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Simulations and measurements of collisional losses with Pb beams at the LHC

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During about one month in every operational year, the Large Hadron Collider (LHC) works as a heavy-ion collider. Four one-month Pb-Pb runs have been executed so far, as well as two p-Pb runs. The LHC heavy-ion programme is scheduled to continue in the future, featuring increased luminosity and beam energy. Beam losses caused by ions fragmenting in the collision process risk introducing performance limitations. Losses occur immediately downstream of the collision points as well as at other locations in the ring, through multi-turn beam dynamics processes and interactions with ring collimators. This paper presents simulations of collisional loss patterns using a new simulation approach that relies on the SixTrack-FLUKA coupling. Simulations of the 2018 Pb-Pb and 2016 p-Pb runs are benchmarked against experimental data and the prediction of collisional losses for future Pb-Pb and p-Pb runs is shown.

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Footnotes

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Yes

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