

The design and layout of the Phase-II upgrade of the Inner tracker of the ATLAS experiment

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In the high luminosity era of the Large Hadron Collider (HL-LHC), the instantaneous luminosity is expected to reach unprecedented values, resulting in about 200 proton-proton interactions in a typical bunch crossing. To cope with the resultant increase in occupancy, bandwidth and radiation damage, the ATLAS Inner Detector will be replaced by an all-silicon system, the Inner Tracker (ITk), aiming to provide tracking coverage up to $|\eta| < 4$. The ITk consists of an inner pixel and an outer strip detector designed to provide a tracking performance at least as good as the current detector, but in the HL-LHC environment. In this talk, the updated layout of the detector for the pixel technical design report is presented, and the expected detector and tracking performance is discussed.

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