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Simulations of Positron Injector for Ce+BAF

Thursday 14 August 2025 16:00 (2 hours)

A baseline concept for a continuous wave (CW) polarized positron injector was developed for the Continuous Electron Beam Accelerator Facility (CEBAF) at Jefferson Lab. This concept is based on the generation of CW longitudinally polarized positrons by a high-current, polarized electron beam (1 mA, 130-370 MeV, and 90% longitudinal polarization) that passes through a rotating, water-cooled, tungsten target. The simulation results for the Ce+BAF injector at the Low Energy Recirculator Facility (LERF) are presented, including positron beam generation, capture, energy selection, and acceleration to 123 MeV. The positron yield (or positron current) and longitudinal polarization are calculated considering the longitudinal and transverse CEBAF acceptances (<1% energy spread, <1 mm bunch length and normalized emittance of <100 mm mrad). The impact of target thickness, drive electron beam energy, and transverse size on positron yield within the required emittance limit is evaluated.

Please consider my poster for contributed oral presentation

No

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

No

Footnotes

Funding Agency

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I have read and accept the Privacy Policy Statement

Yes

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