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Upgrade and recommissioning of the S-band linac of the University of Hawaii FEL laboratory

Tuesday 3 June 2025 16:00 (2 hours)

The electron beam linear accelerator at the FEL laboratory of the University of Hawaii at Manoa, originally developed by John Madey, has undergone significant upgrades in 2024 to enable its restart and improve its control systems and operational capabilities. The S-band linac accelerates electrons to 45 MeV, with a pulse current of 200 mA and pulse lengths of 4 to 8 µs, to generate infrared light through the Mark III undulator of the FEL oscillator. The linac now features a restored microwave electron gun, upgraded vacuum systems, modernized RF components and control systems. These efforts address critical technical challenges and allow for more stable and flexible operation. Preliminary recommissioning results are presented, and future plans include further enhancements to beam diagnostics and simulations to optimize performance and explore advanced configurations for FEL and accelerator research.

Footnotes

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Author: BIDAULT, Niels (European Organization for Nuclear Research)

Co-authors: WEINBERG, Amir (University of Hawaii); PURWAR, Harsh (Université Paris-Saclay, CNRS/IN2P3, IJCLab); LI, Siqi (University of Hawaii)

Presenter: BIDAULT, Niels (European Organization for Nuclear Research)

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