

Readout Tests of the ATLAS Detector's ITk Pixel System Toward the HL-LHC Upgrade

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Data acquisition (DAQ) tests of the RD53a single chip cards (SCC) using Yet Another Rapid Readout (YARR), Front-End Link eXchange (FELIX) and Reconfigurable Cluster Element (RCE) readout systems are performed. Test stand for the DAQ tests of RD53a SCC was assembled at the SLAC National Accelerator Laboratory. YARR is the system developed for readout of up to 4 SCC or one quad module. It is widely used by universities and labs. FELIX system is designed to readout multiple modules; it is selected as the baseline readout system of the prototypes after the system integration. RCE is a System-on-Chip based readout system developed at SLAC, that is the principal data transmission qualification platform which also serves early module tests and large structure readout. DAQ tests of the three readout systems are required to proceed further with the ITk Pixel System upgrade toward the High Luminosity LHC Upgrade of the ATLAS detector. Comparison of results obtained with YARR, FELIX and RCE readout systems is presented.

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Yes

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