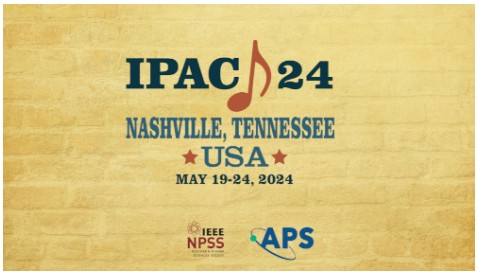

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First-principle simulations of a laser-assisted bunch compression scheme

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

High brightness electron beams with high peak current are critical to reducing the size of XFEL. A promising approach consists in combining low emittance beam generated high-frequency photoinjector with a laser-assisted bunch compression scheme. Such a compression consists in using an infrared laser to modulate the electron beam energy in a planar undulator and a low R56 chicane to compress these modulations and produced a micro-bunched beam. We present first-principle simulations of this compression process including the impact of coherent synchrotron radiation (CSR) on the beam dynamics. These simulations were performed using the large-scale self-consistent LW3D code for two compression configurations under study for compact XFEL designs.

Footnotes

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