Contribution ID: **31** Type: **not specified**

The design and performance of the ATLAS Inner Detector trigger for Run 2

Wednesday 30 September 2015 10:05 (15 minutes)

The design and performance of the ATLAS Inner Detector (ID) trigger algorithms running online on the high level trigger (HLT) processor farm with the early LHC Run 2 data are discussed. During the 2013-15 LHC shutdown, the HLT farm was redesigned to run in a single HLT stage, rather than the two-stage (Level 2 and Event Filter) used in Run 1. This allowed a redesign of the HLT ID tracking algorithms, essential for nearly all physics signatures in ATLAS. The redesign of the ID trigger, required in order to satisfy the challenging demands of the higher energy LHC Run 2 operation, is described. The detailed performance of the tracking algorithms with the initial Run 2 data is discussed, for the different physics signatures. This includes both the physics object reconstruction and timing performance for the algorithms running on the redesigned single stage ATLAS HLT Farm. Comparison with the Run 1 strategy are made and demonstrate the superior performance of the strategy adopted for Run 2.

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Session Classification: ATLAS DAQ