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Optimization of SHINE for attosecond pulse generation

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High-power attosecond X-ray pulses play a critical role in many areas of research like ultrafast nonlinear spectroscopy, structural and electronic damage-free X-ray measurements. For free-electron laser facilities, the self-chirping operation mode has been demonstrated as an effective method for generating terawatt-level X-ray attosecond pulses. To compress the bunches under this mode, the transport line should provide a positive R56. We report on the optimization of the LTU1 beamline in the switchyard section of SHINE, which achieves independent variable of both R56 and dispersion. This development provides crucial support for future attosecond pulse operation at SHINE.

Footnotes

Paper preparation format

Region represented

Asia

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