

Development of planar pixel modules for the ATLAS high-luminosity LHC tracker upgrade

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The high-luminosity LHC will present significant challenges for tracking systems. ATLAS is proposing to replace the entire tracking system, including a significantly larger pixel detector. This paper reports on the development of large area planar detectors for the outer pixel layers and the pixel endcaps. Large area sensors have been fabricated and mounted onto 4 FE-I4 readout ASICs, so called quad-modules, and their performance evaluated in the laboratory and testbeam. Results from characterisation of sensors prior to assembly, experience with module assembly, including bump-bonding and results from laboratory and testbeam studies will be presented.

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