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Electron bunch shaping by laser heater for attosecond XFEL

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The pulse duration of the X-ray free-electron laser (XFEL) relies on the pulse duration of the electron bunch. The energy distribution of the electron bunch can be manipulated by using the laser heater in the purpose of generating attosecond pulse duration electron bunch current profile. Therefore, the resultant electron bunch current profile after the bunch compressor chicanes is programmable by the laser parameters. We performed the electron bunch shaping experiment by using the laser heater at PAL-XFEL. The specific FEL lasing condition using the laser heater shaped electron bunch is investigated using ELEGANT and GENESIS simulations.

Footnotes

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