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## DAQ Hardware and software development for the ATLAS Pixel Detector

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In 2014, the Pixel Detector of the ATLAS experiment was extended by about 12 million pixels with the installation of the Insertable B-Layer (IBL). Data-taking and tuning procedures have been implemented by employing newly designed read-out hardware, which supports the full detector bandwidth even for calibration. The hardware is supported by an embedded software stack running on the read-out boards. The same boards will be used to upgrade the read-out bandwidth for the two outermost layers of the ATLAS Pixel Barrel (54 million pixels).

We present the IBL read-out hardware and the supporting software architecture used to calibrate and operate the 4-layer ATLAS Pixel detector. We discuss the technical implementations and status for data taking, validation of the DAQ system in recent cosmic ray data taking, in-situ calibrations, and results from additional tests in preparation for Run 2 at the LHC.

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