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Feasibility investigation of a low energy laser driven plasma injector for ELSA

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The 3.2 GeV electron stretcher facility ELSA at the University of Bonn provides electron beams for fundamental research in hadron, detector and medical physics. The beam is extracted from a storage ring, whose injector consists of a 26 MeV linear accelerator and a 1.2 GeV booster synchrotron. The advent of functional plasma-based electron injectors in the MeV energy range raise the opportunity to replace the conventional Linac, which currently delivers electron pulses of up to 16 nC at a repetition rate of 50 Hz.

We conduct a feasibility study of using a plasma based injector for the booster synchrotron. For this, we improve the diagnostic capabilities of the Linac transfer beamline and the injector synchrotron to obtain and verify its acceptance parameters which are to be matched to beam properties from contemporary operated laser plasma accelerator setups. Possible plasma-based facility operating modes are evaluated.

Funding Agency

Footnotes

I have read and accept the Privacy Policy Statement

Yes

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