

Research and development of coherent terahertz sources at LEBRA linac, Nihon University

Thursday 29 August 2024 16:00 (2 hours)

The Laboratory for Electron Beam Research and Application (LEBRA) at Nihon University has been developing free electron laser (FEL), parametric X-ray radiation (PXR), and terahertz (THz) wave sources in collaboration with KEK and the National Institute of Advanced Industrial Science and Technology (AIST) using a 100 MeV electron linac. Each of these light sources is used for both internal and external collaborations. We are developing THz coherent edge radiation (CER), coherent transition radiation (CTR) and plane-wave coherent Cherenkov radiation (CCR) sources in the THz band for the FEL and PXR beamlines, respectively. In particular, we are developing THz wave sources using an artificial quartz hollow conical tube for the CCR source and a thin aluminum plate with a helical target surface for the THz-CTR optical vortex source. So far, we have performed parameter measurements, including beam profile and spectrum measurements, for the THz-CCR and the THz-CTR vortex beams. In this paper, we describe the development and characteristics of each THz wave source.

Footnotes

Funding Agency

This work was supported by JSPS KAKENHI Grant Numbers JP19H04406, 21K12539, 23K28360, and JKA through its promotion funds from KEIRIN RACE.

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Session Classification: Thursday Poster Session

Track Classification: MC2: Electron Accelerators and Applications: MC2.7 Synchrotron light sources