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Beam transport and diagnostics study for a space plasma experiment at MITHRA

Tuesday 3 June 2025 16:00 (2 hours)

The MITHRA facility being commissioned at UCLA, will be capable of producing low emittance beams with 100s pC of charge with bunch lengths in the 100s of fs range having an energy of 60 MeV. This can be used to drive plasma wakefields and the long bunch length compared to the plasma skin depth allows us to create a beam with a broadband energy spectrum. The energy spectrum resembles the electron spectrum observed in the radiation belts of Jupiter and can be used as a proxy for electron radiation exposure for flyby operations. In this paper, we discuss the beam transport, plasma source and diagnostics needed for the proposed experiment.

Footnotes

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