



Contribution ID: 1522 Contribution code: TUPL022

Type: **Poster Presentation**

Recommissioning of the FLASH injector and linac

Tuesday, 9 May 2023 16:30 (2 hours)

FLASH, the Free electron Laser in Hamburg is currently undergoing a substantial refurbishment and upgrade project (FLASH2020+). A major stage was the 9 month shutdown in 2021/22. During this shutdown key components of the injector/linac were inserted, moved, rebuild or upgraded to enable the efficient and reliable preparation of electron bunches for HGHG and EEHG seeding in the FLASH1 beamline and simultaneous SASE operation in the FLASH2 beamline. In particular we have, added a new injector laser system, installed a laser heater system, moved the 1st bunch compression chicane downstream to generate space for the laser heater, replaced two old acceleration modules with modern high-gradient modules (thereby gained an additional 100 MeV of energy), replaced the 2nd bunch compression chicane with a more fancy movable one that enables variable longitudinal dispersion while allowing the compensation of bunch tilts, and saves space for an additional matching section section at the entrance to the main linac. Here we describe the more general aspects of the re-commissioning of the machine with beam which started early October 2022.

Funding Agency

Footnotes

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Yes

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Session Classification: Tuesday Poster Session

Track Classification: MC2: Photon Sources and Electron Accelerators: MC2.A06: Free Electron Lasers