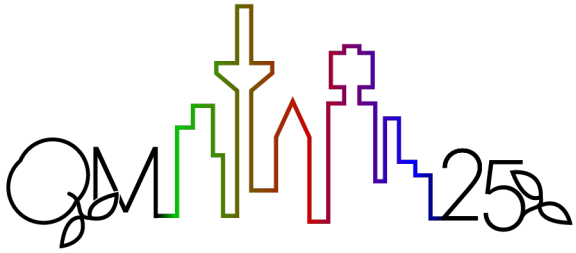

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Luminosity determination in 2023 Pb+Pb collisions at $\sqrt{s_{NN}} = 5.36$ TeV with the ATLAS detector

Determining the luminosity of collisions delivered by the LHC is the goal of the ATLAS luminosity programme. An accurate luminosity measurement is fundamental for any physics measurement with the ATLAS detector, in PbPb collisions especially for high precision physics measurements, such as the $\gamma\gamma \to \mu^+\mu^-$ cross section in ultra-peripheral Pb+Pb collisions. In ATLAS, the absolute luminosity calibration and its uncertainty is derived from a set of dedicated van-der-Meer (vdM) scans, which the LHC delivers for every collision dataset (p+p, p+Pb, Pb+Pb etc.) and at every centre-of-mass energy. The absolute calibration is monitored during the full data-taking period regarding its stability. During Pb+Pb running in the autumn of 2023, the ATLAS experiment recorded seven vdM scan pairs in different configurations, which are used to extract the absolute luminosity calibration. The stability of this calibration is monitored through a set of independent luminometers. This presentation discusses the procedure of the ATLAS luminosity measurement, and the results obtained for the 2023 Pb+Pb dataset.

Category

Experiment

Collaboration (if applicable)

ATLAS

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