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## Recent progress of THz source at the SXFEL

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Coherent, wide-tunable frequency and high intensity terahertz (THz) source is under preparation at the Shanghai Soft X-ray free-electron laser facility (SXFEL). The strong field THz radiation from 0.1 to 5 THz is generated by coherent transition radiation (CTR) when compressed electron bunches pass through the metal foil. In addition, the electron bunches modulated by frequency beating light can generate coherent, wide-tunable, high intensity THz radiation from 5 to 20 THz through the wiggler. Now the frequency beating optical system has been set at the laser heater of the SXFEL. The electromagnetic wiggler with peak magnetic field up to 2.5 T is adopted and the parameters of the wiggler are optimized to ensure the generation of strong field THz radiation. The simulation results show that the peak power of X-ray can reach the order of GW at 4 nm. The THz pulse energy can still be kept at mJ level under the proposed different parameters of the wiggler. The THz source at the SXFEL will provide an outstanding tool for strong field THz pump-probe experiments in the future.

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### Footnotes

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