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Luminosity Measurements with the ATLAS Inner Detector in Run 3 of the LHC

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A high-precision measurement of luminosity is essential for all ATLAS physics analyses, with the luminosity uncertainty limiting precise cross-section measurements of W, Z, and top-quark processes. The preliminary ATLAS luminosity calibration in Run 3 of the LHC is presented, with a particular focus on measurements using the Inner Detector. Methods exploiting the multiplicity of reconstructed charged-particle tracks play a key role in transferring the van der Meer scan-based calibration to standard physics data-taking conditions and ensuring long-term stability. Building on the techniques optimised for the ultra-precise Run-2 luminosity measurement, ATLAS aims to maintain sub-percent precision in Run 3.

Secondary track

T11 - Detectors

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