

Phase-1 ATLAS Level-1 Trigger in Run-3

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The ATLAS Level-1 Trigger, crucial for the selection of LHC events at CERN, has been upgraded for Run-3 with advanced processors and FPGAs, extensively using optical links to enhance performance. The software has adopted modern continuous integration tools and advanced monitoring. The Calorimeter Trigger system, utilizing the detector's full granularity, enhances object identification alongside a redesigned Topological Processor for detailed spatial analysis. Notably, the Muon Trigger system, with input from the newly installed muon sub-detector (NSW), improves Level-1 Trigger background rejection. Trigger Decision and Clock distribution were enhanced with new single-board modules. The Central Trigger system includes a System-on-chip for the new Muon Interface, running control and monitoring applications directly on hardware. This overview highlights the upgrades' impact on system performance, particularly under Run-3 high-intensity conditions, paving the way for future physics.

Alternate track

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