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Overview of THz diagnostics at PITZ

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A terahertz (THz) free-electron laser (FEL) is developed at the Photo Injector Test Facility at DESY in Zeuthen (PITZ) to conduct proof-of-principle experiments for the European-XFEL. Narrowband 3 THz pulses with energies up to 100 µJ are generated using a single-pass, high-gain THz FEL driven by high-brightness electron beams. A dedicated diagnostic setup has been implemented for comprehensive THz radiation characterization. The pulse energy is measured using pyroelectric detectors, while spectral information is obtained via a Fourier-Transform Infrared (FTIR) spectrometer. The transverse radiation profile is captured with a THz camera. Linear polarization of the THz pulses is confirmed through a polarizer angle scan. Additionally, an in-house Michelson interferometer has been commissioned to enable spectral diagnostics at different THz stations.

Summary

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