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Design of the post-linac beam collimation at the switchyard section of SHINE

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The operation of X-ray free-electron laser facilities necessitates the use of electron beams characterized by both high repetition rates and high energy, thereby elevating radiation safety concerns attributable to potential beam loss. Beam collimation is employed to protect the undulator and other elements by removing the beam halo in operation, as well as absorbing the off-axis beam during machine failure. A beam collimation system in the switchyard is designed to protect the undulator and beam pipe in the SHINE. A tracking simulation with a large initial distribution provides a result of the collimation efficiency. Detailed simulation studies evaluating the available collimation design limits for the acceptance of the undulator are described.

Footnotes

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