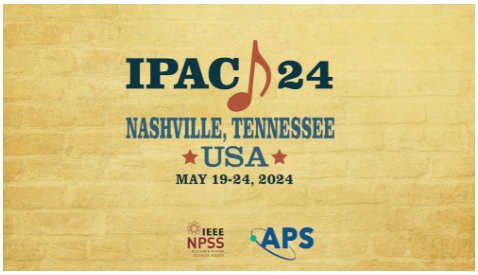

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Start-to-end simulation of high-gradient, high-transformer ratio structure wakefield acceleration with TDC-based shaping

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

In collinear wakefield acceleration, two figures of merits, gradient and transformer ratio, play pivotal roles. A high-gradient acceleration requires a high-charge beam. However, shaping current profile of such high-charge beam is challenging, due to the degradation by CSR. Recently proposed method, utilizing transverse deflecting cavities (TDC) for shaping, has shown promising simulation results for accurate shaping of high-charge beams. This is attributed to its dispersion-less feature. We plan to experimentally demonstrate high-gradient (>100 MV/m) and high-transformer ratio (>5) collinear structure wakefield acceleration. The experiment is planned at Argonne Wakefield Accelerator Facility. We present results from start-to-end simulations for the experiment.

Footnotes

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Presenter: HA, Gwanghui (Northern Illinois University)

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