ATLAS NSW sTGC @ GIF

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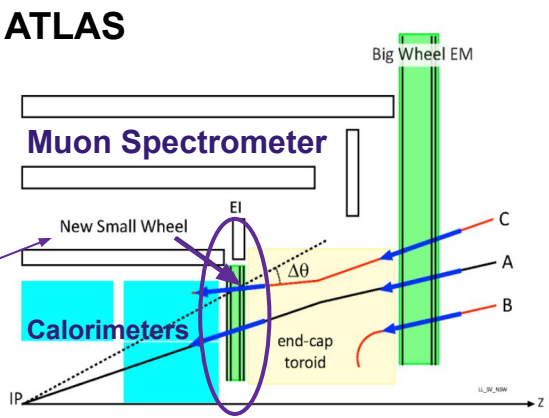
On behalf of the NSW sTGC team

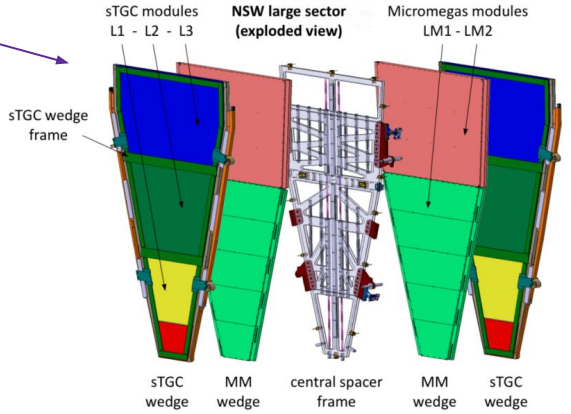
5th Annual GIF++
User Meeting 2021
16-11-2021

TEL AVIV UNIVERSITY

ATLAS NSW sTGC Introduction

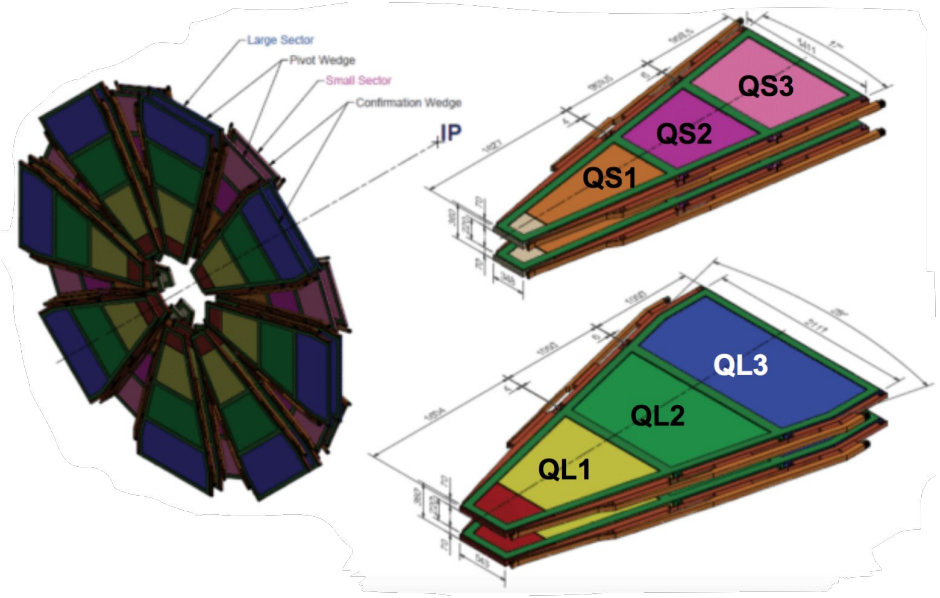
- New Small Wheel – part of the ATLAS Phase II upgrade
  - The two sides of the NSW have now replaced the first muon spectrometer endcap wheels (!)
  - sTGC – small-strip thin gap chambers
  - sTGCs are the outside of the NSW sandwich
    - Multi-wire proportional chambers
  - Provide triggering in addition to the precision tracking from MicroMegas for Run 3 and HL-LHC

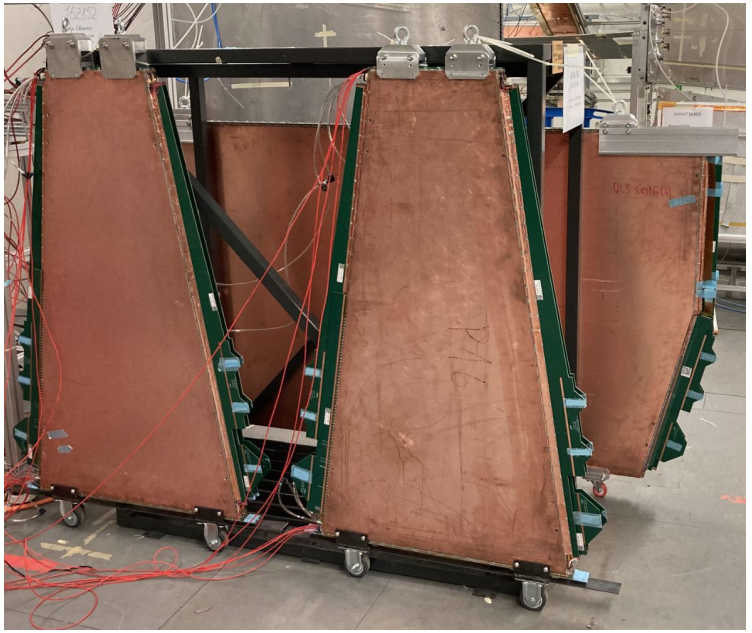




ATLAS NSW sTGC at GIF++

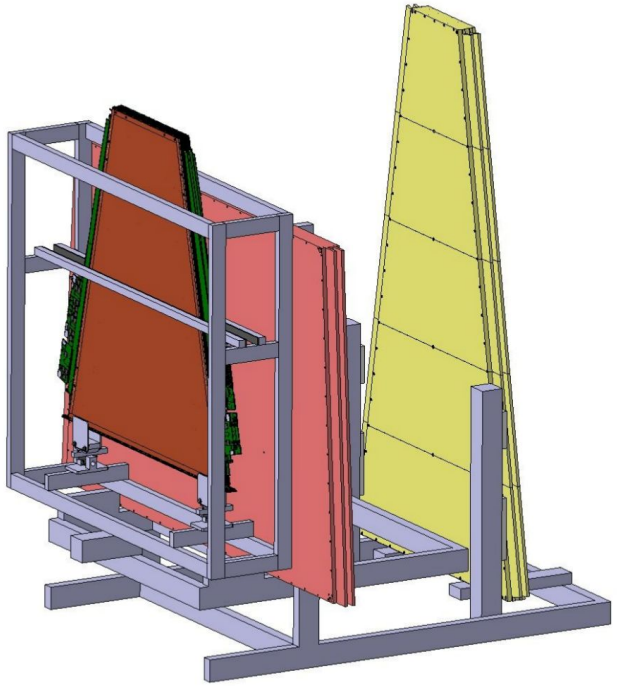
- **All sTGC quadruplets tested** at GIF++:
- 192 production quadruplets + spares = 215 detectors
- Radiation tests for production quads are now **finished**.



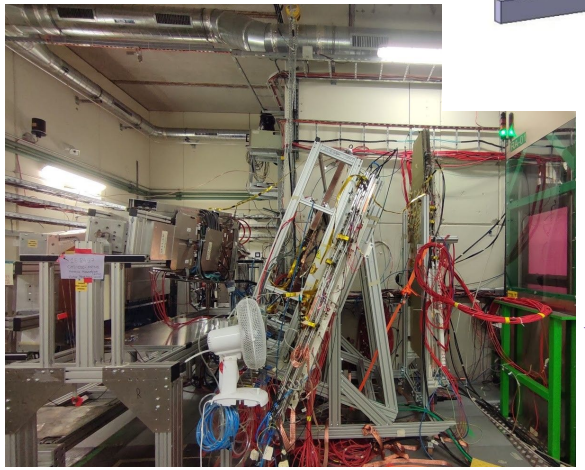


sTGC at Oct+Nov testbeams 2021

- Combined frame with ATLAS MicroMegas
- Test data-taking with final electronics and under background
- Data taken in many configurations, allowing performance studies vs:
  - Readout parameters (peaking time, neighbours logic,...)
  - Tilt angle: 0, 10, 20 degrees
  - Strip, pad, threshold
  - HV of chamber
  - All these vs Background rate



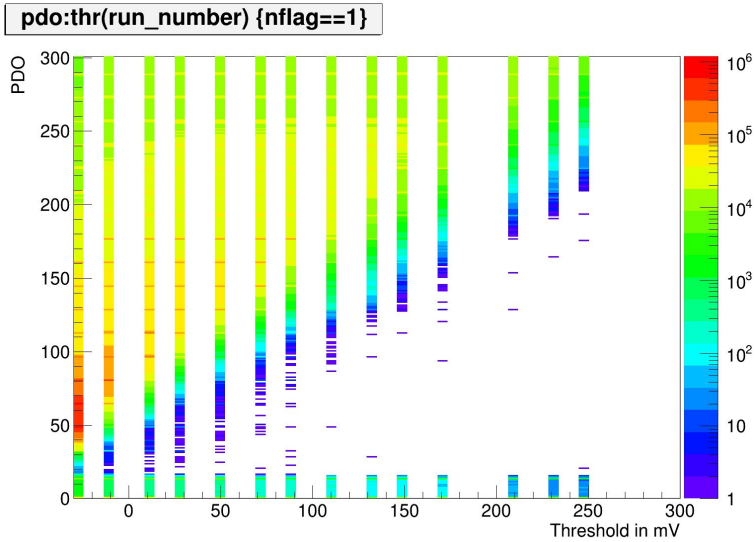
Frame concept

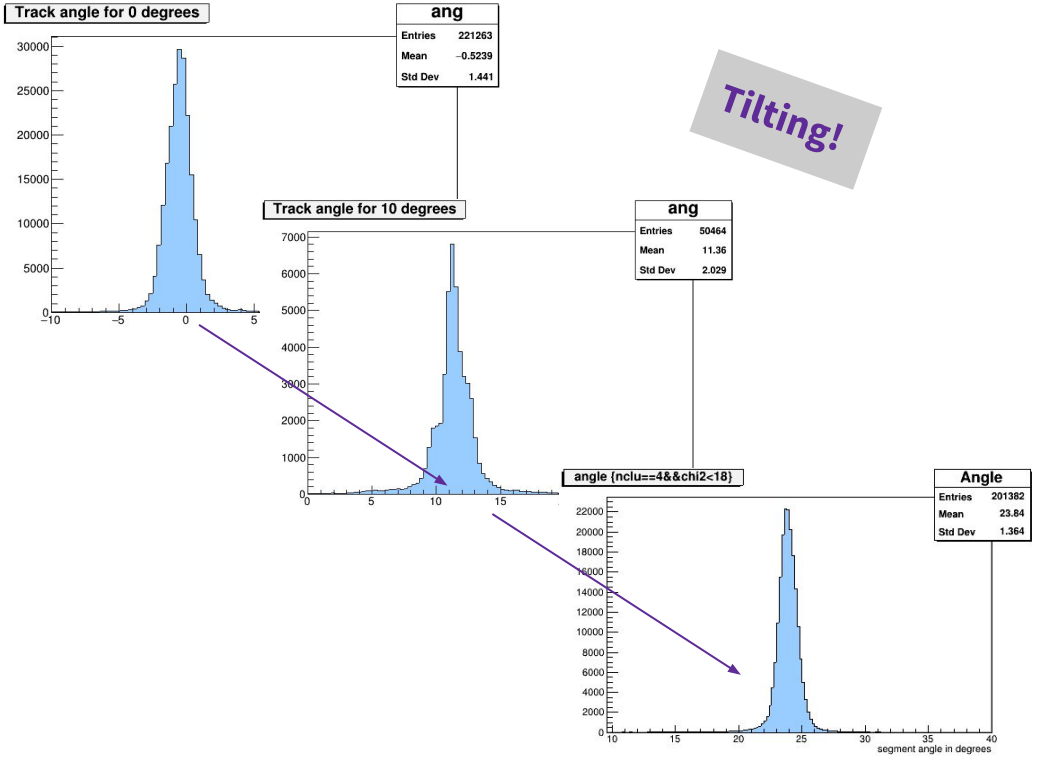


Reality!

sTGC at Oct+Nov testbeams 2021

Preliminary look at data taken





Analysis of the data is ongoing...

sTGC at GIF++ 2022

We hope to come back to GIF++ for testbeam in 2022

- With beam time in 2022, the sTGC team will be able to
  - Build on the data taken in 2021 fall beam times
  - Have the opportunity to investigate finer beam tracking for precision studies
  - Investigate optimization of electronics configurations
    - Both solo and conjunction with NSW MicroMegas!!