



Contribution ID: 1875 Contribution code: WEPC12

Type: **Poster Presentation**

Low-emittance beam generation at Argonne Wakefield Accelerator's upgraded drive-beam photoinjector

Wednesday, 22 May 2024 16:00 (2 hours)

The Argonne Wakefield Accelerator (AWA) facility's main beamline – the drive-beam linac – can produce electron bunches over a wide range of charges (100 pC up to 100 nC). A planned upgrade of the beamline includes the installation of a symmetrized RF gun and linac cavities with the ultimate goal of improving beam brightness. Simulations were done to explore the performance of the upgraded photoinjector to produce very low-emittance beams in conjunction with low mean-transverse-energy photocathodes. Additionally, selective collimation is also explored to further increase the beam brightness. An experiment to validate the devised operational modes will be discussed along with preliminary results on diagnostics tests.

Footnotes

Funding Agency

Paper preparation format

LaTeX

Region represented

North America

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Session Classification: Wednesday Poster Session

Track Classification: MC2: Photon Sources and Electron Accelerators: MC2.A08 Linear Accelerators