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Bunch length measurement based on Cherenkov radiation spectrum at PolFEL

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The PolFEL free electron laser project comprises 185 MeV cw-linac furnished with ASG electron gun and 4 Rossendorf-like cryomodels. The beam diagnostics system, besides bringing the beam to undulators, inverse Compton scattering interaction point, and finally to the dump, system is dedicated to metallic superconducting photocathodes development, in particular to gun performance characterization. Bunch length will be measured in the injector section, behind the bunch compressor, and in each linac branch, behind the wake-field linearizer at the undulator entrance. The bunch length is evaluated from sub-THz coherent Cherenkov radiation spectral distribution. Radiation emitted from a punched radiator will be analyzed with Martin–Puplett interferometer and measured with a broadband detector, both located on the breadboard at linac. A prototype will be preliminary measured with laboratory sub-THz source at IOE-MUT and subsequently at the Solaris linac with 0.5 GeV electrons.

Funding Agency

Footnotes

I have read and accept the Privacy Policy Statement

Yes

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