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Phase-I Trigger Readout Electronics Upgrade for the ATLAS Liquid-Argon Calorimeters

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For the Phase-I luminosity upgrade of the LHC, a higher granularity trigger readout of the ATLAS LAr Calorimeters is foreseen in order to enhance the trigger feature extraction and background rejection. The new readout system digitizes the detector signals, which are grouped into 34000 so-called Super Cells, with 12-bit precision at 40 MHz. The data is transferred via optical links to a digital processing system which extracts the Super Cell energies. A demonstrator version of the complete system has now been installed and operated on the ATLAS detector. The talk will give an overview of the Phase-I Upgrade of the ATLAS LAr Calorimeter readout and present the custom developed hardware including their role in real-time data processing and fast data transfer. This contribution will also report on the performance of the newly developed ASICs including their radiation tolerance and on the performance of the prototype boards in the demonstrator system based on various measurements with the 13 TeV collision data. Results of the high speed link test with the prototype of the LAr Digital Processing Boards will be also reported.

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