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Combining SASE and external seeding at high repetition rate: FLASH upgrade status

Monday 2 June 2025 16:00 (2 hours)

The FLASH facility generates XUV and soft X-ray radiation in two FEL beamlines based on SASE and powered simultaneously by a single superconducting linac. To enable next generation user experiments a series of upgrades is coordinated within the FLASH2020+ project. Upgrades on the linac have been performed in a preparatory 9 month shutdown in 2021/2022 and have demonstrated to deliver an improved electron beam quality and parameter range for operation. Right now the upgrades are targeted towards the FLASH1 FEL beamline and will transit the FEL from SASE to external seeding at MHz repetition rate with near transform limited pulses at superb stability. With an APPLE3 design, the radiators will enable full polarisation control which, together with a THz radiator, new pump-probe lasers and the corresponding beamlines, will enable new experiments on e.g. circular dichroism of magnetic materials, chirality and resonant excitations. In this contribution, we report on the FLASH2020+ incorporated existing and upcoming alterations to the FLASH facility as well as to project progress with respect to the current as well as following near- and midterm installations.

Footnotes

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Region represented

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