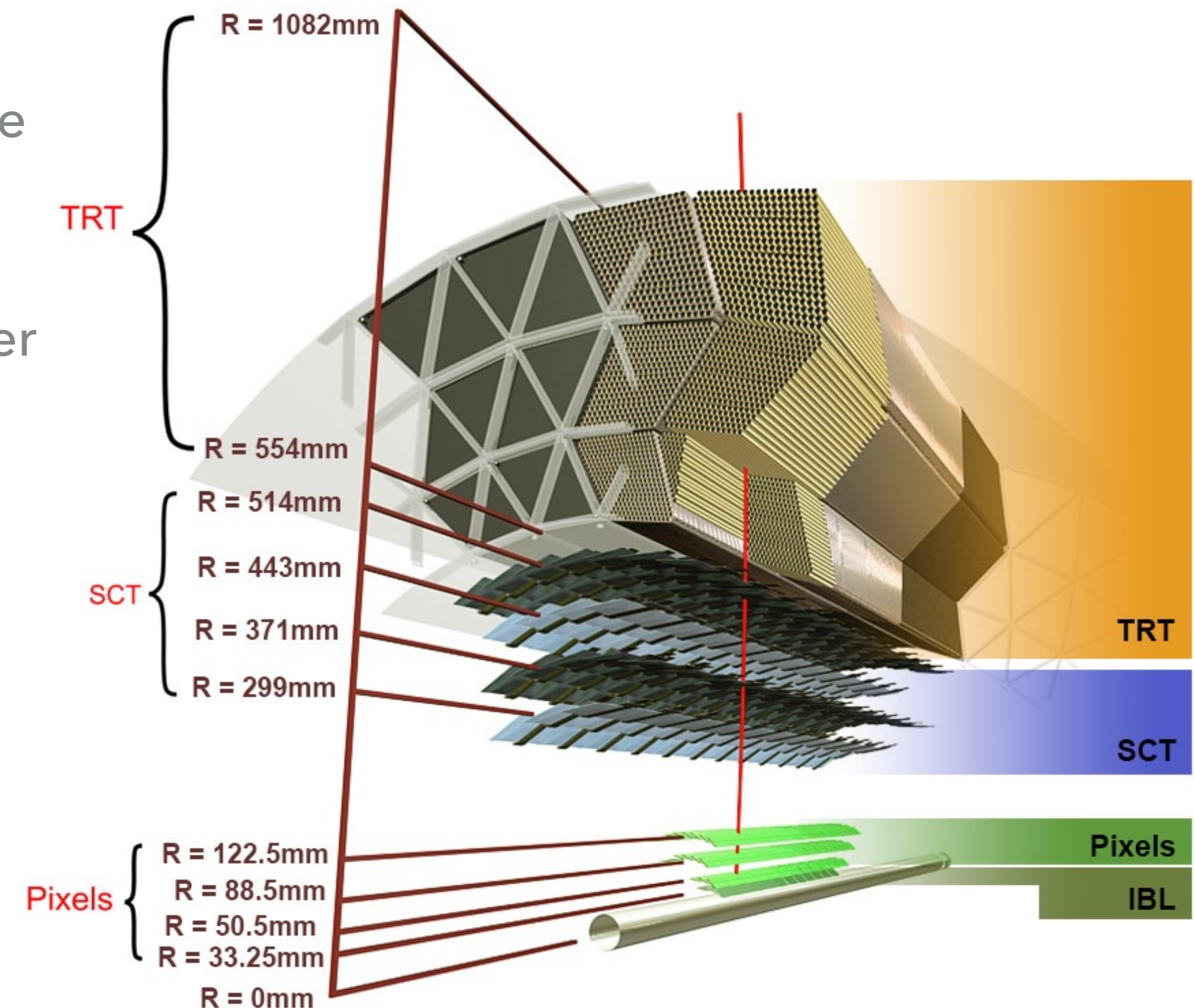
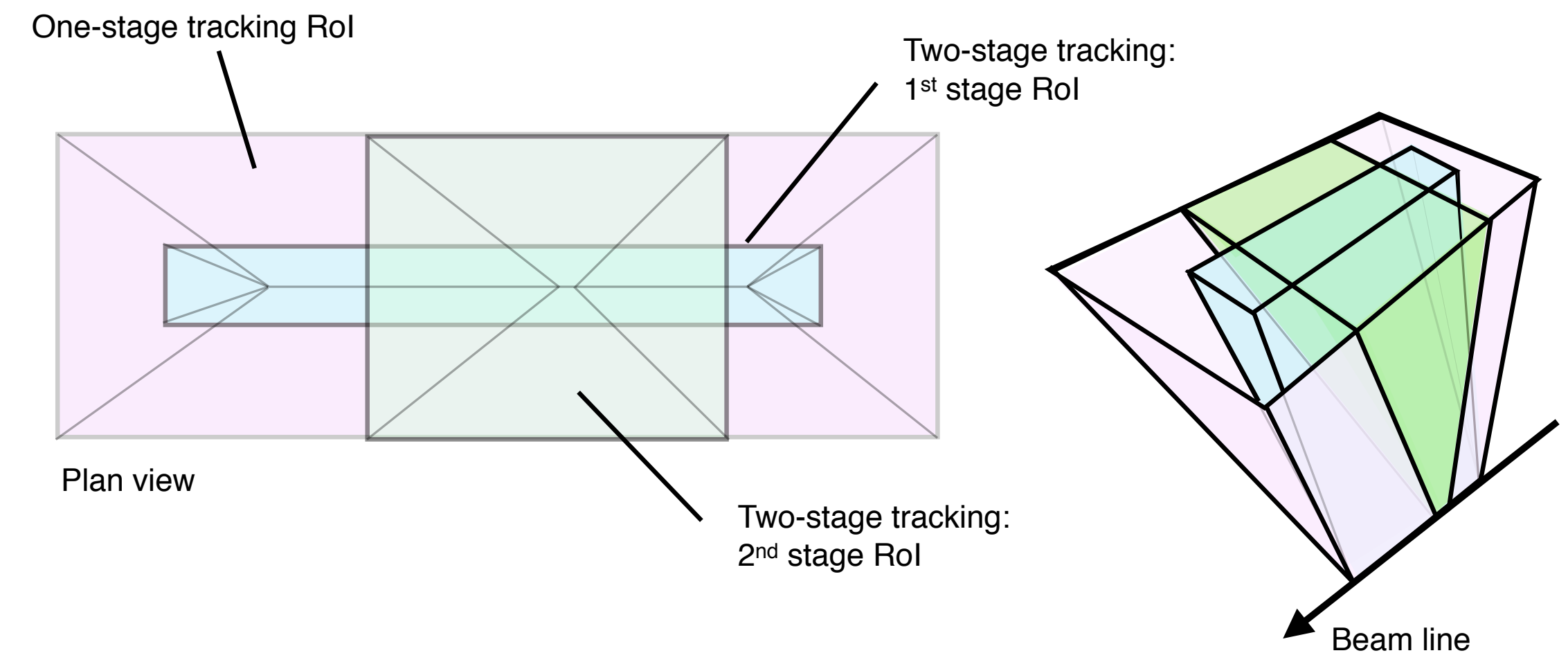
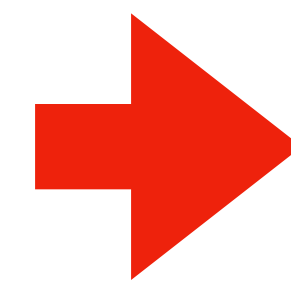


- ▶ ID Trigger Task:
 - ▶ To rapidly and accurately reconstruct the charged particle tracks for an efficient triggering of final state objects
- ▶ Challenge:
 - ▶ Large centre-of-mass energy, luminosity and number of proton-proton interactions (pileup), increased in Run 2 to 13 TeV, $2 \cdot 10^{34} \text{ cm}^{-2}\text{s}^{-1}$ and up to ~ 80 respectively
- ▶ Components:
 - ▶ Insertable B-Layer (IBL)
 - ▶ Pixel Detector (Pixels)
 - ▶ Silicon Microstrip Detector (SCT)
 - ▶ Transition Radiation Tracker (TRT)

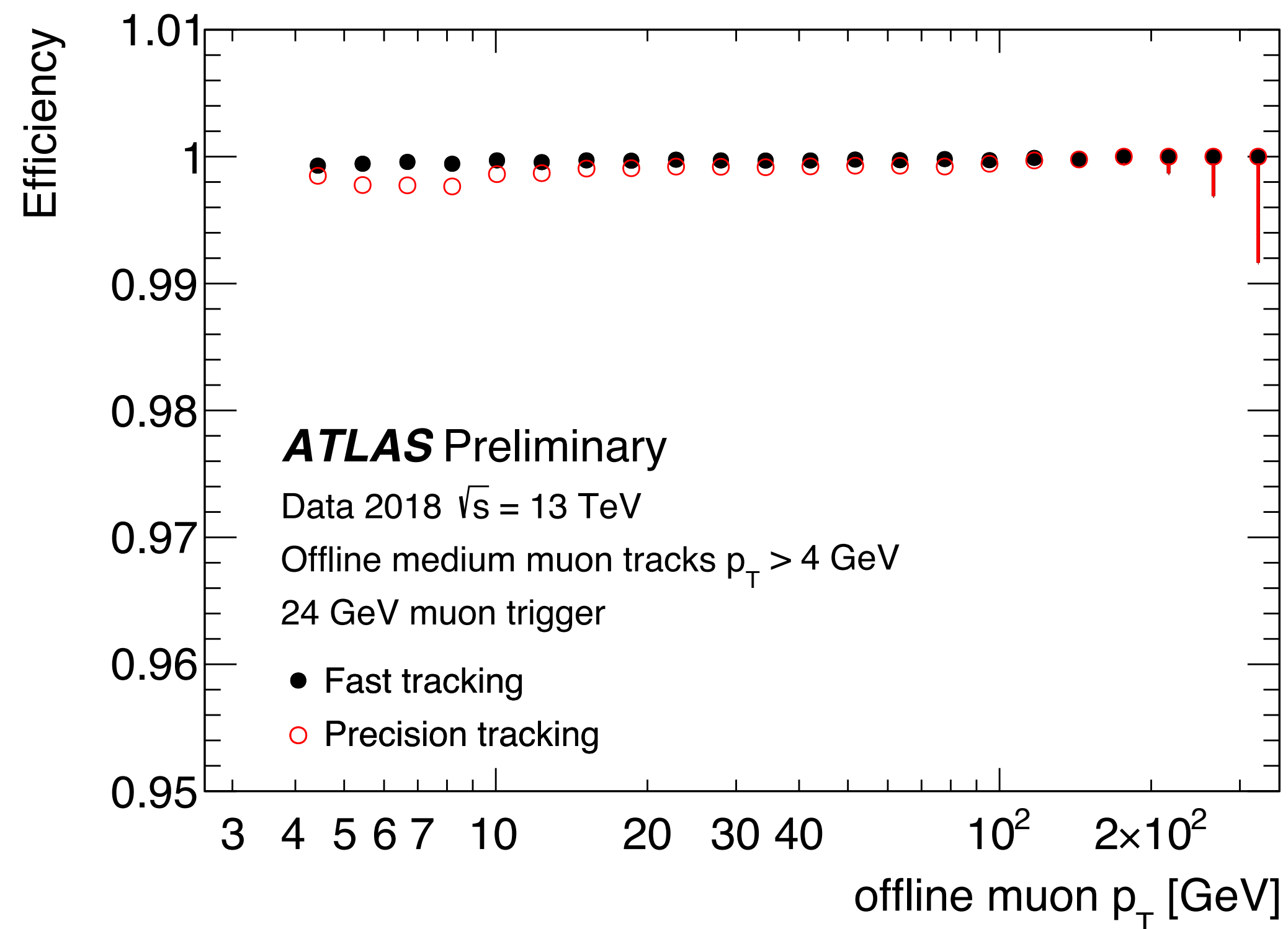


- ▶ The High Level Trigger (HLT) :
 - ▶ Uses software based tracking algorithms to trigger on interesting events
 - ▶ less than 1 kHz output rate, with an average decision timing of ~200ms
- ▶ 2 tracking algorithms
 - ▶ Fast Tracking - trigger specific pattern recognition algorithm
 - ▶ Precision Tracking - uses aspects of offline tracking



- ▶ Hadronic tau trigger and b-jet tracking use multiple stage tracking process
 - ▶ taus adopt a two stage system that uses combination of Fast and Precision Tracking
 - ▶ b-jets adopt Multi-Stage Tracking strategy

- ▶ Tracking efficiency are computed with respect to the well reconstructed offline tracks for different trigger signatures



- ▶ ID trigger continues to perform well at high luminosity and pileup in 2018 and has significantly improved efficiency with respect to the algorithms running in 2017

- ▶ Very high muon efficiency for whole range of p_T values, well above 99% for both Fast Tracking and Precision Tracking
- ▶ Efficiencies well above 99% even at high muon $\langle \mu \rangle$ (pileup) values reached with 2018 data

