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DAQ software implementation in the TileCal ALTI Module

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The Tile Calorimeter (TileCal) is the central hadronic calorimeter ($|\eta| < 1.7$) of the ATLAS experiment, made out of iron plates and plastic scintillators. The TileCal is divided into three cylinders along the beam axis, each of which is azimuthally segmented into 64 wedge-shaped modules, staggered in the ϕ direction. TileCal online software is a set of Trigger and Data Acquisition (TDAQ) software, and its main purpose is to readout, transport and store physics data originating from collisions at the Large Hadron Collider (LHC). The ATLAS Local Trigger Interface (ALTI) module is a new electronic board, designed for the ATLAS experiment at CERN, a part of the Timing, Trigger and Control (TTC) system. It is a 6U VME module which integrates the functionalities of four legacy modules, currently used in the experiment: Local Trigger Processor, Local Trigger Processor interface, TTC VME bus interface and the TTC emitter. ALTI module will provide the interface between the Level-1 Central Trigger Processor and the TTC optical broadcasting network to the front-end electronics of each of the ATLAS sub-detectors. There is a need to develop and integrate the ALTI software in the Tile online software. Performance tests and maintenance of the ALTI module software will be carried out during the second half of the Long Shutdown 2 (Dec 2018 - Apr 2021) period, in preparation for Run 3 (May 2021-2024) data-taking period.

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