Joint DESY and University of Hamburg Accelerator Physics Seminar

MONDAY, 18.12.2023 14:30

Hybrid Seminar:

Seminar Room 30b/459 & zoom Video Access

Exploring the Characteristics and Challenges of Operating an Externally Seeded FLASH1

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Abstract

The FLASH Free-electron laser (FEL) at DESY represents a unique integration of scientific paradigms, benefitting from extensive learning and developing advanced controls based on past studies. This talk will present the virtual exploration with comprehensive simulations of the FLASH1 operational characteristics following its forthcoming transformation into a seeded FEL. As the first high repetition rate externally seeded FEL using Echo-enabled harmonic generation to reach the water window regime (4 nm), FLASH1 confronts a spectrum of operational challenges. These include known issues identified from past experiments and theoretical studies, as well as new complexities that we aim to proactively address through simulations. The focus here will be on:

1. Analyzing FLASH's inherent chirp and its impact on external seeding at the shortest planned wavelength;
2. Examining the resultant synchronization requirements;
3. Discussing the need for a resource-efficient framework for coherent control.

NOTE THE UNUSUAL DATE AND TIME

Please consider our zoom link

W.Hillert, (Univ. HH), I.Agapov (MPY) and M.Vogt (MFL).

Visit our web site at https://accphysem.desy.de/index.html