



Contribution ID: 1995 Contribution code: MOPM065

Type: **Poster Presentation**

Generalized longitudinal strong focusing in a storage ring for coherent EUV radiation

Monday, 8 May 2023 16:30 (2 hours)

A laser-driven storage ring is proposed to generate steady-state, nanometer-long electron bunches. A ring of this type can produce coherent EUV radiation with greatly enhanced power and photon flux, benefiting a wide range of scientific and industrial communities, including condensed matter physics and computer chip fabrication. The underlying mechanism is called generalized longitudinal strong focusing (GLSF), which invokes precise transverse-longitudinal coupling dynamics and lowers the required laser power significantly by exploiting the ultrasmall vertical beam emittance. A practical instance indicates that kW-level coherent EUV radiation is attainable in a GLSF ring with a modulation laser power as low as 1 MW, allowing for continuous-wave operation of up-to-date optical cavities.

Funding Agency

This work is supported by the National Key R&D Program of China (Grant No. 2022YFA1603400) and the National Natural Science Foundation of China (NSFC Grant No. 12035010).

Footnotes

I have read and accept the Privacy Policy Statement

Yes

Primary author: LI, Zizheng (Tsinghua University in Beijing)

Co-authors: DENG, Xiujie (Tsinghua University in Beijing); PAN, Zhilong (Tsinghua University in Beijing); TANG, Chuanxiang (Tsinghua University in Beijing); CHAO, Alex (SLAC National Accelerator Laboratory)

Presenter: LI, Zizheng (Tsinghua University in Beijing)

Session Classification: Monday Poster Session

Track Classification: MC2: Photon Sources and Electron Accelerators: MC2.A24: Accelerators and Storage Rings, Other