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Multi-turn Beam Losses

Due to the large amount of energy stored in the LHC ring, cleaning of the beam halo is necessary in order to avoid quenches of the LHC superconducting magnets.

We review the mechanisms of multi-turn beam losses and design parameters of the LHC collimation system, and present the cleaning performance for various beam lifetimes scenarios, both at injection and top energy.

Results of tracking simulations after cleaning process are presented: inefficiency curves and longitudinal/transvere loss maps, with and without machine imperfections.

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