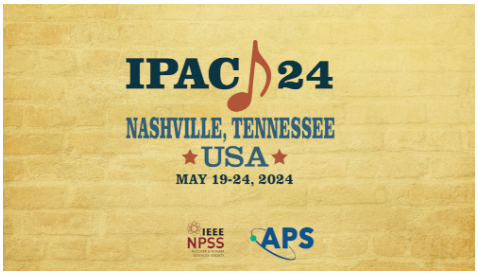

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Simulations of dielectric-lined waveguide seeding option for THz FEL at PITZ

Monday, 20 May 2024 16:00 (2 hours)

The first operational high peak and average power THz SASE FEL at the Photo Injector Test facility at DESY in Zeuthen (PITZ) has demonstrated up to 100 uj single pulse energy at a center frequency of 3 THz from electron bunches of 2-3 nC. The measured shot-to-shot radiation pulse energy has a fluctuation of ˜10\%. Shot-to-shot stability and temporal coherence in FELs can be greatly enhanced by the seeding method. In this paper, we propose the use of dielectric-lined waveguides (DLW) to obtain the initial seeding signal. Simulations of using electromagnetic wakefield in DLW to get energy modulation, control the transformation between energy modulation and density modulation, space charge dominated beam matching with chicane will be presented.

Footnotes

Funding Agency

Paper preparation format

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Region represented

Europe

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