provide an overview of FEL performances of this externally seeded source based on the high gain harmonic generation scheme, where the light from an optical laser is up-converted in frequency and amplified to the VUV/EUV and soft-X rays spectral range. This fourth-generation light source is characterized by a number of desirable properties, such as wavelength stability, low temporal jitter and longitudinal coherence. We provide an overview of the FEL performances and of the various modes of operation for the generation of multiple color/multiple pulses.

Aerial view of the ELETTRA storage ring and the FERMI free electron laser facility.