Contribution ID: **186** Contribution code: **WEP008** Type: **Poster Presentation**

A W-band corrugated waveguide for high-efficiency high-gradient wakefield acceleration

Wednesday 13 August 2025 16:00 (2 hours)

Compact RF structures in the sub-terahertz regime are promising for structure wakefield acceleration due to their ability in achieving high gradients in a reduced footprint. We report on the design, fabrication, and testing of a metallic corrugated waveguide operating at 110 GHz, tailored to the 42 MeV electron beam parameters at the Argonne Wakefield Accelerator (AWA). The experiment utilized the emittance exchange (EEX) beamline at AWA for longitudinal bunch shaping in two configurations: (1) a single short drive bunch to study high decelerating gradients, and (2) a two-bunch scheme featuring a triangularly shaped drive bunch followed by a long witness bunch to probe the wakefield and achieve a high transformer ratio. We will present the experimental design and results, which show good agreement with simulation predictions.

Please consider my poster for contributed oral presentation

Yes

Would you like to submit this poster in student poster session on Sunday (August 10th)

Yes

Footnotes

Funding Agency

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I have read and accept the Privacy Policy Statement

Yes

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