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Study of the microbunching instability in the THz FEL at PITZ

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The PITZ accelerator comprises a radiofrequency photogun and an RF booster cavity, capable of generating electron beams with bunch charges of several nC and momenta of up to ˜24 MeV/c. To achieve higher beam currents which is a key parameter for the single-pass high-gain THz FEL, a four-dipole chicane is installed upstream of the undulator. Given the low beam energy and high bunch charge, amplification of microbunching instability (MBI) could be expected in the photo injector. Since the modulation induced by MBI typically occurs in the micrometer wavelength range—comparable to the THz wavelength—the impact of MBI on the THz source at PITZ will be analyzed and discussed in this paper.

Footnotes

Paper preparation format

LaTeX

Region represented

Europe

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