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Optimizations for enhancing performance of emittance exchange-based photoinjector

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A recent simulation study demonstrated the potential to achieve high 4D-emittance using an emittance exchange (EEX) beamline integrated within a photoinjector. This EEX beamline enabled to achieve the final normalized longitudinal emittance of 0.44 micron, which corresponds to rms bunch length of 7micron and energy spread of 32keV. These results are noteworthy for a 60-MeV photoinjector comprising a gun, linac, and EEX beamline. However, the transverse emittance of approximately 0.6 micron remains a limitation for many applications. To address this, we have conducted computational studies to improve the performance of EEX photoinjector. We present the progress achieved thus far.

Footnotes

Paper preparation format

Others

Region represented

Asia

Funding Agency

Author: SEO, MinKyu (Korea University Sejong Campus)

Co-authors: HA, Gwanghui (Northern Illinois University); PARK, Seong Hee (Korea University Sejong Campus)

Presenter: SEO, MinKyu (Korea University Sejong Campus)

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