

Integration test of a new inner-station TGC system for the ATLAS experiment at HL-LHC

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We integrated the detector and the readout electronics for a new inner-station TGC system at the ATLAS experiment and evaluated the performance. The TGC detectors installed in the endcap inner stations of the ATLAS detector will be upgraded from the doublet to triplet chambers for an improved selectivity of the first-level muon trigger at the HL-LHC. The challenging structure of fitting a triplet within the same envelope as the doublet makes integration tests with the readout electronics crucial. The detector and readout electronics from early production were integrated, and the measurements showed an acceptable noise level and a detection efficiency of 94% for each layer. Additionally, the trigger firmware was developed requiring coincidences in two or more layers for this detector and confirmed with the functional simulation.

Alternate track

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Yes

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