Contribution ID: **1914** Contribution code: **MOPB085** Type: **Poster Presentation**

Study on the linear model of the wiggler in the storage ring

Monday 2 June 2025 16:00 (2 hours)

As proposed in Ref[1], a fully coherent synchrotron light source requires a high-current, low-emittance storage ring with very short damping time to deliver a high-quality beam for the bypass line, ultimately producing high average power EUV radiation. The initial design adopts 8 TBA (Triple Bend Achromat) cells, with four cells forming one superperiod. The straight sections on either side of each super-period are designed with high beta functions, while the internal straight sections feature low beta functions. Each low-beta straight section includes three super-conducting sandwich-type damping wigglers to facilitate the I transformation, which increases radiation losses and significantly reduces the damping time. Overall, the ring is equipped with 18 superconducting damping wigglers.

Footnotes

*Bocheng Jiang et al. A synchrotron-based kilowatt-level radiation source for euv lithography. Scientific Reports, 12(1), 2022.

Paper preparation format

LaTeX

Region represented

Asia

Funding Agency

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Session Classification: Monday Poster Session

Track Classification: MC2: Photon Sources and Electron Accelerators: MC2.A05 Synchrotron Radiation Facilities