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The ATLAS Muon Trigger vertical slice at LHC startup

The ATLAS trigger system has a three-levels structure, implemented to retain interesting physics events, here described for the muon case ("Muon Vertical Slice"). The first level, implemented in a custom hardware, uses measurements from the trigger chambers of the Muon Spectrometer to select muons with high transverse momentum and defines a Region of Interest (RoI) in the detector. RoIs are then processed by a second trigger level, in which fast algorithms run on an online software architecture. Full granularity information from precision chambers is accessed inside RoIs. A third trigger level (Event Filter), using offline-like algorithms and accessing the full event, provide the best possible muon reconstruction/identification and finally confirm or discard the trigger hypothesis formed at earlier levels. Implementation and performance of the full muon trigger slice, together with first events triggered with LHC beams on, are presented.

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