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## Characterization of a single-pass high-gain THz FEL at PITZ

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A single-pass THz free-electron laser (FEL) at the Photo Injector Test facility at DESY in Zeuthen (PITZ) was designed and implemented for a proof-of-principle experiment on a tunable high-power THz source for pump-probe experiments at the European XFEL. THz pulses are generated at a radiation wavelength of 100  $\mu\text{m}$  within a 3.5 m long, strongly focusing planar LCLS-I undulator. High gain is achieved by driving the FEL with high brightness beams from the PITZ photoinjector at 17 MeV and a bunch charge of up to several nC. In addition to the mechanisms of self-amplified spontaneous emission (SASE), seeding of the THz-FEL by electron bunch modulation at the photocathode is also being investigated. The experimental results, including the gain curves and spectral properties of the THz-FEL radiation, are presented in comparison with theoretical predictions and numerical simulations.

### Footnotes

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