Contribution ID: **4** Contribution code: **TUP004-TUB** Type: **Poster Presentation**

Proposal for an extreme ultraviolet free-electron laser with low-energy electron beam

Tuesday 20 August 2024 20:40 (20 minutes)

There is an increasing demand for coherent extreme ultraviolet (EUV) radiation in imaging and spectroscopy, particularly as the next generation of EUV lithography requires high-power EUV light sources. Experimental results demonstrate that harmonic lasing in a free-electron laser (FEL) is an effective method for extending the wavelength range and producing narrow bandwidth FEL. In this contribution, we propose operating the radiation segment in conventional echo-enabled harmonic generation at high harmonic mode instead of the fundamental radiation. This approach combines phase shifting and undulator tapering to generate high-power EUV radiation. The results indicate that fully coherent EUV radiation with an average power of up to 1 kW can be generated using a 280-MeV electron beam with an average current of 10 mA.

Footnotes

Funding Agency

Author: YANG, Hanxiang (Shanghai Institute of Applied Physics)

Co-authors: HUANG, Nanshun (Zhangjiang Lab); Mr HE, Changchao (Shanghai Institute of Applied Physics); DENG, Haixiao (Shanghai Institute of Applied Physics)

Presenter: YANG, Hanxiang (Shanghai Institute of Applied Physics)

Session Classification: Poster session

Track Classification: Seeded FEL