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Status and testing of the MDT Trigger Processor for the ATLAS Level-0 Muon Trigger at HL-LHC

The Monitored Drift Tube Trigger Processor (MDT-TP) will improve the rate capabilities of the first-level muon (L0 Muon) trigger of the ATLAS Experiment during the operation of the HL-LHC.
The information of the trigger candidate, obtained by other muon trigger subsystems, will be combined with the precision of the MDT chambers in order to improve the resolution on the muon momentum measurement, while limiting the trigger rate to an acceptable level in the high-pileup environment of HL-LHC.
The MDT-TP trigger logic is implemented on a AMD VU13P FPGA, where MDT hits are extracted around the region-of-interest identified by the trigger candidate and are used to perform muon reconstruction and transverse momentum estimation. For accepted events, MDT hits are transmitted by the MDT-TP to the ATLAS data acquisition system via FELIX. Monitoring, configuration and interfaces with other ATLAS subsystems are implemented via services running on a Zynq SoC.
Several tests of the MDT-TP are being conducted, including the configuration and monitoring of the MDT-TP and the on-detector electronics, communication with other L0 Muon trigger boards and readout via FELIX. The current status of the prototype testing and the recent updates on firmware and software developments will be presented.

Secondary track

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