

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

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Electronics developments are pursued for the trigger readout of the ATLAS Liquid-Argon Calorimeter towards the Phase-I upgrade scheduled in the LHC shut-down period of 2019-2020. Trigger signals with higher spatial granularity and higher precision are needed in order to improve the identification efficiencies of electrons, photons, tau, jets and missing energy, at high background rejection rates, already at the Level-1 trigger. The LAr Trigger Digitizer system will digitize the 34,000 channels (SuperCells) at a 40 MHz sampling frequency with 12 bit precision after the bipolar shaping of the front-end system. The data will be transmitted to the LAr Digital Processing system in the back-end to extract the transverse energies and perform the bunch-crossing identification. A demonstrator has been installed during Run-2, and the results of the data-taking have helped to validate the chosen technology. Results of ASIC developments including QA/QC and radiation hardness evaluations, performance of the pre-production boards, results of the system integration tests, QA/QC test of final production boards will be presented along with the overall system design and status of the installation and commissioning.

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