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## Simulations of Seeding Options for THz FEL at PITZ

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A THz FEL is in preparation at PITZ as a proof-of-principle experiment for a high power and high repetition rate THz source and as an option for THz-driven experiments at the European XFEL. Some of these experiments require excellent coherence and CEP stable THz pulses. In SASE regime the coherent properties of the FEL radiation are limited. A seeding scheme can be used instead of SASE to improve the coherent properties and shot-to-shot stability. Several options for seeding are considered in simulation for the THz FEL at PITZ: external laser pulse, pre-bunched electron beam, energy modulated electron beam and additional short spike. The results of the simulations for each method of seeding are evaluated and compared. The improvements over SASE in energy, spectral and temporal stability of the THz pulse are presented.

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Yes

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