

Physics and Applications of High Brightness Beams



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First laser plasma accelerator based seeded FEL

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Free Electron Lasers (FELs) are traditionally operated on Radio-Frequency Accelerators (RFAs). But the use of Laser Plasma Accelerators (LPAs), exhibiting much higher accelerating gradients, could enable to reduce the footprint of the FEL facilities, especially in the case of FELs operated in the X-ray range.

We report the first lasing of a seeded FEL fully driven by an LPA. The experiment was performed at HZDR (Germany), coupling the high quality electron beams of the HZDR's LPA with the versatile COXINEL beam manipulation beamline. Our results substantiate the continuous progress of LPA technology to enable FEL operation and finally bring temporal coherence to those compact promising sources.

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