



Contribution ID: 1722 Contribution code: WEODB1

Type: Contributed Oral Presentation

An upgraded universal frequency divider module for the new FLASH2020+ RF reference generation system

Wednesday 10 May 2023 11:30 (20 minutes)

FLASH (Free Electron Laser in Hamburg) is the first FEL in the world to deliver ultrashort radiation pulses in extreme ultraviolet and soft X-ray ranges, currently being upgraded at DESY within the FLASH2020+ plan. The upgrade covers implementing new tunable undulators, improving the beam energy to 1.35 GeV, and a complete redesign of the FLASH RF Reference Generation System. That system generates and distributes ultralow phase noise reference signals at several frequencies, all synchronized to the main 1.3 GHz signal. Lower frequency signals are created using a new version of a frequency divider module, originally developed for European-XFEL. The upgraded module is equipped with an input signal detection circuit that disables RF outputs when no input signal is provided. The new divider is significantly smaller and designed to be as universal as possible, therefore it is possible to use it in other systems and applications. This contribution presents the new frequency divider module, its performance, and its target application in the new FLASH RF Reference Generation System.

Funding Agency

Research supported by the Polish Ministry of Science and Higher Education, funds for international co-financed projects for years 2020-2021, agreement 5083/DESY/2020/0.

Footnotes

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Yes

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Session Classification: MC06.2 - Beam Instrumentation, Controls, Feedback & Operational Aspects (Contributed)

Track Classification: MC6: Beam Instrumentation, Controls, Feedback and Operational Aspects: MC6.T24: Timing and Synchronization