Abstract Submitted
for the APR21 Meeting of
The American Physical Society

sMDT Module-0 Chamber Construction and Test for HL-LHC Upgrade of the ATLAS Muon Spectrometer CHUANSHUN WEI, University of Michigan, ATLAS COLLABORATION — The Large Hadron Collider (LHC) will be upgraded to increase its luminosity by a factor of 2 of its designed luminosity ($10^{34} cm^2 s^1$). The ATLAS detector will undergo a major upgrade to fully explore the physics opportunity provided by the upgraded LHC. In order to optimize trigger efficiency at the HL-LHC(High Luminosity LHC), the Muon Spectrometer will be upgraded by replacing the MDT (Monitored Drift Tube) chambers by smaller-diameter MDT (sMDT) chambers and additional thin-gap RPC (Resistive Plate Chamber) trigger chambers in the barrel inner station. Michigan has carried out intensive RD for sMDT construction over the past few years. Large infrastructure and tools are designed and built. The first small prototype chamber and a full-size Module-0 chamber have been built and tested at Michigan. I will report on the sMDT Module-0 chamber construction, precision measurement and test at the University of Michigan. We demonstrate that we can build the new generation muon chamber to satisfy all the stringent precision and performance requirements.

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Date submitted: 06 Jan 2021 Electronic form version 1.4