

The ATLAS ITk Strip Detector System for the Phase-II LHC Upgrade

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The ATLAS experiment at the Large Hadron Collider is currently preparing for a major upgrade of the Inner Tracking for the Phase-II LHC operation, scheduled to start in 2026. The radiation damage at the maximum integrated luminosity of 4000/fb implies integrated hadron fluencies over 2×10^{16} neq/cm² requiring a completed replacement of the existing Inner Detector. An all-silicon Inner Tracker (ITk) is under development with a pixel detector surrounded by a strip detector. The current prototyping phase, targeting an ITk Strip Detector system consisting of four barrel layers in the centre and forward regions composed of six disks at each end, is described in the ATLAS Inner Tracker Strip Detector Technical Design Report (TDR). With the recent final approval of the ITk strip TDR by the CERN Research Board, the pre-production readiness phase has started at the institutes involved. In this contribution we present the design of the ITk Strip Detector, and outline the current status of R&D and prototyping on various detector components, with a particular emphasis on the radiation-hard sensors, ASICs and front-end electronics under development. We will also discuss the status of preparations and the plans for the forth-coming pre-production and production phase.

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