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An evaluation of collimation settings for the High Luminosity LHC baseline

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In the context of the High Luminosity Large Hadron Collider (HL-LHC) project, two configurations of collimator settings are being considered. A set of relaxed settings were conceived to address potential limitations due to the impedance contribution of the collimation system with the initially foreseen settings, and to increase the
primary betatron cut in case of over-populated beam tails. A significant simulation campaign has been conducted, utilising Xsuite-FLUKA coupling for the first time, to estimate the cleaning performance for each of these settings with the latest optics and layout scenarios. In addition, experiments in the current LHC have been carried out to experimentally study the cleaning performance with HL-LHC settings and to
validate the simulated predictions. This paper presents and examines the results of these studies, aiming to determine which collimation settings are more suitable for implementation.

Footnotes

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