



Contribution ID: 233

Type: **Contributed talk**

First Commissioning Results from the XFEL Setup at the European XFEL

Tuesday 27 August 2024 17:30 (15 minutes)

We present the first commissioning results of the XFEL laser oscillator (XFELo) demonstrator project, a joint European XFEL and DESY effort.

XFELos promise unprecedented coherence, stability and brilliance in the hard X-ray regime. Their successful implementation would mean a leap forward for the field of FELs, opening new experimental opportunities and facilitating more demanding experiments at FEL facilities due to the increase in reproducibility and spectral flux.

The setup currently being developed at the European XFEL aims to test the feasibility of a cavity-based oscillator at a super-conducting high-repetition rate XFEL facility.

With two diamond crystals close to perfect backscattering geometry a bandwidth of 20 meV at a fixed X-ray photon energy of 7 keV should be achievable.

Photon pulses with mJ-level pulse energies and high pulse-to-pulse stability are within the potential reach of this demonstrator setup.

The scope of the project with its inherent challenges, the current status, and first results will be presented in this contribution.

I plan to submit also conference proceedings

No

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Session Classification: Mikrosymposium 2/2: Beamline Innovations

Track Classification: 2. Beamline Innovations