

Performance of pixel planar sensors for ATLAS inner Tracker to operate at High-Luminosity LHC

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Abstract — In view of the High Luminosity LHC upgrade (HL-LHC), the ATLAS experiment plans to replace the current Inner Detector with an all-silicon Inner Tracker system (ITk). ITk will be instrumented with pixel sensors with an n-on-p silicon technology to achieve tracking requirements with radiation hardness and cost efficiency. A performance study on thin n-on-p planar pixel sensors attached to the readout chip showing testbeam results of hit efficiencies, space resolution and cluster properties are given before and after irradiation.

Keywords

High energy physics, instrumentation, detector technology, pixel detector, ATLAS.