

The upgraded Pixel Detector of the ATLAS Experiment for Run2 at the Large Hadron Collider

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Run-2 of the LHC will provide new challenges to track and vertex reconstruction with higher energies, denser jets and higher rates. Therefore the ATLAS experiment has constructed the first 4-layer Pixel detector in HEP, installing a new Pixel layer, also called Insertable B-Layer (IBL). IBL is a fourth layer of pixel detectors, and has been installed in May 2014 at a radius of 3.3 cm between the existing Pixel Detector and a new smaller radius beam-pipe. To cope with the high radiation and pixel occupancy due to the proximity to the interaction point, two different silicon sensor technologies (planar and 3D) have been developed as well as a new read-out chip within CMOS 130nm technology and with larger area, smaller pixel size and faster readout capability. The new detector is the first large scale application of 3D detectors and CMOS 130nm technology.

An overview of the lessons learned during the IBL project will be presented, focusing on the challenges and highlighting the issues met during the production, integration, installation and commissioning phases of the detector.

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