7th European Advanced Accelerator Conference

EAAC2025

Contribution ID: **706** Type: **Oral contribution**

Horn-based THz Streak Camera for Few-Femtosecond Electron Bunch Diagnostics at UCLA Pegasus

Monday 22 September 2025 18:00 (20 minutes)

At the UCLA Pegasus Laboratory, we demonstrate direct measurement of few-femtosecond electron bunches using THz streaking diagnostics. High-energy (50 uJ) THz pulses generated by optical rectification in a cryo-cooled LN crystal are used to streak ultrashort bunches that are generated by velocity compressing the high gradient RF photoinjector beam in a short linac section. An X-band RF linearizer can be used to flatten the longitudinal phase space. We compare the performance of different horn-based THz structures in terms of transmission, field enhancement and ultimately temporal resolution. This work highlights flexible, table-top methods for femtosecond-scale beam metrology in advanced accelerator applications.

Author: MUSUMECI, Pietro

Presenter: MUSUMECI, Pietro

Session Classification: PS2: High gradient vacuum structures

Track Classification: PS2: High gradient vacuum structures