



Contribution ID: 1817 Contribution code: MOPG70

Type: **Poster Presentation**

## Early lasing at LCLS and its implications for future cavity-based XFELs

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

Cavity-based XFEL, or CBXFEL, is a future photon source concept under intense development at SLAC. It is considered a path towards full 3D coherence at angstrom wavelength, delivering another 2-3 orders of magnitude leap in source brightness compared to current XFELs configurations. In a first phase of the project, one of the goals is to demonstrate the regenerative amplification by returning and amplifying the seed pulse from 7 LCLS Hard X-ray Undulators (HXUs) with a rectangular crystal cavity. In this paper, we report on the recent measurement of early stage XFEL lasing characteristics at 9.831 keV photon energy by using 7 LCLS HXUs under e-beam conditions close to those chosen for the first phase of CBXFEL gain demonstration.

### Footnotes

### Funding Agency

### Paper preparation format

### Region represented

North America

**Primary author:** Dr HALAVANAU, Aliaksei (SLAC National Accelerator Laboratory)

**Co-authors:** LUTMAN, Alberto (SLAC National Accelerator Laboratory); ZHU, Diling (SLAC National Accelerator Laboratory); TANG, Jingyi (Stanford University); BALCAZAR, Mario (University of Michigan); MARGRAF, Rachel (Stanford University); SATO, Takahiro (RIKEN SPring-8 Center); MAXWELL, Timothy (SLAC National Accelerator Laboratory); HUANG, Zhirong (SLAC National Accelerator Laboratory)

**Presenter:** BALCAZAR, Mario (University of Michigan)

**Session Classification:** Monday Poster Session

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