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Lasing of the elliptically polarized undulators in SXFEL

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Shanghai soft X-ray free electron laser facility(SXFEL) is the first coherent X-ray light source in China with a wavelength covering the water window. With the help of a pair of elliptically polarized undulators(EPU) in the seeding line, the output laser can be switched between linear polarization and circular polarization, meeting the needs of different users. After tuning the planar undulators upstream and adjusting the gap and phase shift of the EPUs, FEL pulses at the wavelength of 6.75nm with both polarization states can be observed after the EPUs. With a proper reverse taper on these planar undulators, the intensity of the circularly polarized radiation is found much higher than linearly polarized radiation. Vertically polarized radiation can also be observed in a similar way. The pulse energy and the polarization purity are left to be measured.

Footnotes

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Author: GAO, Zhangfeng (Shanghai Synchrotron Radiation Facility)

Co-authors: LIU, Bo (Shanghai Advanced Research Institute); FENG, Chao (Shanghai Advanced Research Institute); DENG, Haixiao (Shanghai Institute of Applied Physics); ZHANG, Kaiqing (Shanghai Synchrotron Radiation Facility); LIU, Tao (Shanghai Advanced Research Institute); QI, Zheng (Shanghai Advanced Research Institute)

Presenter: GAO, Zhangfeng (Shanghai Synchrotron Radiation Facility)

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