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IR beam losses and MDI collimators

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The Future Circular electron-positron Collider (FCC-ee) is being designed to explore physics beyond the present energy and luminosity frontiers for leptons. To achieve this goal, the FCC-ee must be capable of storing and colliding very high-intensity lepton beams. Handling such intensities poses unique challenges, including the need to safely manage stored beam energies of up to 17.5 MJ. A beam collimation system is therefore indispensable to protect sensitive machine components from damage due to beam losses and to minimize backgrounds in the experimental detectors. This contribution focuses on beam losses that can reach the interaction region (IR) and discusses collimation solutions under study to mitigate their impact. The current status of the studies is presented, including simulation-based evaluations of collimator performance in various beam loss scenarios affecting the IR and machine-detector interface (MDI).

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