Contribution ID: **1862** Contribution code: **TUPM115** Type: **Poster Presentation**

Simulation and developmental status for generation and detection of THz using coherent transition radiation (CTR) technique in Delhi Light Source (DLS)

Tuesday 3 June 2025 16:00 (2 hours)

THz technology being a highly growing and potent field, finds use in a wide range of research applications. Delhi Light Source (DLS) at IUAC, New Delhi is at final stage of commissioning to produce intense and coherent THz radiation based on pre-bunched Free Electron Laser principle. As an addition to the narrowband undulator radiation, broadband Coherent Transition Radiation (CTR) will also be produced by passing femtosecond electron beam bunches through an Al foil .
To generate the electron bunches with multi-micro bunch structure from the RF photo cathode gun, a state of the art femtosecond fiber laser system has been developed in collaboration with KEK, Japan. The generated electron beam bunches with energy up to 8 MeV is expected to produce CTR maximum up to 10 THz with electric field few tens of kV/m. The multi-micro bunch structure increases the average CTR power. This paper reports the simulation results of the CTR showing the power, angular and frequenccy distribution. The schematic design and developmental status for the generation and detection of THz CTR are also discussed.

Footnotes

Paper preparation format

LaTeX

Region represented

Asia

Funding Agency

Author: KARMAKAR, Bappa (Inter University Accelerator Centre)

Co-authors: SAHU, Bhuban (Inter University Accelerator Centre); KARMAKAR, Joydeep (Guru Ghasidas Vishwavidalaya); AGGARWAL, Madhuri (Inter University Accelerator Centre); PATRA, Padmanava (Inter University Accelerator Centre); SHARAN, Sanchita (St Joseph's College (Autonomous)); GHOSH, Subhendu (Inter University Accelerator Centre); KUMAR, Sunil (Indian Institute of Technology Delhi)

Presenter: KARMAKAR, Bappa (Inter University Accelerator Centre)

Session Classification: Tuesday Poster Session

Track Classification: MC2: Photon Sources and Electron Accelerators: MC2.A25 THz sources