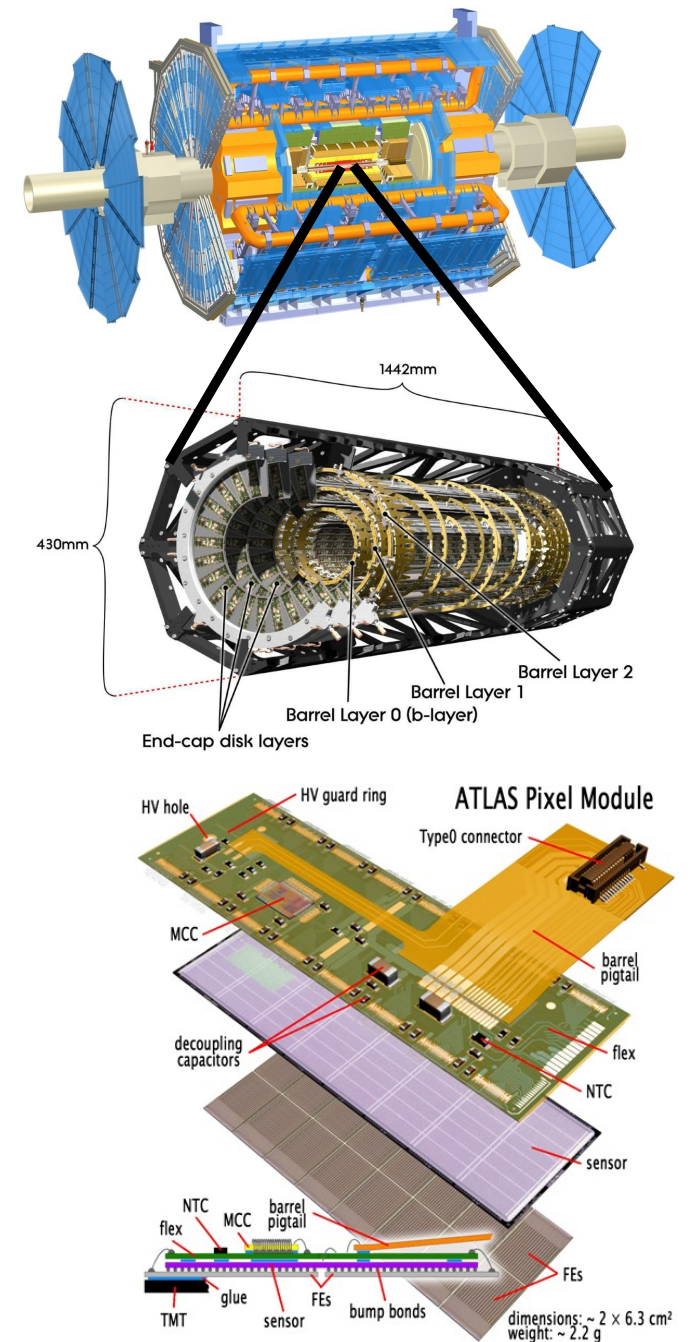


Operational experience of the ATLAS Pixel Detector

- Atlas Pixel Detector is the innermost detector at the ATLAS Apparatus at the Large Hadron Collider at CERN
- 1744 identical modules total with 80×10^6 channels
- Radiation hardness $10^{15} \text{ 1 MeV n}_{\text{eq}} \text{ cm}^{-2}$
- Submerged in 2T magnetic field
- 250 μm thick n^+ -on- n Si sensor
- $50 \times 400 \mu\text{m}^2$ pixel size
- Hit detection efficiency 99%
- Time resolution $< 25 \text{ ns}$

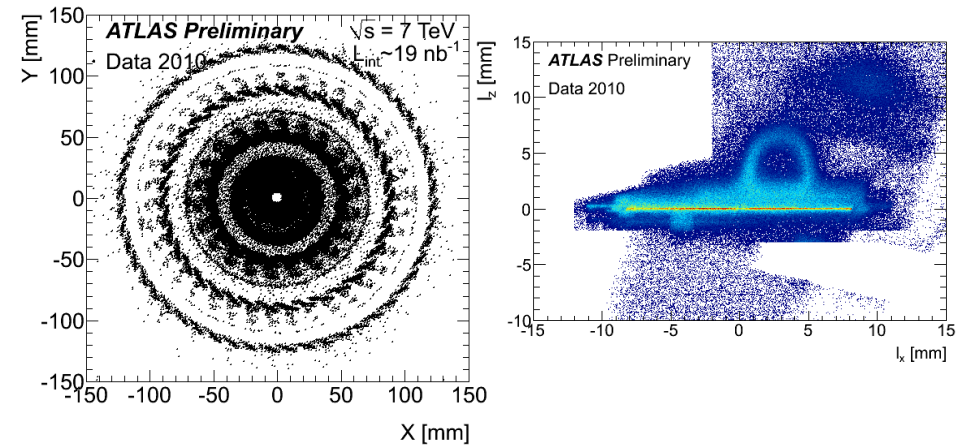
After more than one year of LHC running at high luminosity, more than 1 fb^{-1} of collisions was recorded and significant operational experience was acquired.



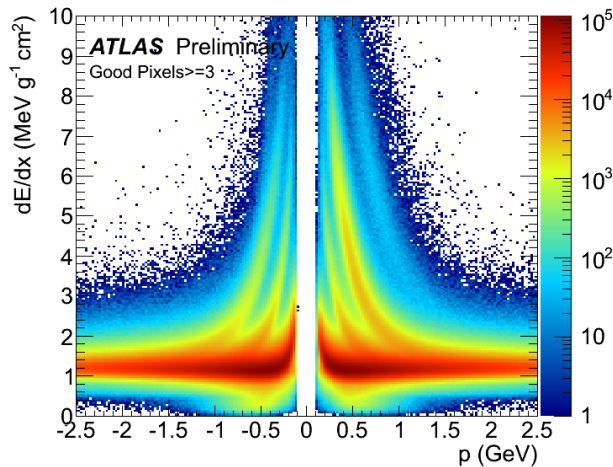
Operational experience of the ATLAS Pixel Detector

Atlas Pixel Detector has been aligned and tuned and operates with 99.8% efficiency, 96.8% of pixels fully participating in the data taking.

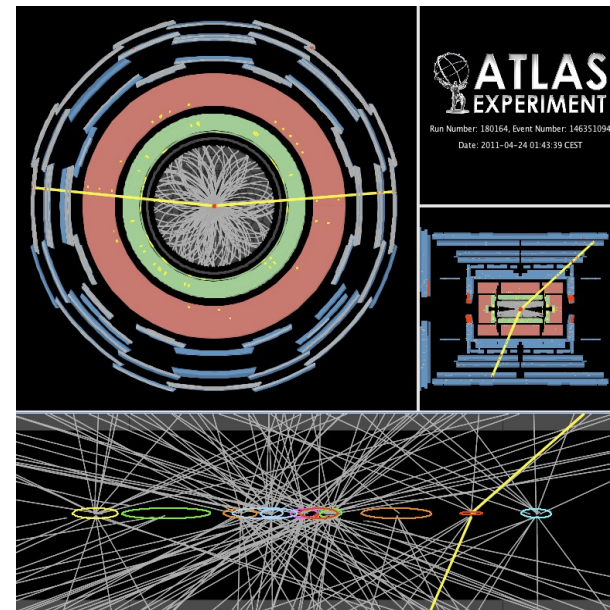
- Now operating at 3500 e^- threshold with 0.1% of pixels masked.
- Threshold dispersion after tuning $\sim 40 e^-$
- Noise for normal pixels $\sim 170 e^-$



X vs. Y of reconstructed secondary vertices



dE/dx determined by ToT. Pion, Kaon, proton and deuteron bands are clearly seen.



A candidate Z boson event in the di-muon decay with 11 reconstructed vertices.