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## Beam dump transfer line design in FCC-ee

*Monday 2 June 2025 16:00 (2 hours)*

The Future Circular lepton Collider (FCC-ee) will be an  $e^+e^-$  collider with beam energy spanning from 45.6 GeV to 182.5 GeV. When operating in Z-mode, it will deliver the highest luminosity ever obtained in any lepton machine worldwide, and the stored beam energy will reach up to 18 MJ. Due to synchrotron radiation damping, the beam vertical size will be on the order of a few tens of  $\mu\text{m}$  corresponding to a maximum energy density of  $\sim 5 \text{ GJ/mm}^2$  in the collider ring.

A dedicated beam dumping scheme is required to safely dispose this potentially disruptive beam. A transfer line is designed to increase the beam transverse size as much as possible and reduce the energy density of the beam at the dump. This contribution presents the dump transfer line design for the collider ring as well as related studies on machine protection.

### Footnotes

### Paper preparation format

LaTeX

### Region represented

Europe

### Funding Agency

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