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X-ray radiation source characterization within the EuAPS project.

Plasma Wakefield Acceleration is a widely adopted technique able to increase the accelerating gradient and overcome the electrical breakdown phenomena, occurring in metallic structures, while reducing the size and the cost of conventional Radio-Frequency (RF) accelerators.

Plasma-based accelerators are capable of intrinsically generating betatron radiation emitted by accelerated electrons. This radiation is ultra-short (fs-range), spatially coherent, and its emission spectrum ranges from soft/hard X-ray up to gamma rays.
It can be adopted in a wide range of scientific areas for several user-oriented applications, including high-energy physics, materials science, medical and biological applications.

In this contribution, we will show the betatron source characterization. Two dedicated experimental campaigns, within the EuAPS project (EuPRAXIA Advanced Photon Source), were carried out at the INFN laboratory in Frascati and at the CLPU laboratory in Salamanca, with the aim of completely characterizing the radiation source and the laser-plasma acceleration process.

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