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# Level-1 Data Driver Card - A high bandwidth radiation tolerant aggregator board for detectors

*Tuesday 23 May 2017 15:20 (4 minutes)*

The Level-1 Data Driver Card (L1DDC) was designed for the needs of the future upgrades of the innermost stations of the ATLAS end-cap muon spectrometer, the New Small Wheel project, based on Micromegas and sTGC technologies. The L1DDC is a high speed aggregator board capable of communicating with multiple front-end electronic boards. It collects the Level-1 data along with monitoring data and transmits them to a network interface through bidirectional and/or unidirectional fiber links at 4.8 Gbps each. In addition, the L1DDC board distributes trigger, time and configuration data coming from the network interface to the front-end boards. The L1DDC is fully compatible with the Phase II upgrade where the trigger rate is expected to reach the 1 MHz. Three different types of L1DDC boards will be fabricated handling up to 10.080 Gbps of user data. It consist of custom made radiation tolerant ASICs: the GigaBit Transceiver (GBTx), the FEAST DC-DC converter, the Slow Control Adapter (SCA), and the Versatile Tranceivers (VTRX) and transmitters (VTTX). The overall scheme of the data acquisition process and in particular the L1DDC board will be described. The results from the various system integration and radiation tests will be presented.

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