

## EXPECTED PERFORMANCE OF THE ATLAS INNER TRACKER AT THE HIGH-LUMINOSITY LHC

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The large data samples at the High-Luminosity LHC will enable precise measurements of the Higgs boson and other Standard Model particles, as well as searches for new phenomena such as supersymmetry and extra dimensions. To cope with the experimental challenges presented by the HL-LHC such as large radiation doses and high pileup, the current Inner Detector will be replaced with a new all-silicon Inner Tracker for the Phase II upgrade of the ATLAS detector. The current tracking performance of two candidate Inner Tracker layouts with an increased tracking acceptance (compared to the current Inner Detector) of  $|\eta| < 4.0$ , employing either an 'Extended' or 'Inclined' Pixel barrel, is evaluated. New pattern recognition approaches facilitated by the detector designs are discussed, and ongoing work in optimising the track reconstruction for the new layouts and experimental conditions are outlined. Finally, future approaches that may improve the physics and/or technical performance of the ATLAS track reconstruction for HL-LHC are considered.

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