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Beam dynamics studies for the FCC-ee collimation system design

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The electron-positron Future Circular Collider (FCC-ee) foresees stored beam energies up to 20.7 MJ, a value almost two orders of magnitude higher than any previous lepton collider. Considering the intrinsic damage potential of the FCC-ee beams, a halo collimation system is under study to protect the most sensitive equipment from unavoidable losses. Beam dynamics and tracking studies are key aspects to evaluate the cleaning performance of the collimation system, as they help in an iterative process to converge on an optimum performance. The first results of such studies, exploring various configurations of materials and collimator lengths, are presented, including also estimated beam loss distributions around the ring. In addition, an impact parameter scan on the primary collimators is studied to identify the most critical case for the protection of sensitive equipment.

Funding Agency

Footnotes

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Yes

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