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Authors:Shen, Yuzhen (1); Yang, Xi (1); Carr, G.L. (1); Hidaka, Yoshiteru (1); Murphy, James B. (1); Wang, Xijie (1)
Author affiliation:(1) National Synchrotron Light Source, Brookhaven National Laboratory, Upton, NY 11973, United States
Corresponding author:Shen, Y.
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Abstract:We report the generation of tunable, narrow-band, few-cycle and multicycle coherent terahertz (THz) pulses from a temporally modulated relativistic electron beam. We demonstrate that the frequency of the THz radiation and the number of the oscillation cycles of the THz electric field can be tuned by changing the modulation period of the electron beam through a temporally shaped photocathode drive laser. The central frequency of the THz spectrum is tunable from ~ 0.26 to 2.6 THz with a bandwidth of ~0.16THz.
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