



Contribution ID: 1794 Contribution code: MOPG45

Type: **Poster Presentation**

## Development of X-ray laser oscillator

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

The X-ray Laser Oscillator (XLO) uses LCLS pulses to pump population inversion in solid copper and lase on the K alpha line, producing fully coherent, transform limit X-ray pulses, opening new avenues for experiments in fields such as inelastic X-ray scattering, parametric down-conversion, quantum science, X-ray interferometry, and coherent imaging. An important component of XLO is a bow-tie cavity to recirculate the X-ray pulses, using Si or diamond crystals as mirrors in a Bragg configuration. In this proceeding, we report on the XLO optical cavity design and initial measurements, including intracavity focusing, mirrors and lenses alignment. We present and discuss a comparison between the numerical simulations and experimental data.

### Footnotes

### Funding Agency

### Paper preparation format

### Region represented

North America

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

**Co-authors:** AQUILA, Andy (SLAC National Accelerator Laboratory); PELLEGRINI, Claudio (University of California, Los Angeles); DOYLE, Margaret (Lawrence Berkeley National Laboratory); LIANG, Mengning (SLAC National Accelerator Laboratory); MAJERNIK, Nathan (SLAC National Accelerator Laboratory); WELKE, Noah (University of Wisconsin-Madison); MANWANI, Pratik (University of California, Los Angeles); BERGMANN, Uwe (SLAC National Accelerator Laboratory)

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

**Session Classification:** Monday Poster Session

**Track Classification:** MC2: Photon Sources and Electron Accelerators: MC2.A23 Other Linac Based Photon Sources