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Optimizations and updates of the FCC-ee collimation system

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The Future Circular electron-positron Collider, FCC-ee, is a design study for a 90 km circumference luminosity-frontier and highest-energy e^+e^- collider. It foresees four operation modes optimized for producing different particles by colliding high-brightness lepton beams. Operating such a machine presents unique challenges, including stored beam energies up to 17.5 MJ, a value about two orders of magnitude higher than any lepton collider to date. Given the high stored beam energy, unavoidable beam losses pose a serious risk of damage. Thus, an adequate protection system has to be implemented. To address this challenge, a beam collimation system to protect the sensitive equipment of this machine is indispensable. This paper presents the studies that led to a new collimation system baseline and a collimation performance evaluation under selected beam loss scenarios.

Footnotes

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