Contribution ID: **601** Contribution code: **THPS138** Type: **Poster Presentation**

Advanced optimization of microwave signal stability in the X band unit of SXFEL injector

Thursday 5 June 2025 15:30 (2 hours)

In the SXFEL injector, the beam stability achieved superior performance, maintaining fluctuations below 0.01% after passing through four S-band accelerating units. However, the stability deteriorated to 0.02% upon exiting the X-band linearizer. To mitigate this degradation, a series of targeted enhancements were implemented, including an extensive upgrade of the low-level RF system's front-end electronics and the integration of adaptive modulation techniques for input signal optimization. These measures effectively restored and improved the beam stability, achieving precision levels within 0.01%.

Footnotes

Paper preparation format

Region represented

Asia

Funding Agency

Author: XIAO, Chengcheng (Shanghai Synchrotron Radiation Facility)

Co-authors: WANG, Cheng (Shanghai Synchrotron Radiation Facility); TAN, Jianhao (Shanghai Advanced Research Institute); FANG, Wencheng (Shanghai Synchrotron Radiation Facility); HUANG, Xiaoxia (Shanghai Synchrotron Radiation Facility); XU, Yiming (Shanghai Synchrotron Radiation Facility)

Presenter: XIAO, Chengcheng (Shanghai Synchrotron Radiation Facility)

Session Classification: Thursday Poster Session

Track Classification: MC6: Beam Instrumentation and Controls,Feedback and Operational Aspects: MC6.T27 Low Level RF