



Contribution ID: 1260 Contribution code: MOPG41

Type: **Poster Presentation**

Electron bunch spacing for the FEL generation with a laser heater and collimators at PAL-XFEL

Monday, 20 May 2024 16:00 (2 hours)

High current electron bunches with lower emittance and slice energy spread are required to generate the intense XFEL. However, it is difficult to maintain the emittance and slice energy spread during the bunch compression at magnetic bunch compressors (BC). The higher current peaks in the head and tail of compressed bunches spoil the core slices by the wakefield and coherent synchrotron radiation. We suppress these collective effects by the bunch spacing with a laser heater (LH) and collimators. Head and tail slices can be eliminated by collimators in the BCs. The effects from the head and tail slices are strongly suppressed to dilute them by the intense laser heating in the LH. In this paper, we present the bunch spacing with the LH and collimators in simulations and experiments. Also, we present the FEL improvement by these bunch spacing.

Footnotes

Funding Agency

This work is supported by MSIP, Korea.

Paper preparation format

Word

Region represented

Asia

Primary author: YANG, Haeryong (Pohang Accelerator Laboratory)

Co-authors: SHIM, Chi Hyun (Pohang Accelerator Laboratory); NAM, Inhyuk (Pohang Accelerator Laboratory); CHO, MyungHoon (Pohang Accelerator Laboratory)

Presenter: SHIM, Chi Hyun (Pohang Accelerator Laboratory)

Session Classification: Monday Poster Session

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