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Performance of pixel n-in-p planar sensors for ITk to operate in High-Luminosity LHC

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. The paper reports on the performance of thin n-on-p planar pixel sensors pump-bonded to the RD53a prototype chip. An overview study of 2018 testbeam results of hit efficiencies, space resolution and cluster properties are given before and after irradiation.

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