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Optimizing the circular polarization degree of on-axis high harmonics of segmentally undulator system

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Recently, a new method has been proposed for fast polarization switching up to kilohertz of undulator radiation by using magnetic field modulation generated from low-current electromagnetic coils. Through fast switching the power of coils, the radiation spectra of two undulators can be rapidly shifted into and out of the bandpass of a monochromator, enabling fast polarization switching for the user beamline. With the help of electromagnetic coils, the distribution of polarization degree of on-axis high harmonic of segmental undulator system can be optimized. In this paper, we have studied the performance of the scheme using planar undulators. The circularly polarized mode is selected to be an example. The performance of related parameters, such as photon flux, polarization degree, and spot distribution, will be reported.

Footnotes

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