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Performance simulation studies for the ALICE TPC GEM Upgrade

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The ALICE collaboration plans major upgrades to its detectors for run 3 and 4 of the LHC. For the TPC, the upgrade is aimed at increasing the rate capability to record an expected collision rate of 50 kHz Pb-Pb collisions, which requires continuous readout.

The current TPC will therefore be reinstrumented with new Gas Electron Multipliers (GEM) readout chambers that can suppress ~99% of the ion back flow. The remaining 1% ion back flow will still give rise to significant space charge distortions that have to be corrected.

In this poster I will show how these corrections are foreseen to be done and report the expected performance obtained from simulations studies.

In order to understand the time dependence of the space charge distortions, a dynamic simulation has been developed. Results from these simulations will also be presented here.

Collaboration

ALICE collaboration

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