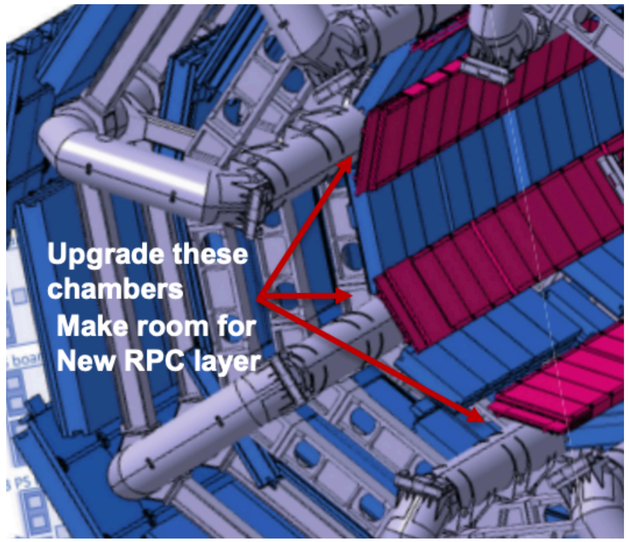
sMDT Construction and Testing for HL-LHC

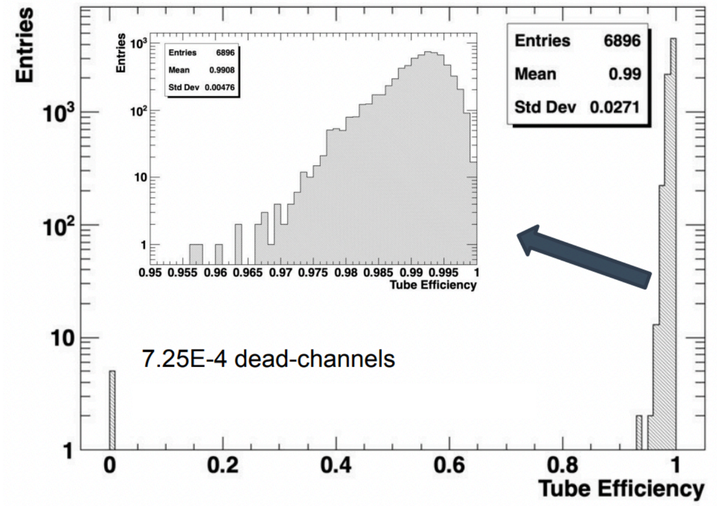


The ATLAS muon spectrometer sMDT upgrade will use smaller radius drift tubes to make room for a new RPC layer for muon triggering.

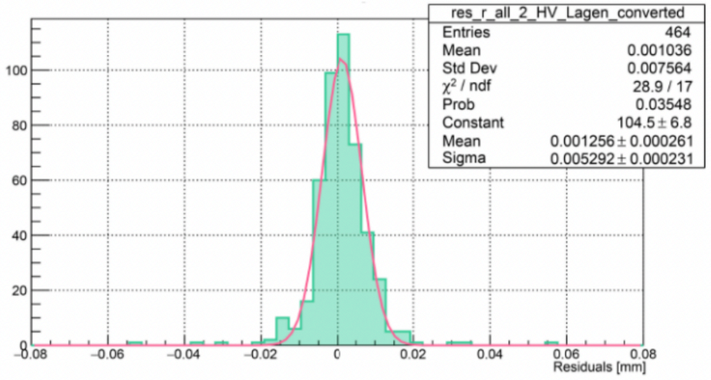
55 of 96 chambers have been constructed at MPI Munich and the University of Michigan. The upgrade will include 46080 new drift tubes.

Results from cosmic-ray test: each tube is on average **99% efficient**.

Less than 1E-3 tubes have wire removed for various issues (wire snap, etc.).



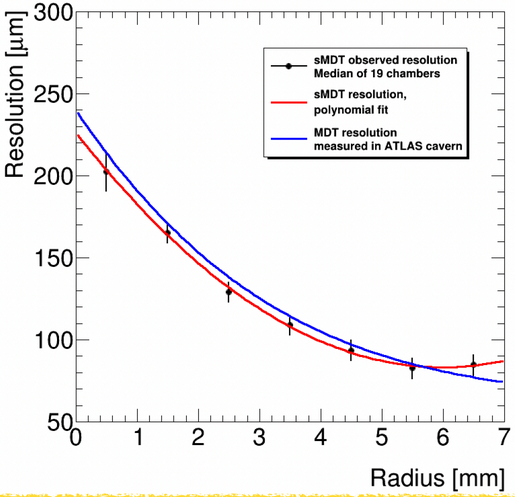
Wire position is measured to within ± 10**µm**.



Observed (expected) single-hit resolution is **102.9±8.1µm (106 µm)**.

Results are consistent with ATLAS Run 2 MDT resolution.

Includes a Geant4 estimate of the multiple Coulomb scattering correction.



Kevin Nelson (University of Michigan),
on behalf of the ATLAS Muon Collaboration

Pisa Meeting on Advanced Detectors
May 22-28, 2022

ATLAS EXPERIMENT