

Physics and Applications of High Brightness Beams



Contribution ID: 45

Type: **Poster**

THz driven fs-resolution streaking

Longitudinal phase space measurements of high-brightness beams are limited by the streaking field strength and frequency of the RF source. Single cycle THz pulses generated through optical rectification have been proven to generate strong electric fields, offering significant improvement in field gradients while maintaining compactness for beam manipulation. We present experimental designs to couple micro-Joule level pulses with relativistic electron beams to perform longitudinal phase space measurements with fs-level resolution using 3D printed metal-coated structures. To achieve high interaction lengths, a zero-slippage IFEL scheme is demonstrated in which the electron beam velocity is matched to the group velocity of the THz radiation.

Primary authors: LENZ, Maximilian (UCLA-PBPL); Prof. MUSUMECI, Pietro

Presenter: LENZ, Maximilian (UCLA-PBPL)

Session Classification: Poster