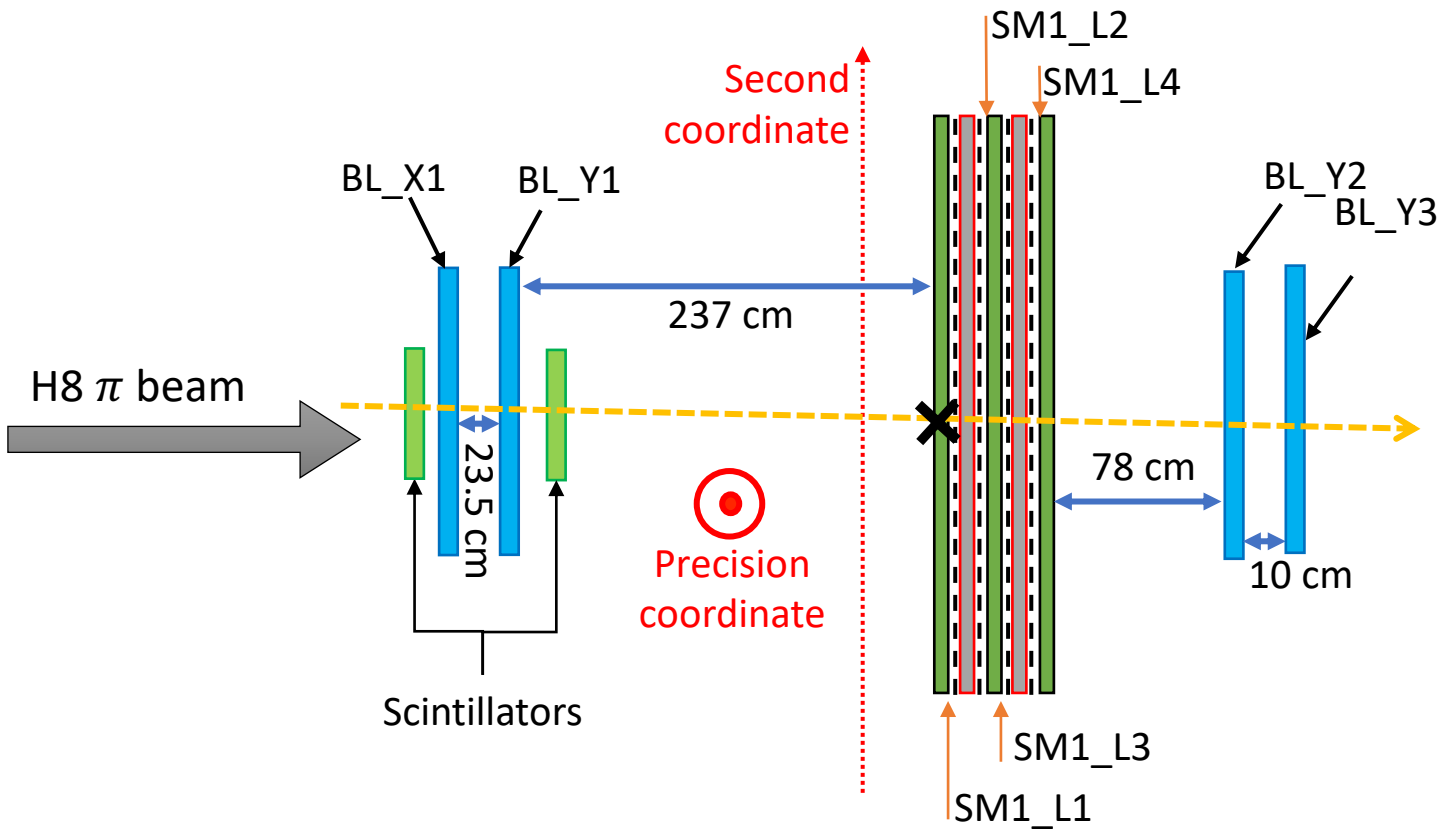
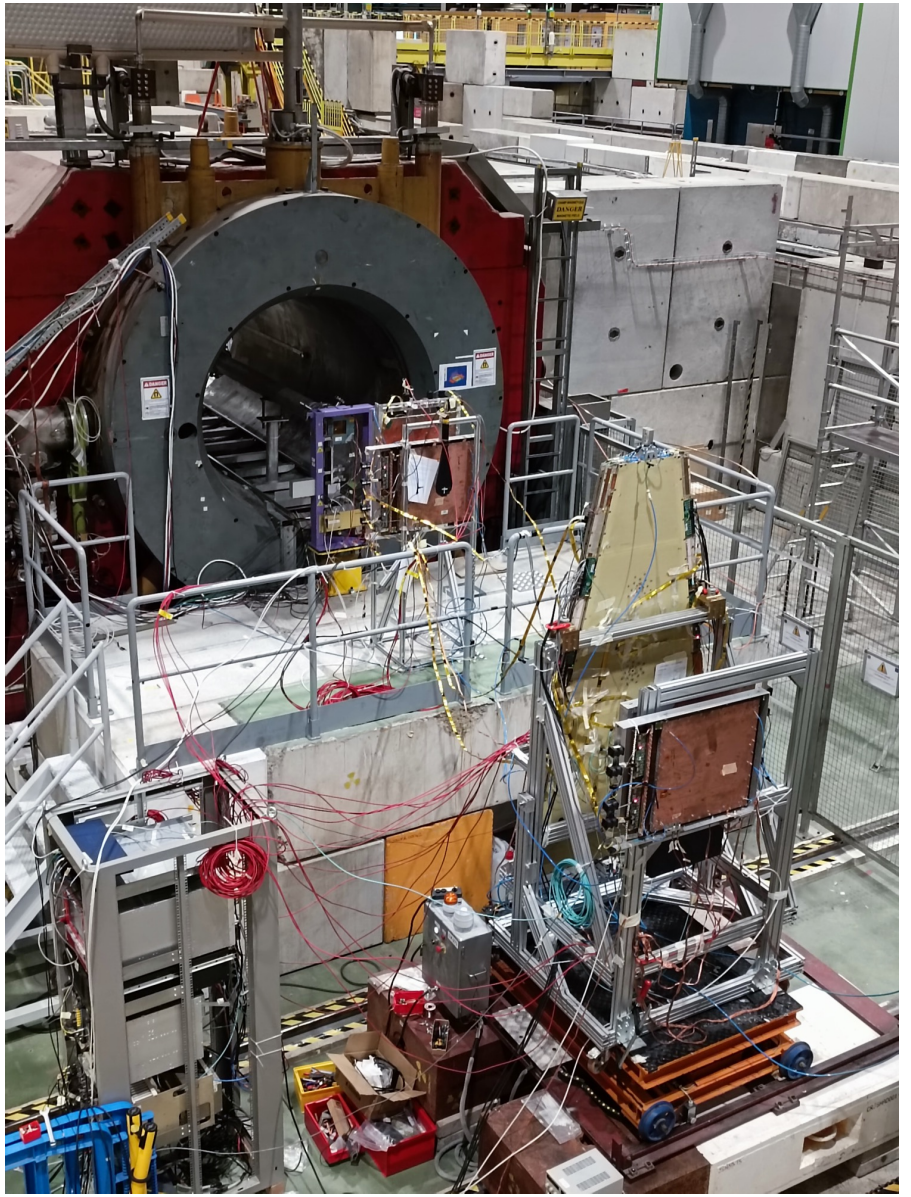
ATLAS Micromegas setup

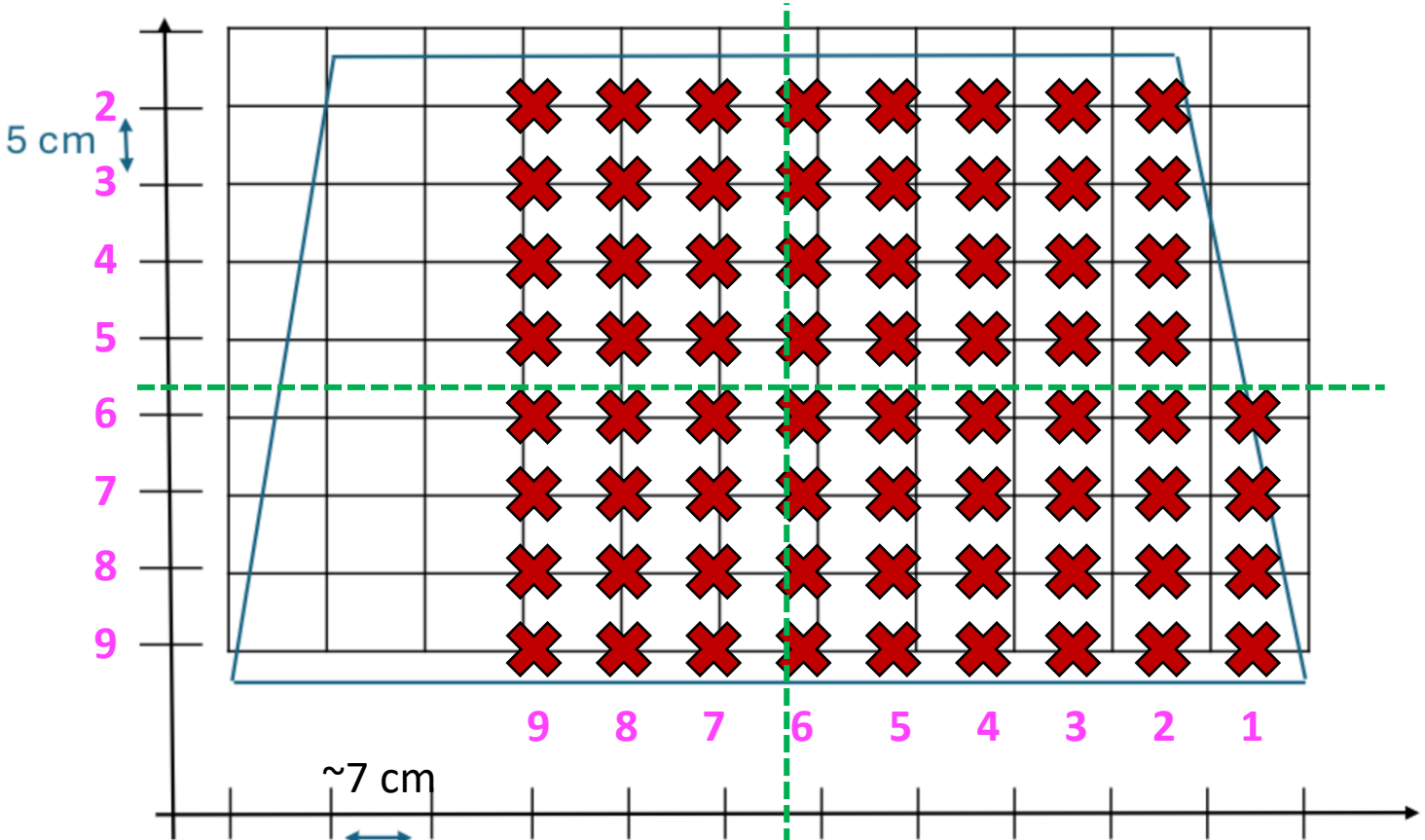
- 2 scintillators, and 4 $40{\times}40\ cm^2$ micromegas chambers for tracking
- ATLAS SM1 production detector tested and mounted on tiltable table
- Use of remotely movable table to perform a 2D scan in position: 68 points
- Runs taken with detector in vertical and tilted position: 10°, 15°, 20°, 25°, 30°

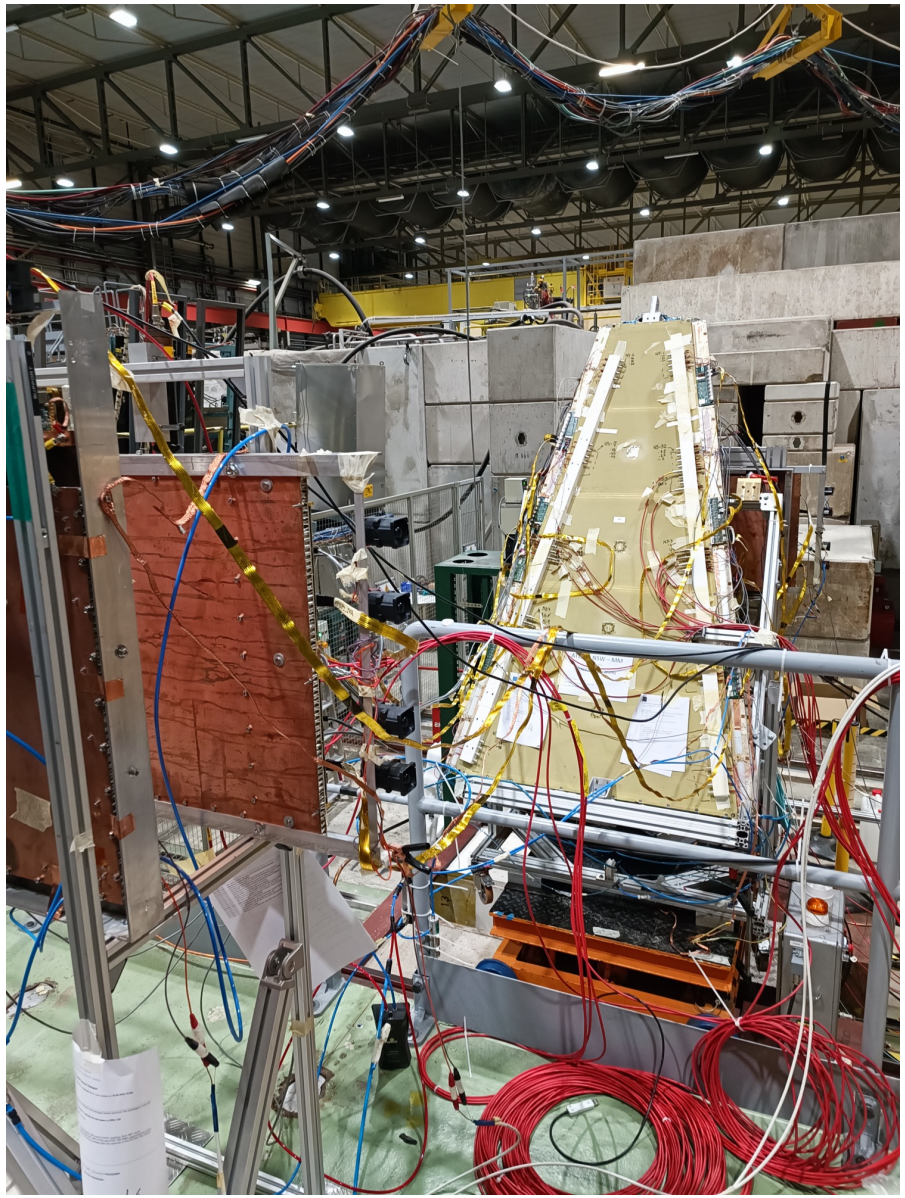




Data taking

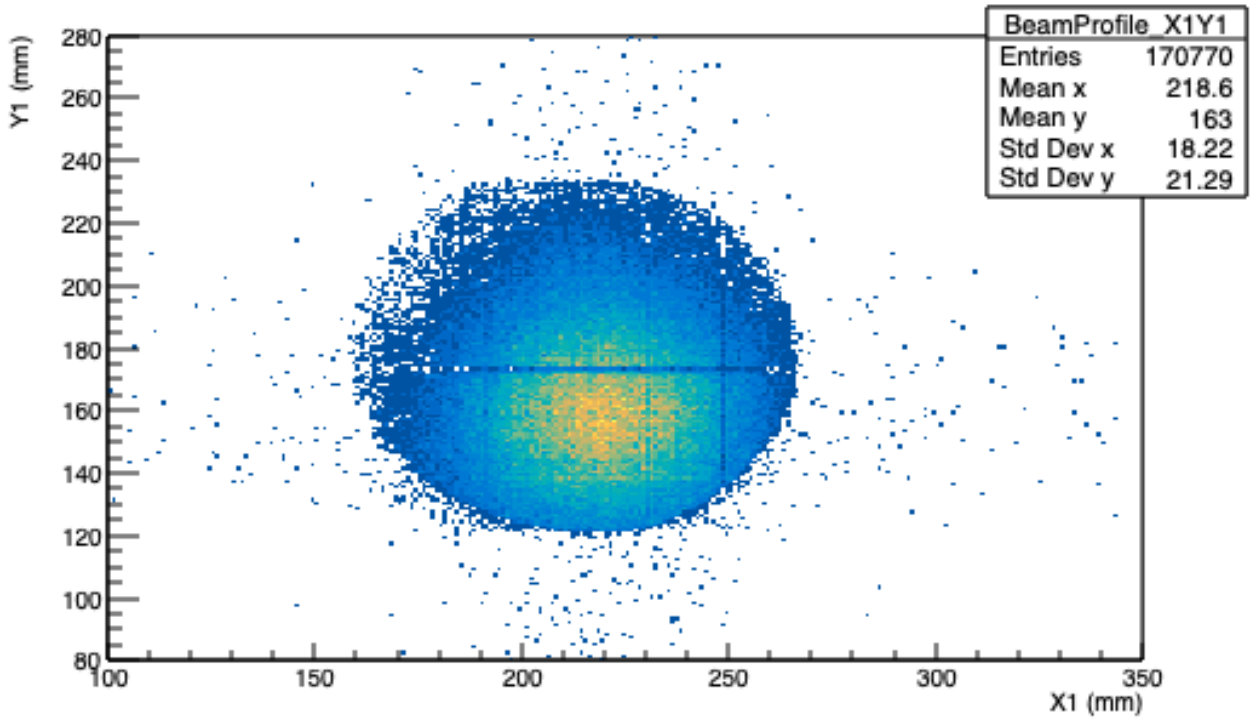
- 2 scintillators, and 4 40x40cm2 micromegas chambers for tracking
- ATLAS SM1 production detector tested and mounted on tiltable table
- Use of remotely movable table to perform a 2D scan in position: 68 points
- Runs taken with detector in vertical and tilted position: 10°, 15°, 20°, 25°, 30°





Beam time

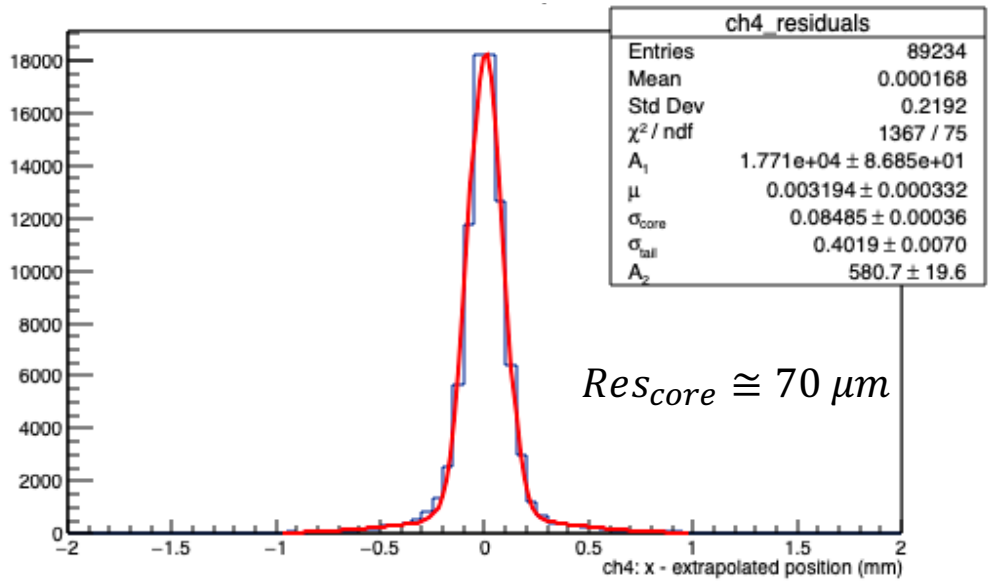
- 2D beam spot reconstruction
- 180 GeV pions / protons
- FW: ≈ 10 cm
- FWHM: ≈ 5 cm
- Beam delivered as expected:
  - high intensity pion spills perfect for our data taking
  - $3 - 7 \times 10^5$ particles per spill
  - 1 run per spill



- Many problems with new DAQ and SPS downtime but managed to finish our program in 3 high-efficient data-taking shifts
- 690 runs taken, spanning the surface of 3000 cm^2 of our detector every ~5 cm
- Long analysis ongoing due to alignment needed for every position
- Preliminary results are good!
- ~70 um resolution for 0° tracks, good tracking efficiencies, and uniformity on detector surface

Some preliminary results

- Preliminary analysis, not fine-tuned alignment yet
- Uniformity key parameters on the detector surface
- Cluster charge uniform
- Spatial resolutions around 100 um with coarse alignment
  → achieving 70 um with fine-tuned alignment in benchmark positions



- Efficiency uniform and good for preliminary result: overall >85% in the active area of the detector (excluding edge points)
  → need to adjust the clustering to avoid losses due to dead electronic channels