

Generation of Monochromatic Radiation from a Multilayer Prismatic Target

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In this report, we show the experimental results of angular distribution and spectrum of radiation produced by a multilayer prismatic target, consisting of metallic foils separated by vacuum/air gaps when an electron beam moving near target. Experiment was carried out at TPU microtron, where the 6 MeV electron beam consists of electron bunches with a repetition rate 2.63 GHz determined by RF system. We observe the sharp monochromatic lines in the spectrum of produced radiation and the dependence of the radiation intensity on the tilt angle of target. The obtained results are compared with Smith-Purcell radiation from a grating with the same period and Cherenkov radiation from a teflon prism generated for the same experimental conditions. We expect using this effects to allow increasing the monochromaticity and intensity of radiation when such a target will be designed and employed in THz and sub THz spectral ranges.

The reported study was funded by the JSPS-RFBR, project number 18-52-50002, and the Competitiveness enhancement program of Tomsk polytechnic university.

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