

Beam Cleaning and Collimation: Too Bad or Too Good?

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The LHC collimation system intercepts unavoidable beam losses and absorbs the lost beam power. In particular, it shields the super-conducting magnets against heating from beam loss. Its performance is characterized by the leakage rate or cleaning inefficiency. The system inefficiency depends on the beam energy, the beam type (protons or ions), the collimator settings and operational imperfections. The achieved performance during the first full LHC run is presented. Operational tolerances and difficulties during the 2010 run are reviewed. Setup procedures are described and ways for faster setup discussed. Based on the observed loss rates and magnet quench limits future performance is extrapolated, in particular for the achievable store beam energy and beta*. Observations and updated limits are compared to previous predictions. Collimator settings for 2011 are proposed and associated limits and margins explained. The impact of higher beam energy is discussed.

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