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Progress on the flat beam PWFA experiment at AWA

Tuesday 3 June 2025 16:00 (2 hours)

A wakefield experiment at the Argonne Wakefield Accelerator (AWA) facility employs flat electron beams with highly asymmetric transverse emittances to drive plasma wakefields in the underdense regime. These beams generate elliptical blowout structures, leading to asymmetric transverse focusing forces. The experiment features a compact 4-cm-long capillary discharge plasma source developed at UCLA. Analytic models of blowout ellipticity and matching conditions, validated by particle-in-cell simulations, inform the experimental design. Key engineering preparations, including vacuum-gas separation windows, beam transport systems, and diagnostics, are detailed. Initial beam runs focusing on flat beam generation and transport are also presented.

Footnotes

Paper preparation format

LaTeX

Region represented

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