

THE LHC BEAM COLLIMATION

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Abstract

The Large Hadron Collider (LHC), presently under construction at the European Organization for Nuclear Research (CERN), will accelerate and collide 7 TeV proton beams with an unprecedented stored beam energy of 360 MJ. Handling this large stored energies in a superconducting machine requires a powerful collimation system which should provide a cleaning performance 100 to 1000 times better than what has been achieved in other operating storage rings. The LHC collimation system has also an important role in machine protection in case of system failures. Approximately 90 collimators will be available at the LHC from startup in order to fulfill these requirements. In this paper, the final LHC collimation system is presented. The designs of the various collimators is reviewed and the predicted performance of the overall system is discussed.

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