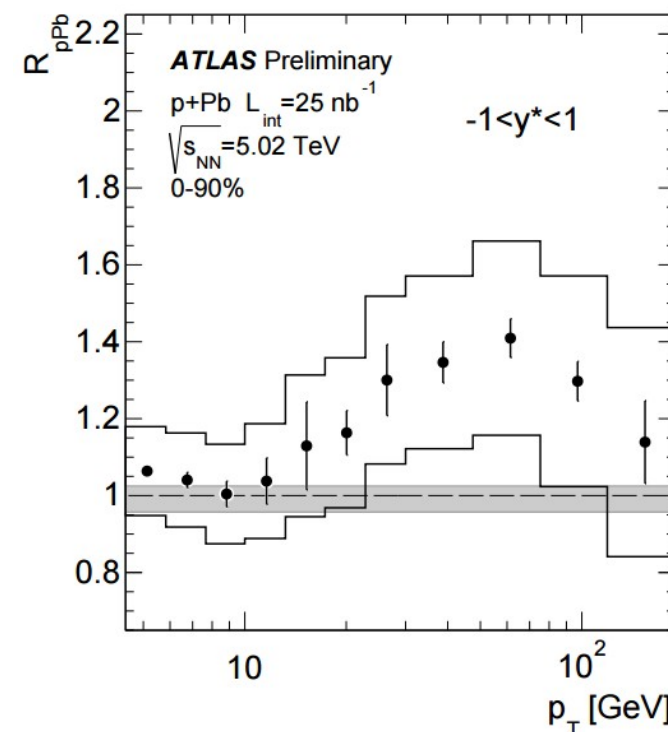
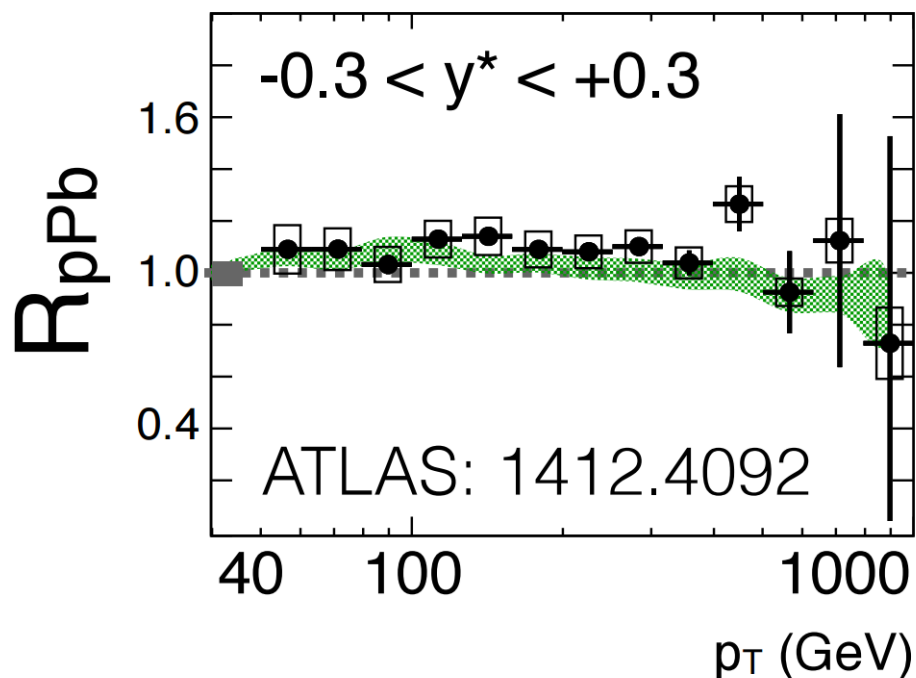




Jet fragmentation measurements in p +Pb collisions with ATLAS



- A Study of jet internal structure shows a modification of fragmentation functions in central HI collisions.
 - ◆ Can we use p +Pb collisions as a reference for Pb+Pb collisions?
 - ◆ How much modification is coming from initial nPDF effects?



- Inclusive jet rate in p +Pb collisions is only slightly enhanced.

- Enhancement of charged spectra at high p_T .

➡ suggestive of modification of jet internal structure.

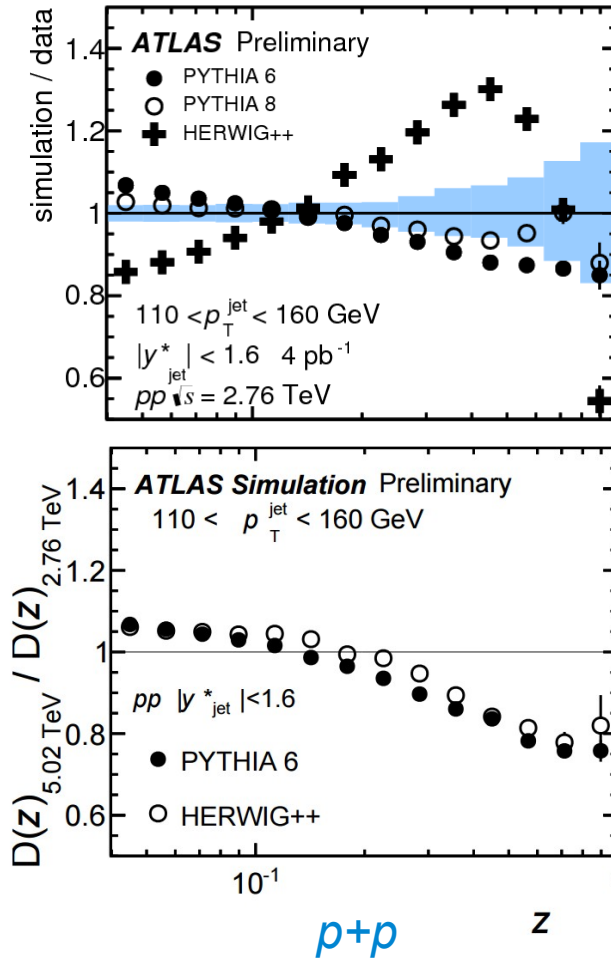
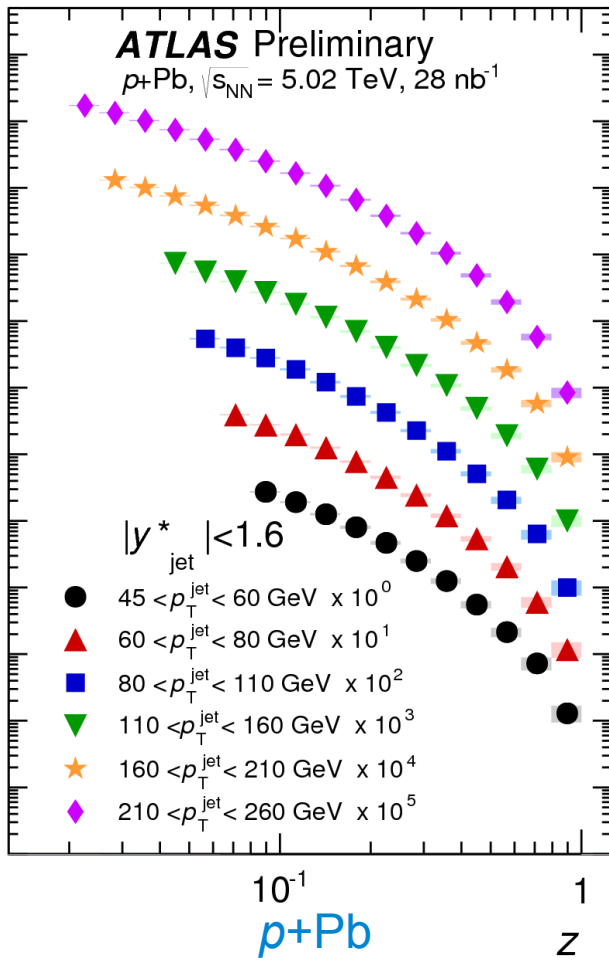


Fragmentation functions

- Tracking efficiency corrected fragmentation function (FF) defined as:

$$D(z) \equiv \frac{1}{N_{\text{jet}}} \frac{1}{\varepsilon} \frac{\Delta N_{\text{ch}}(z)}{\Delta z}, \text{ where } z = p_{\text{T}}^{\text{ch}} / p_{\text{T}}^{\text{jet}} \cos \Delta R$$

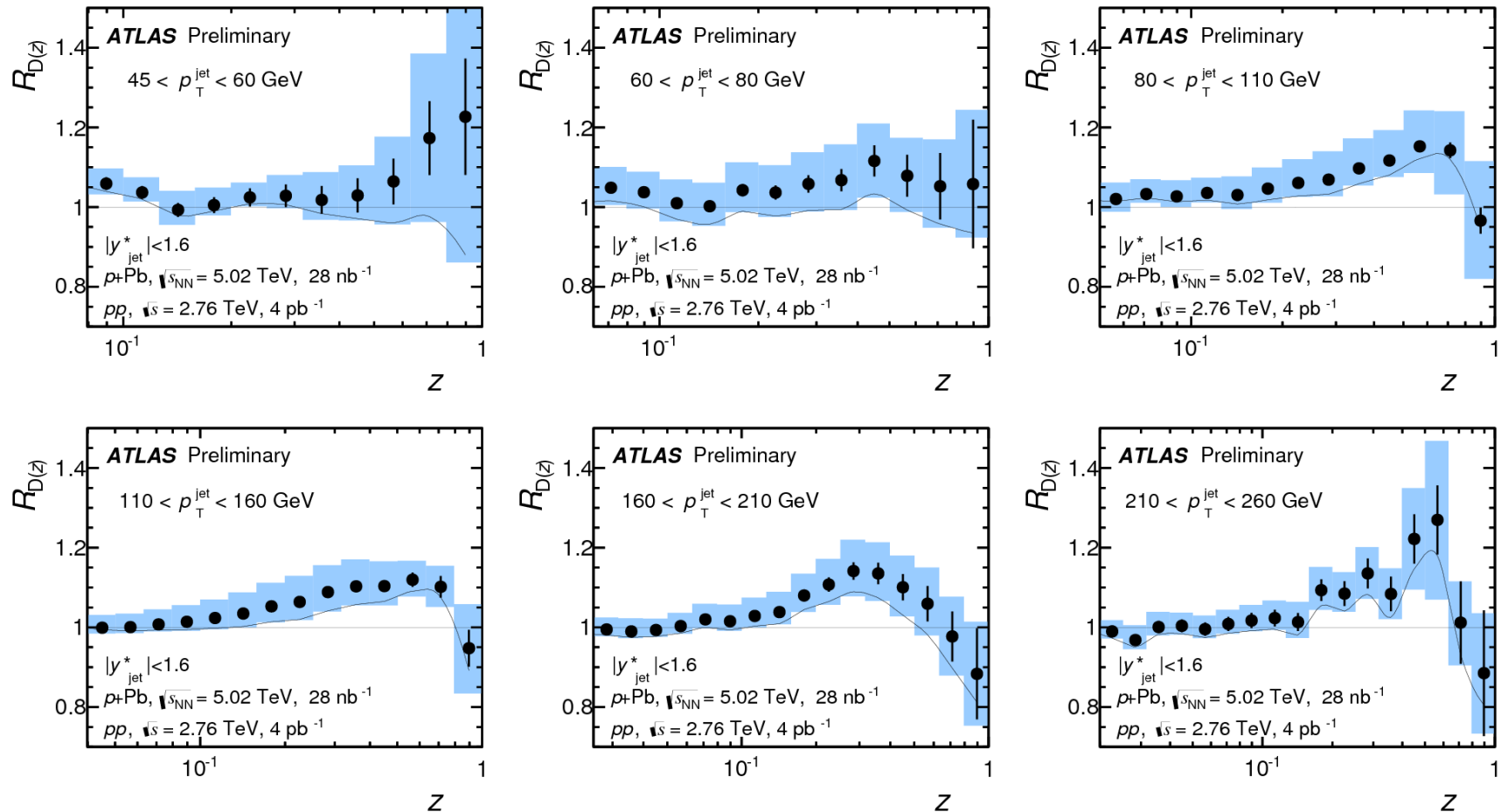
- Fragmentation functions are unfolded using 2D Bayesian unfolding in z and jet p_{T} .



- Significant differences between MC models.
- FF in pp well described by NLO QCD calculations (arXiv:1506.01415).
- No pp data at 5.02 TeV.
- The reference was built by extrapolation of the 2.76 TeV FF using PYTHIA 6 and HERWIG++.
- Different MC models have similar \sqrt{s} evolution.



Comparison of $p+Pb$ data to extrapolated pp reference



Lines: the $R_{D(z)}$ evaluated using extrapolation with HERWIG++

- An evidence for an enhancement of $R_{D(z)}$ in the z region 0.3-0.8.
- Correspond to the same range in p_T where the inclusive charged particle spectrum in $p+Pb$ collisions is enhanced.
- 5.02 TeV pp reference data are essential for final conclusion.