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## Construction and testing of the sMDT system for the HL-LHC ATLAS muon detector upgrade

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The Large Hadron Collider (LHC) will be upgraded to increase its luminosity by a factor of 7.5 relative to the design luminosity (referred as HL-LHC). The ATLAS detector will undergo a major upgrade to fully explore the physics opportunities provided by the HL-LHC. In order to improve the Level-1 muon trigger efficiencies at the HL-LHC, the precision Monitored Drift Tube (MDT) chambers will be upgraded with smaller-diameter MDT (sMDT) chambers, designed by the Max Planck Institute (MPI), in the barrel inner station of the Muon Spectrometer to make space for additional Resistive Plate Chamber (RPC) triggering layers. This talk will report on the design and construction of the infrastructure for the sMDT tube and chamber productions as well as the procedures of the detector construction and QA/QC tests. Data on mechanical precision measurements and sMDT efficiencies and tracking resolutions measured with cosmic ray muons will be presented based on the first 50 chambers produced at MPI (Germany) and Michigan (USA) in the past year.

### Collaboration

ATLAS Muon

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**Session Classification:** Gas Detectors - Poster session