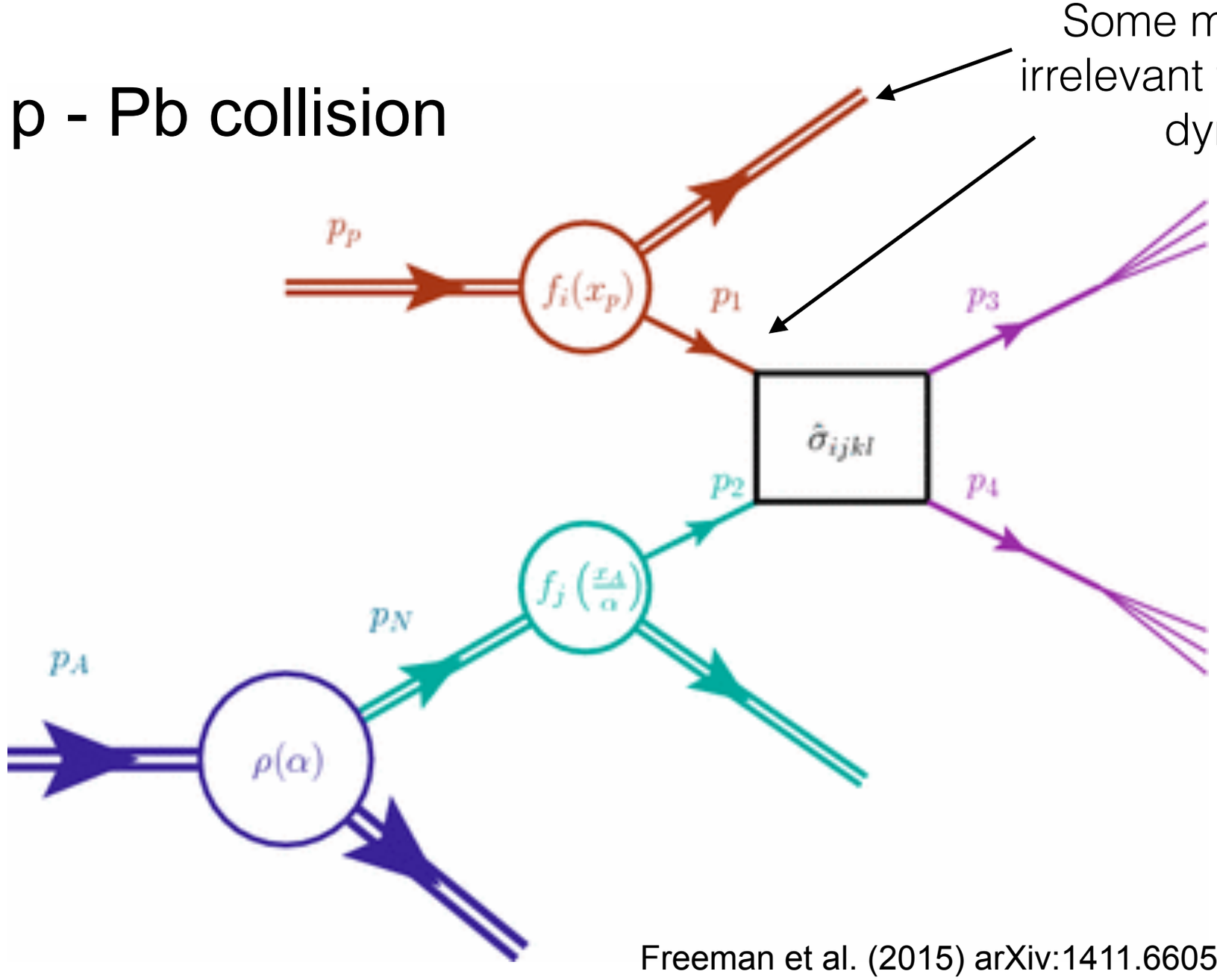
Extracting PDFs from ATLAS p-Pb dijets

x

p - Pb collision



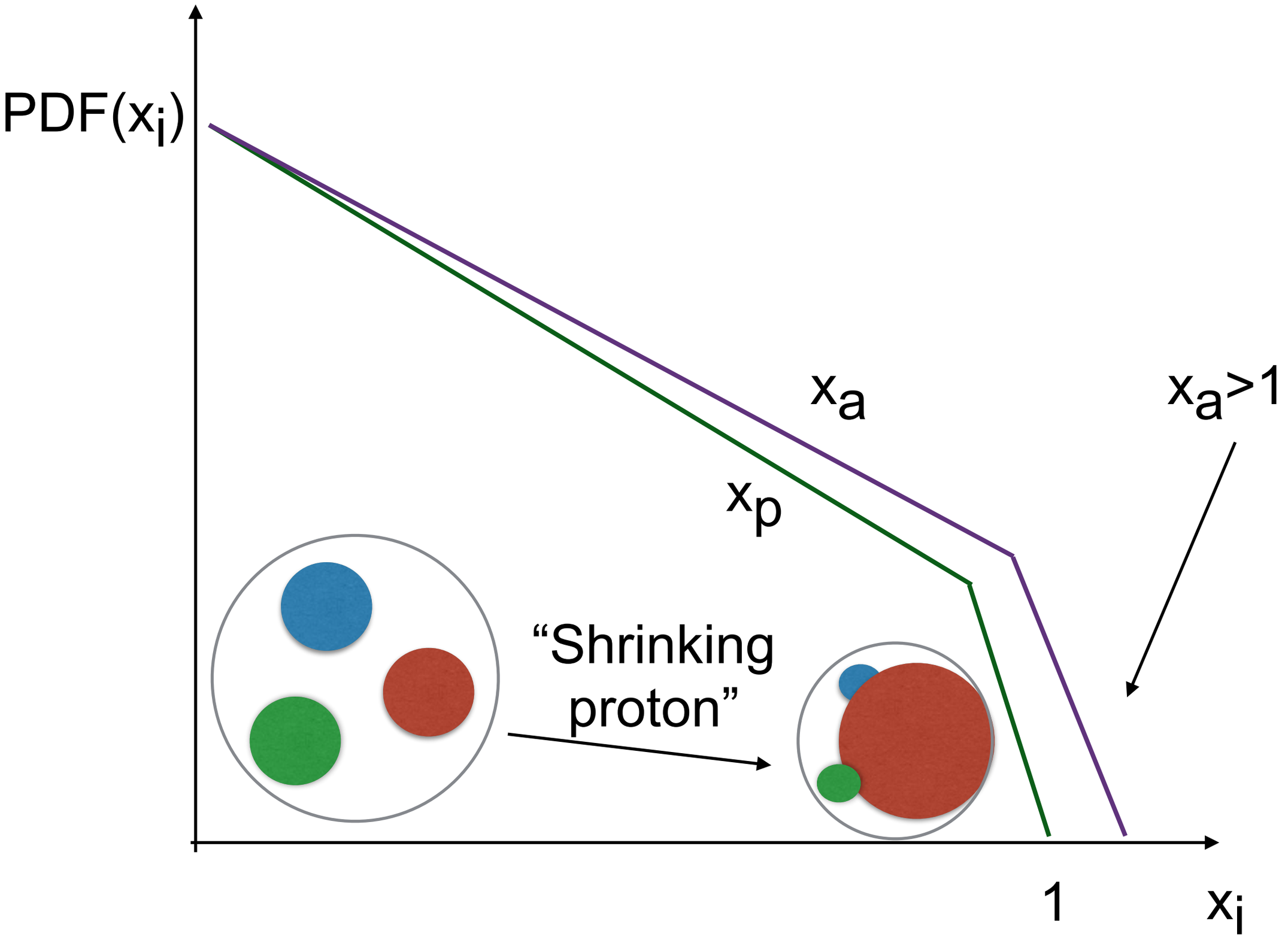
$$x_p = \frac{p_1}{p_p}$$

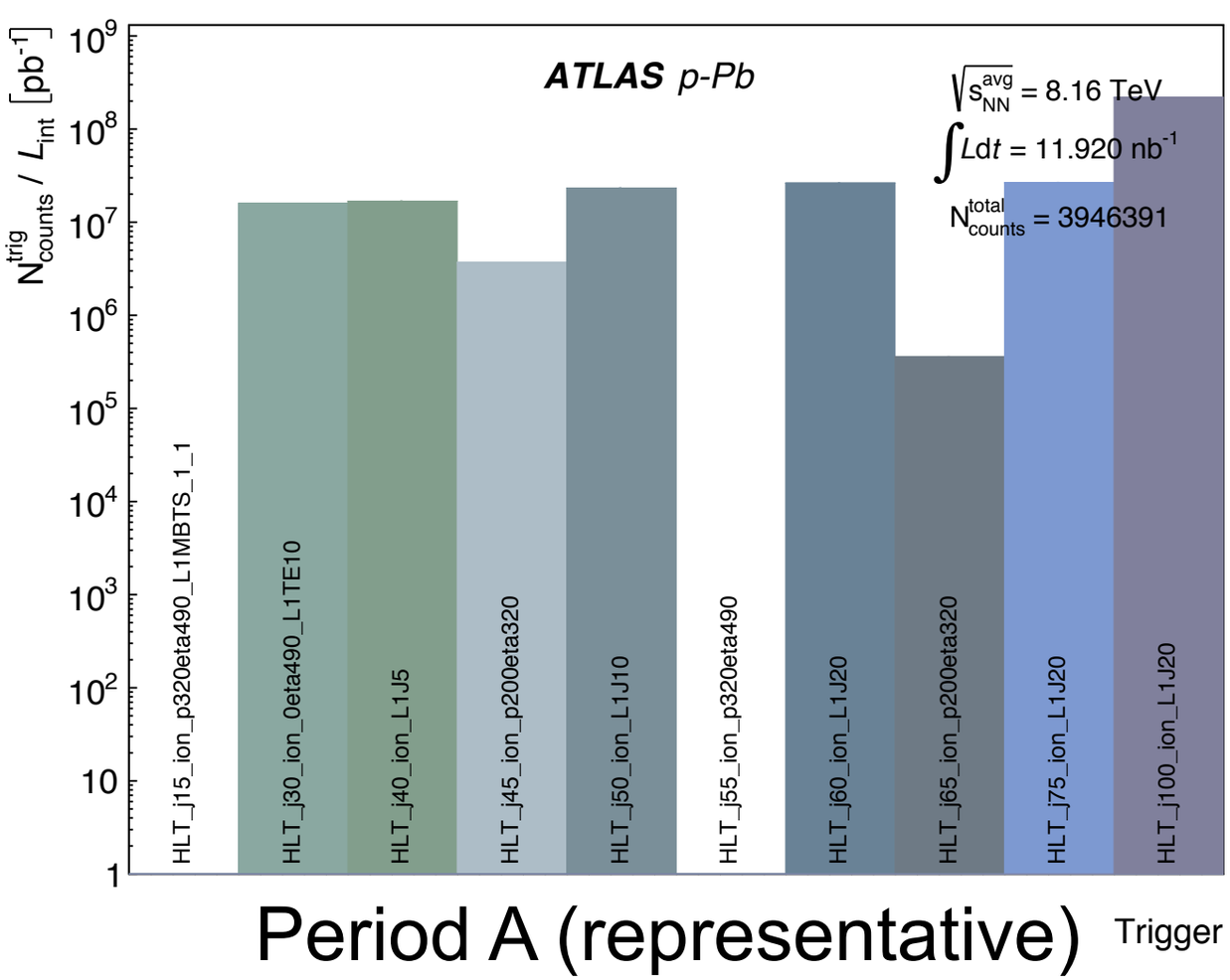
$$x_A = A\frac{p_2}{p_A}$$

Freeman et al. (2015) arXiv:1411.6605

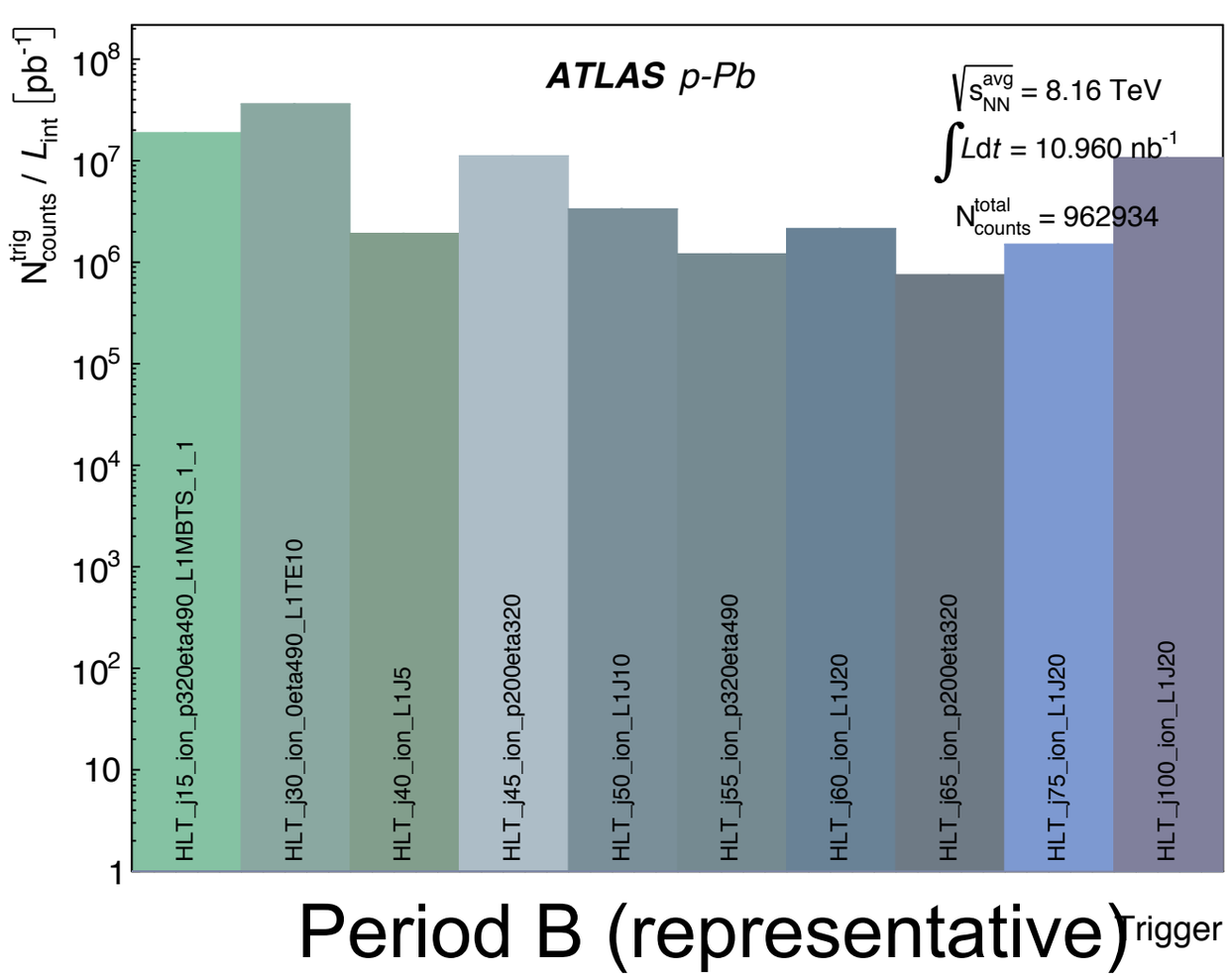
t

Key Idea: “Superfast quarks”

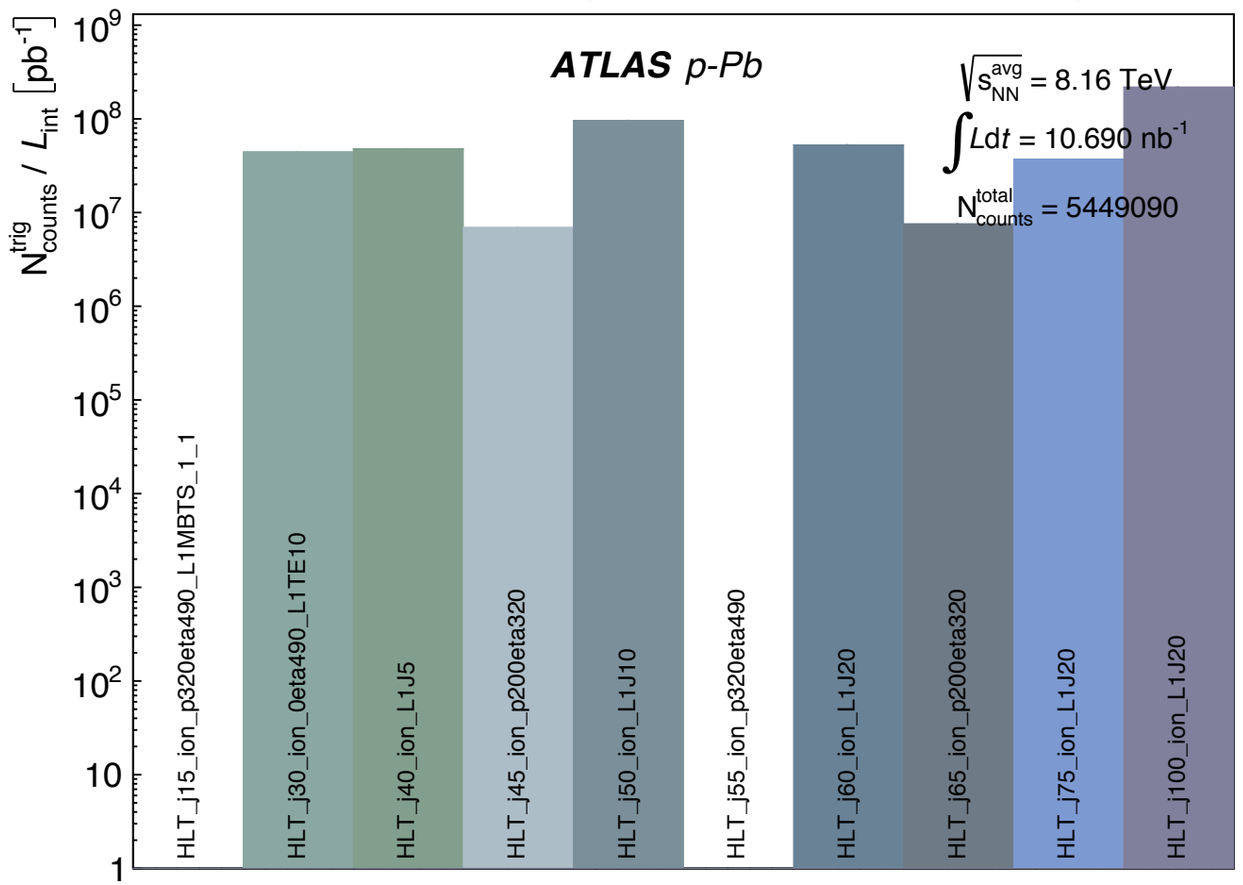


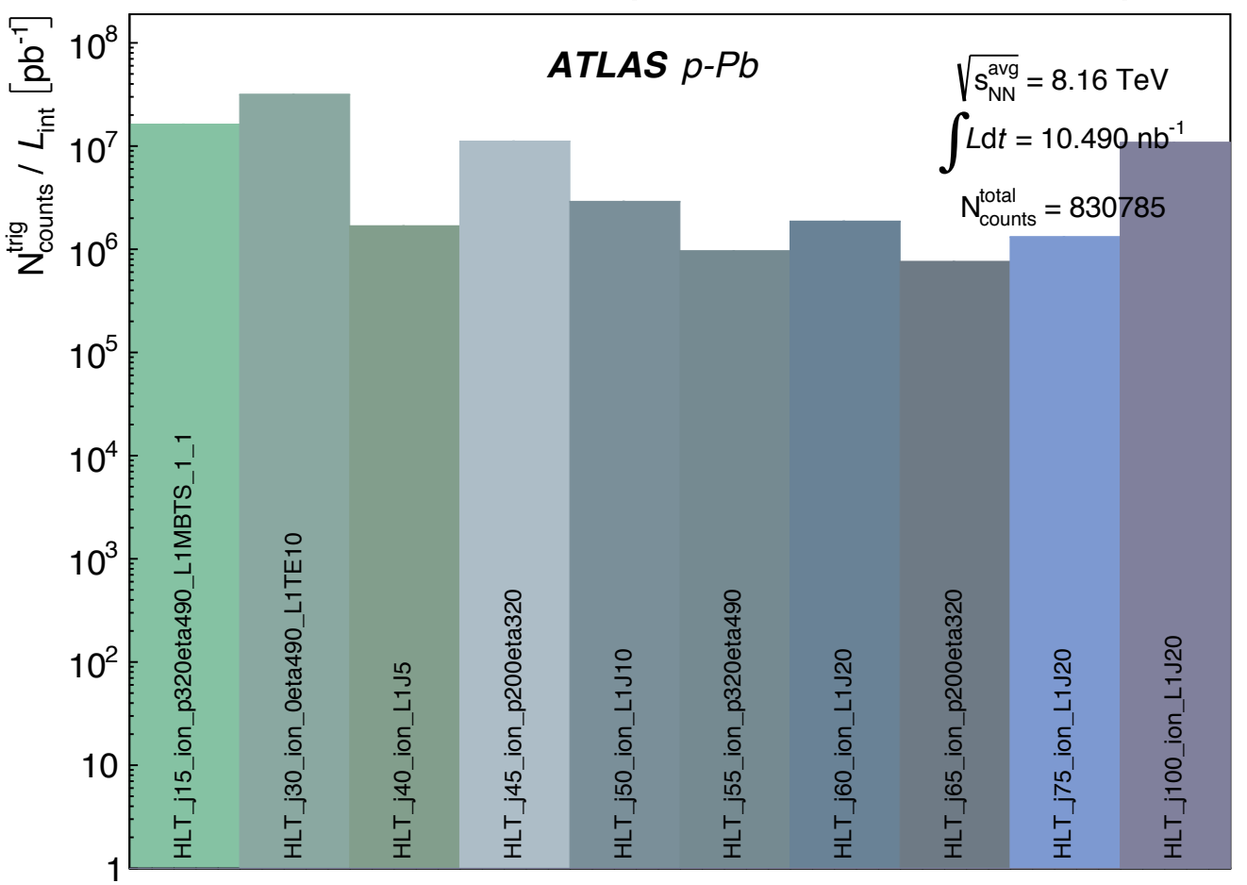


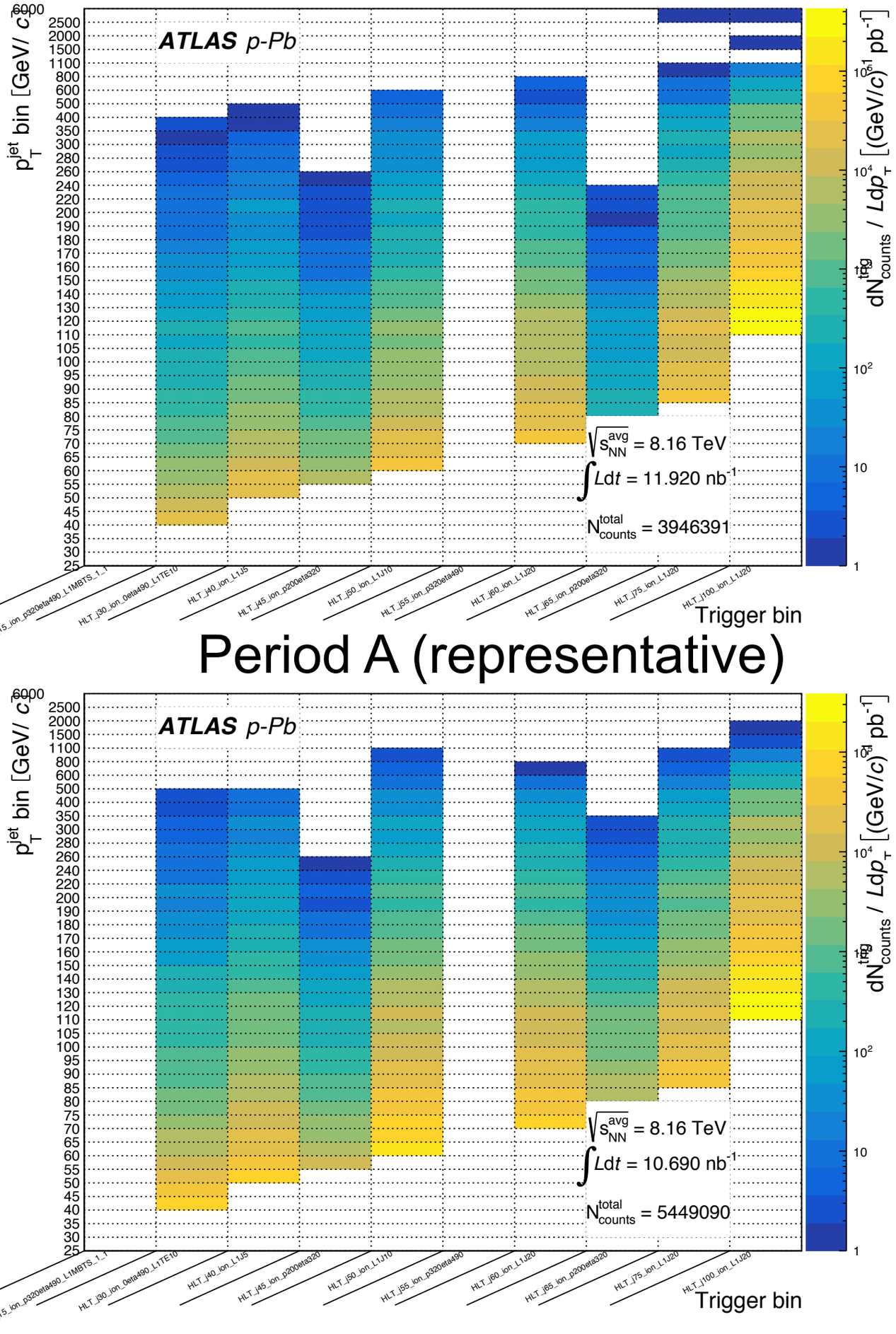
Period A (representative) Trigger



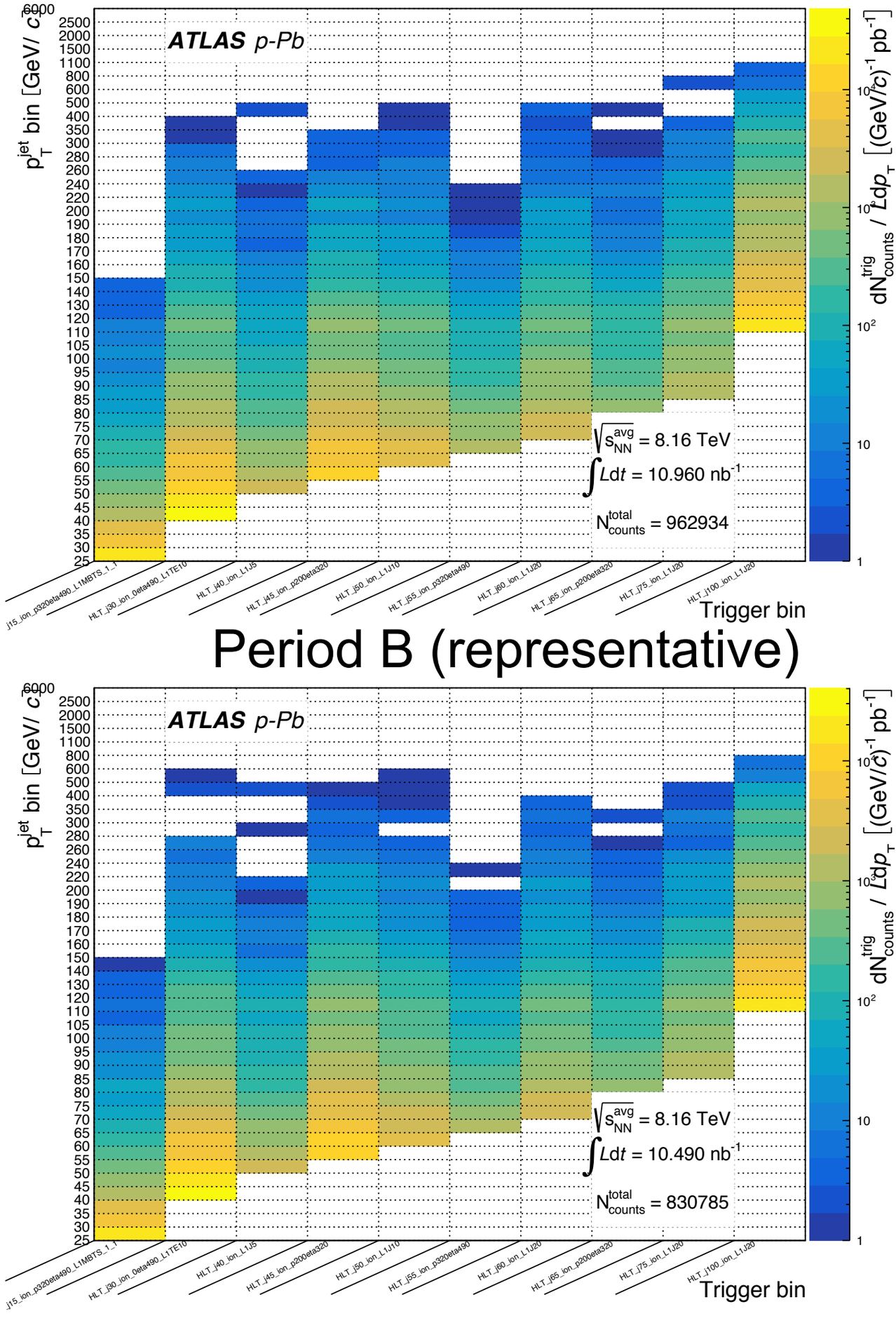
Period B (representative) Trigger





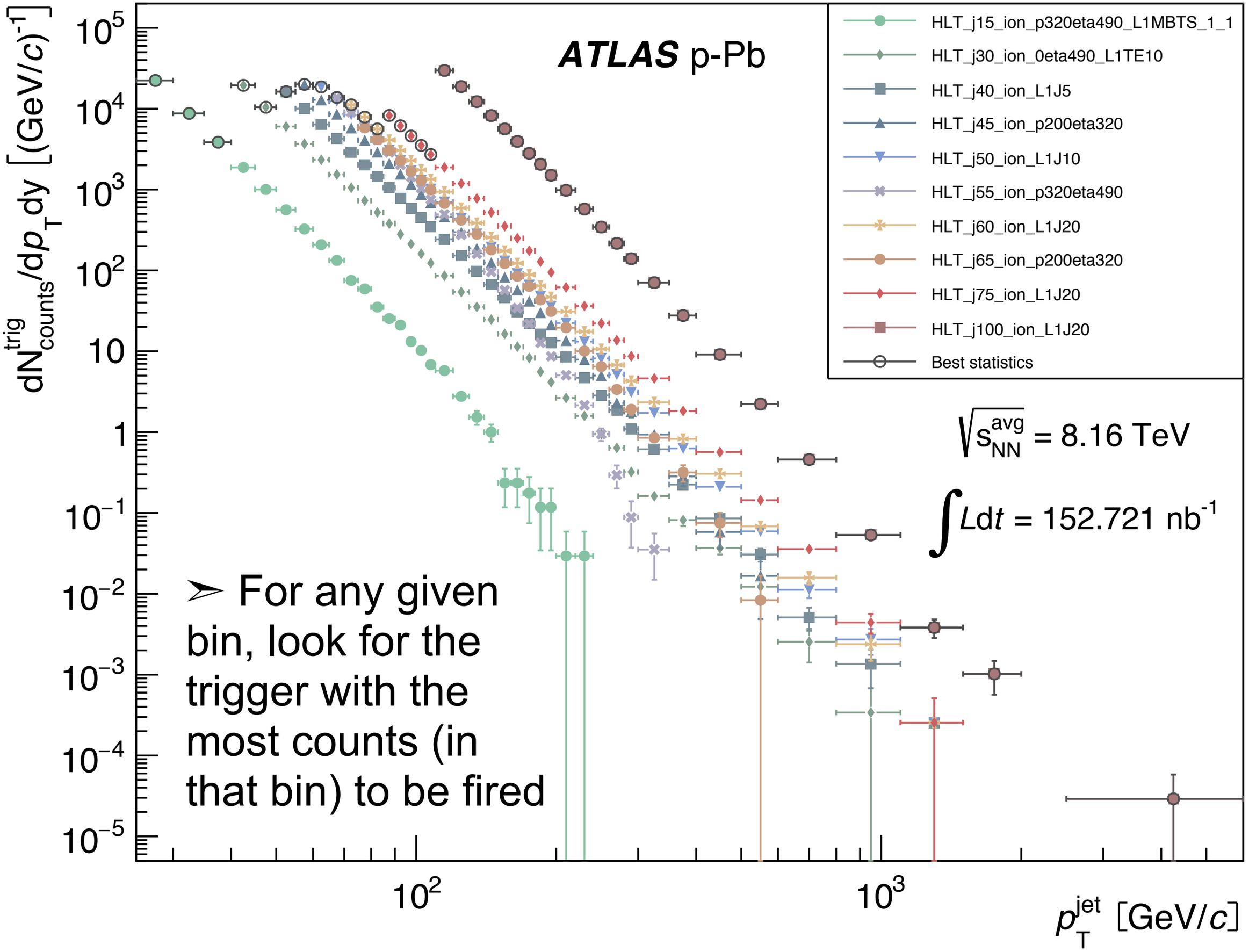


Period A (representative)



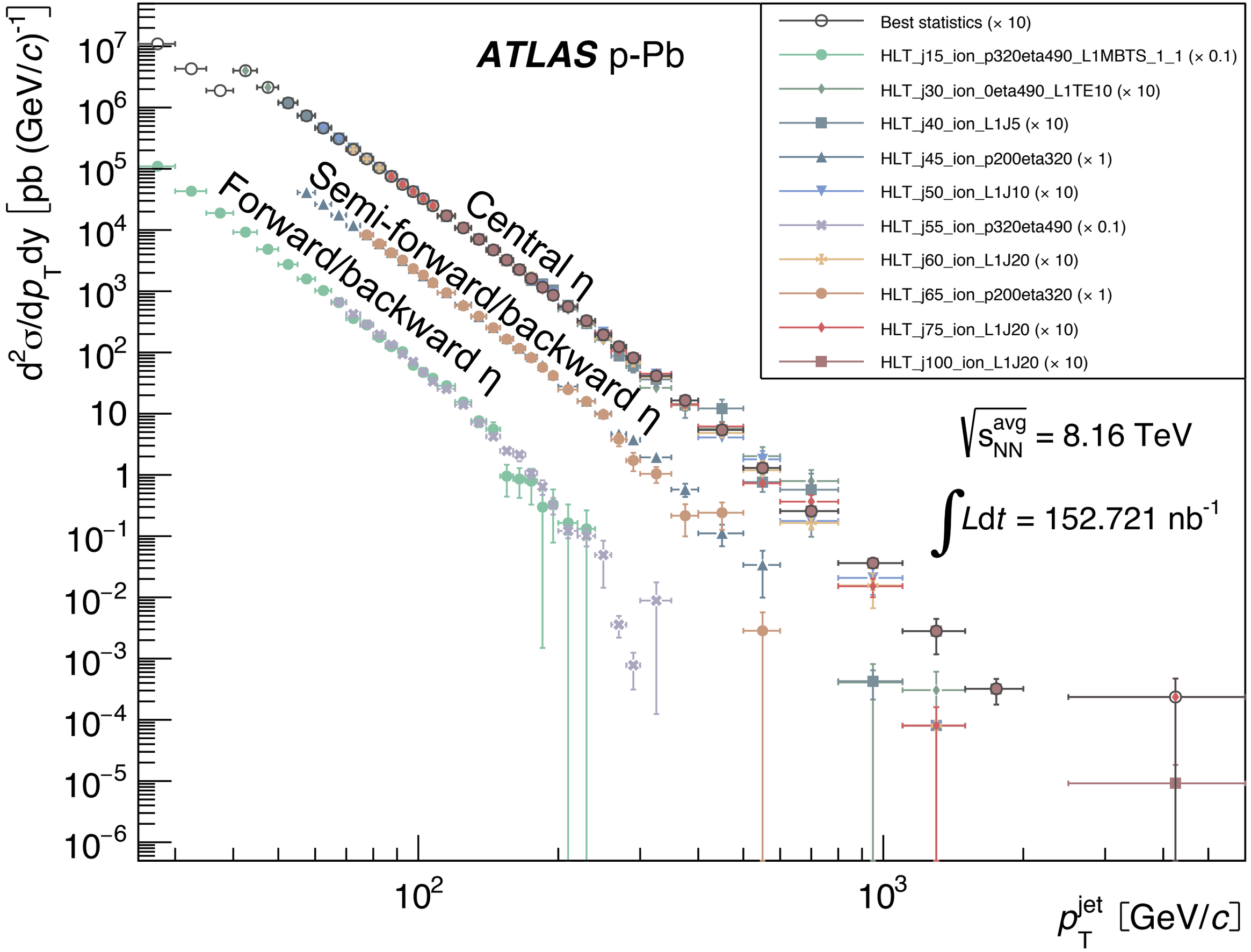
Period B (representative)

Number of Trigger Firings

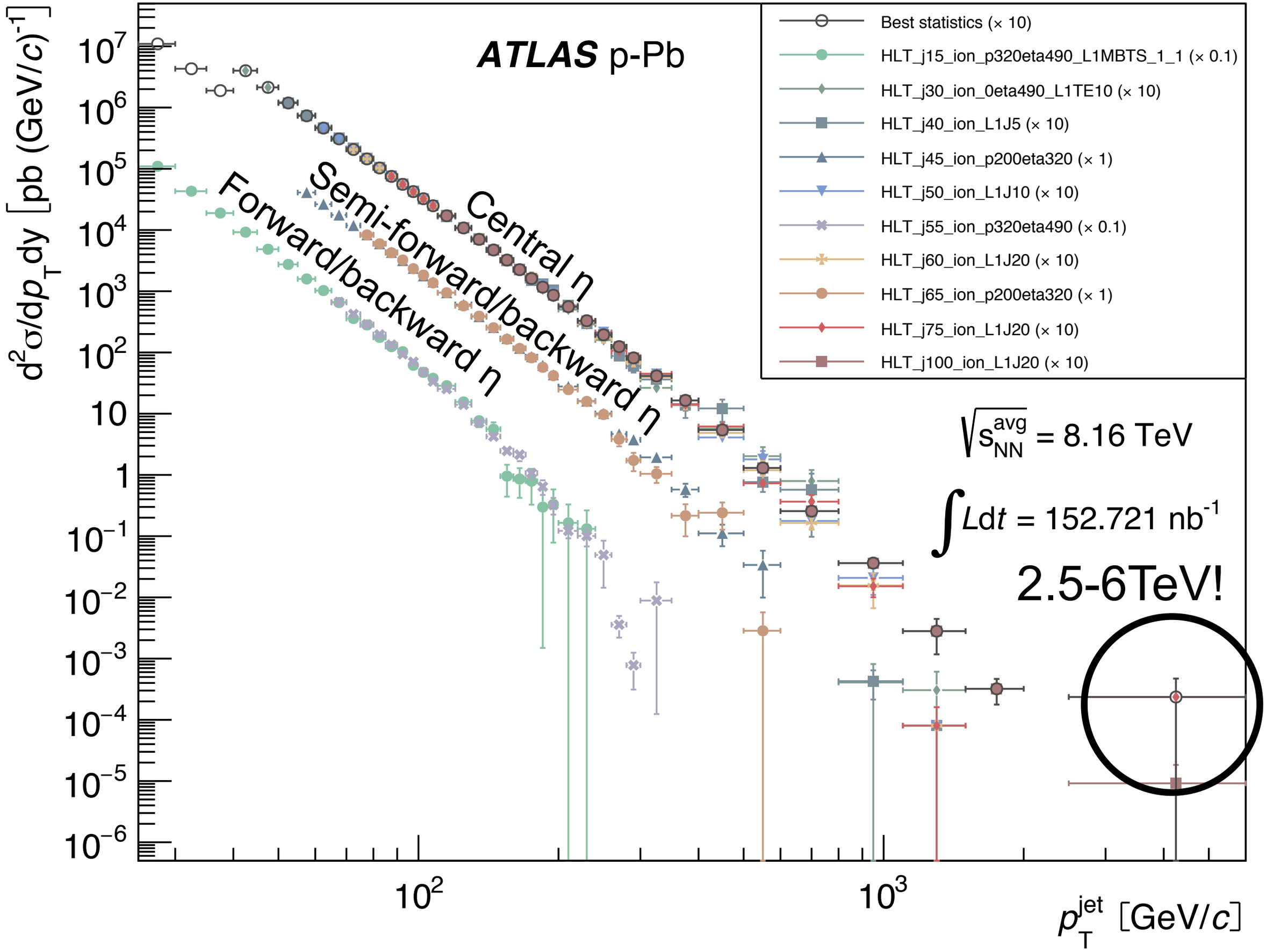


➢ For any given bin, look for the trigger with the most counts (in that bin) to be fired

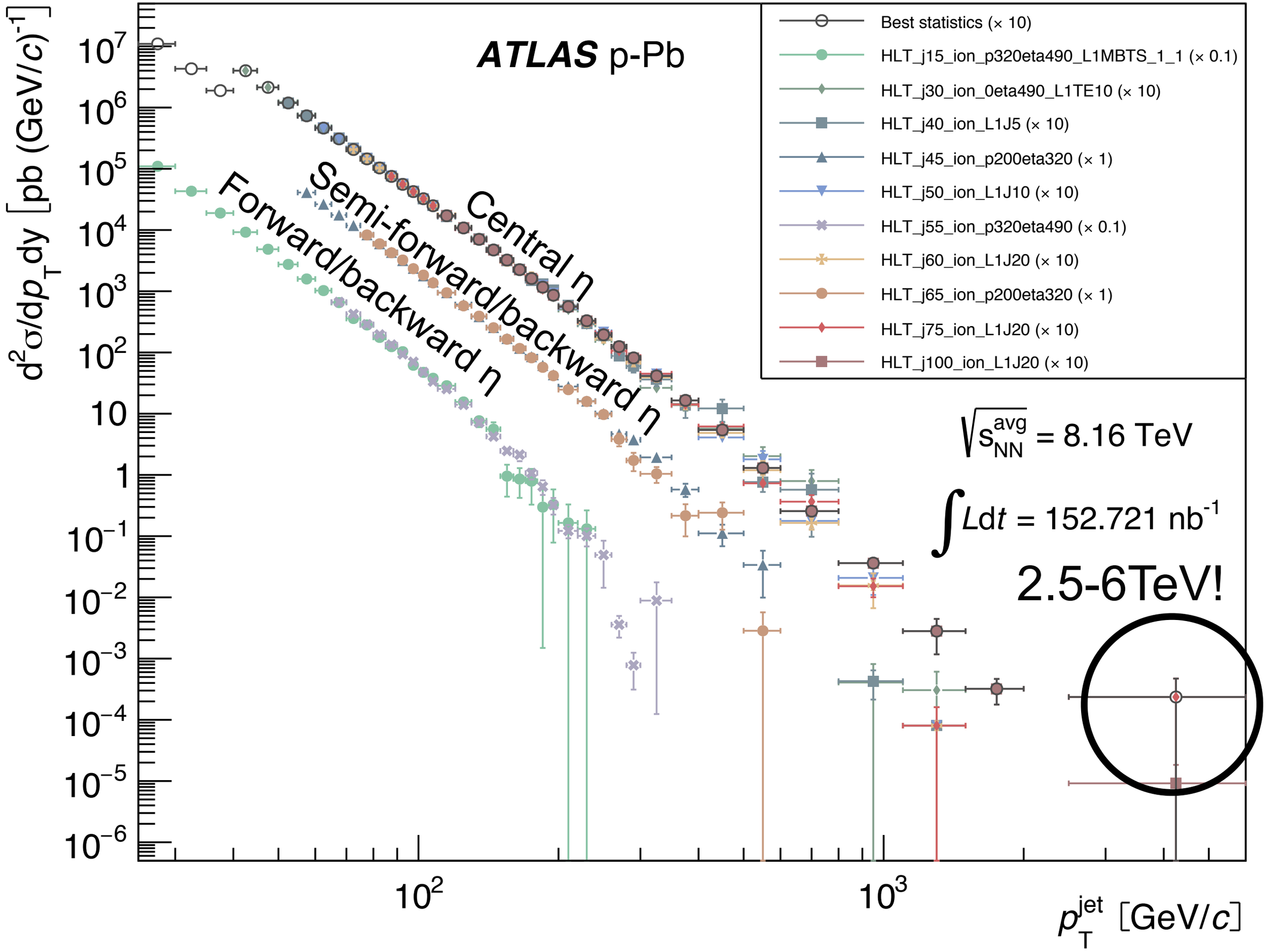
Inclusive Jet p_T Spectra per Trigger



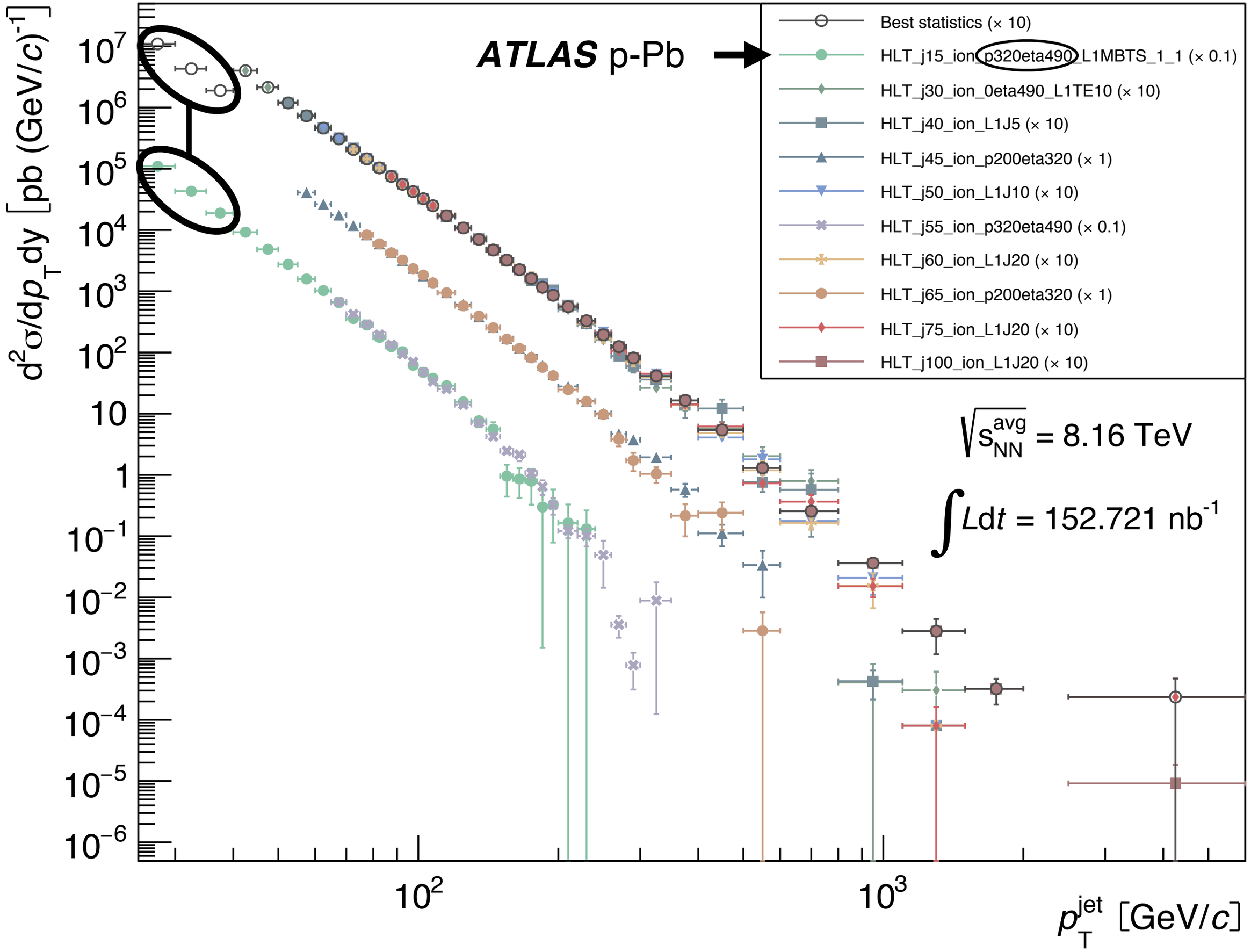
Inclusive Jet p_T Spectra per Trigger



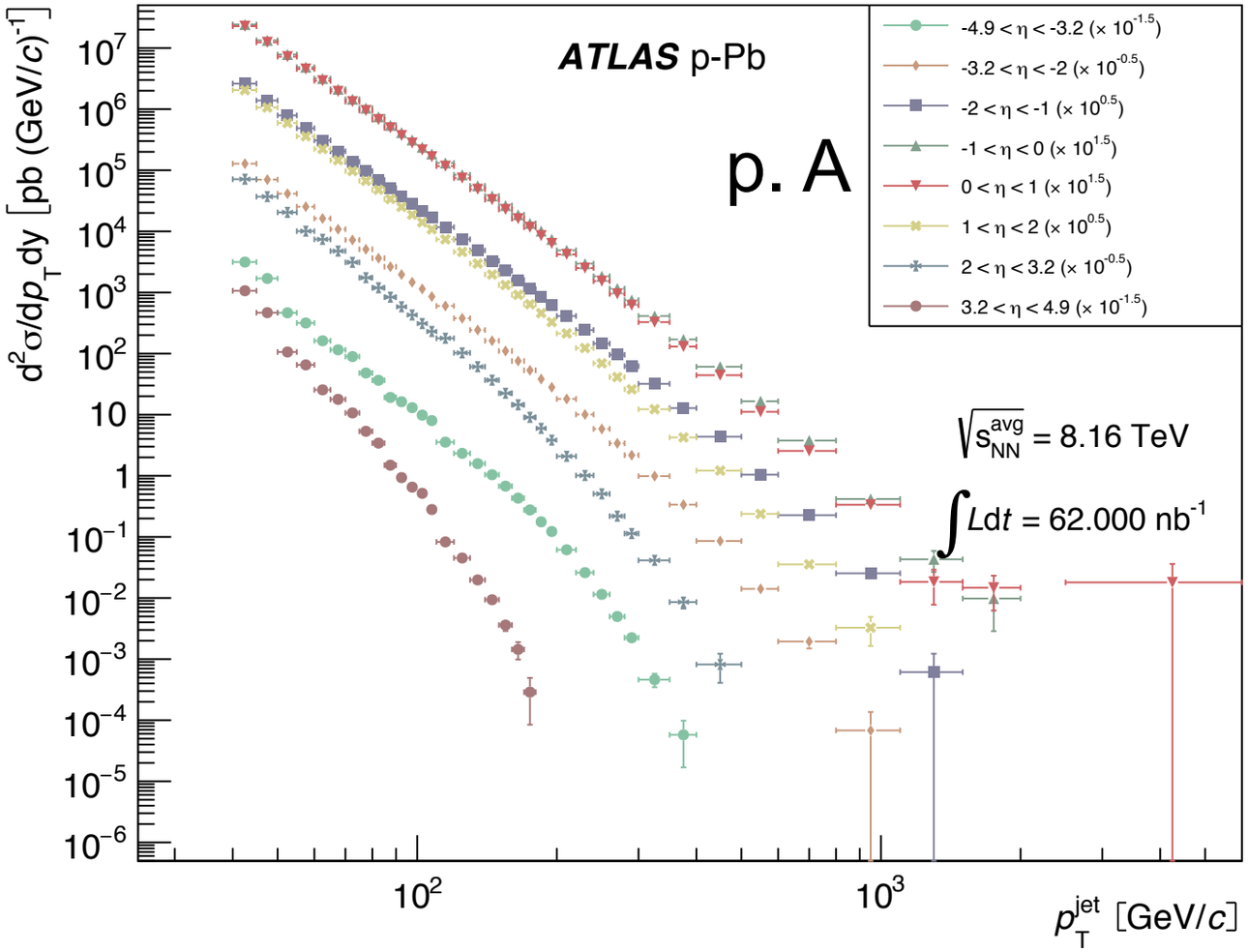
Inclusive Jet p_T Spectra per Trigger



Inclusive Jet p_T Spectra per Trigger

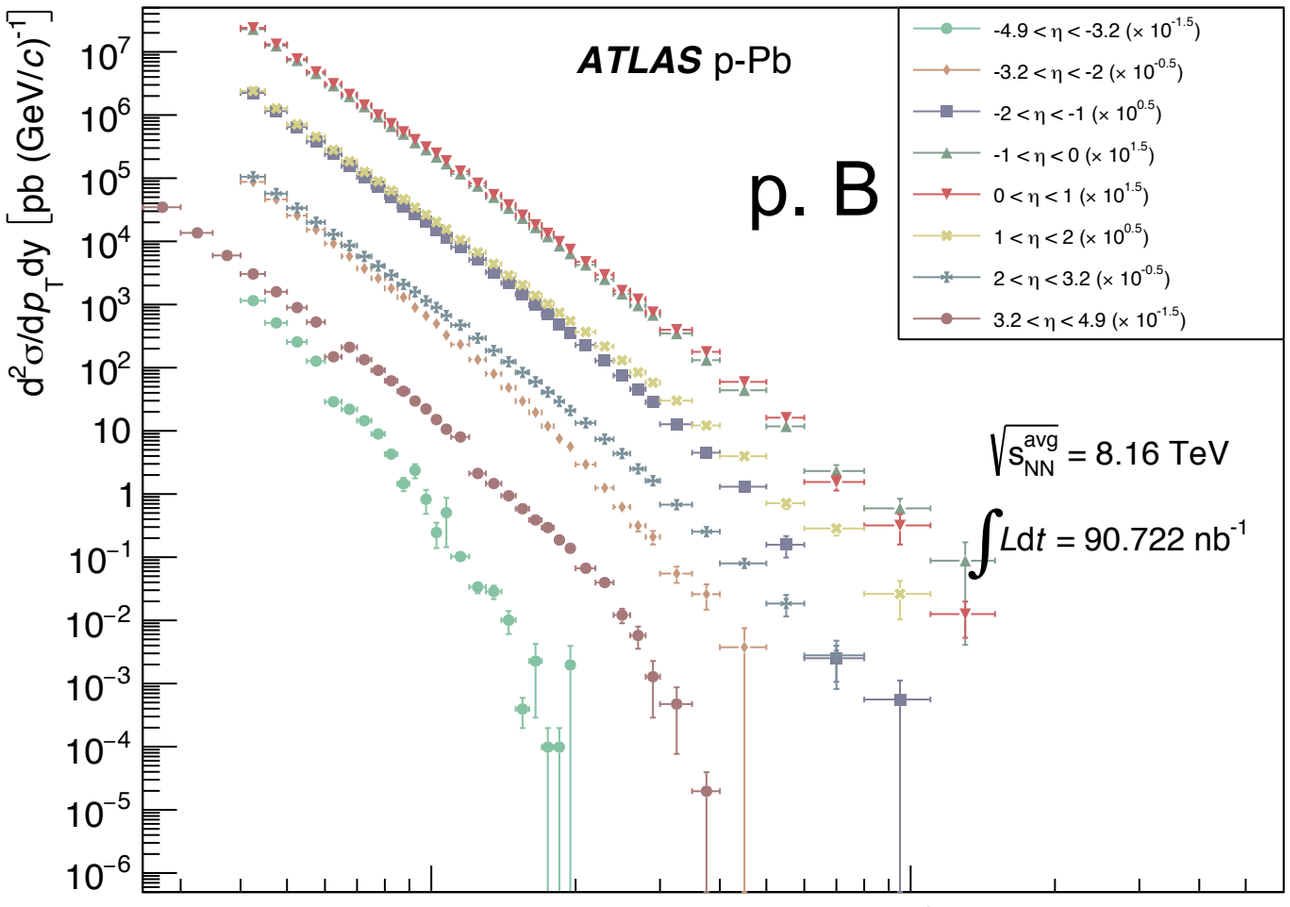


Inclusive Jet p_T Spectra binned in η

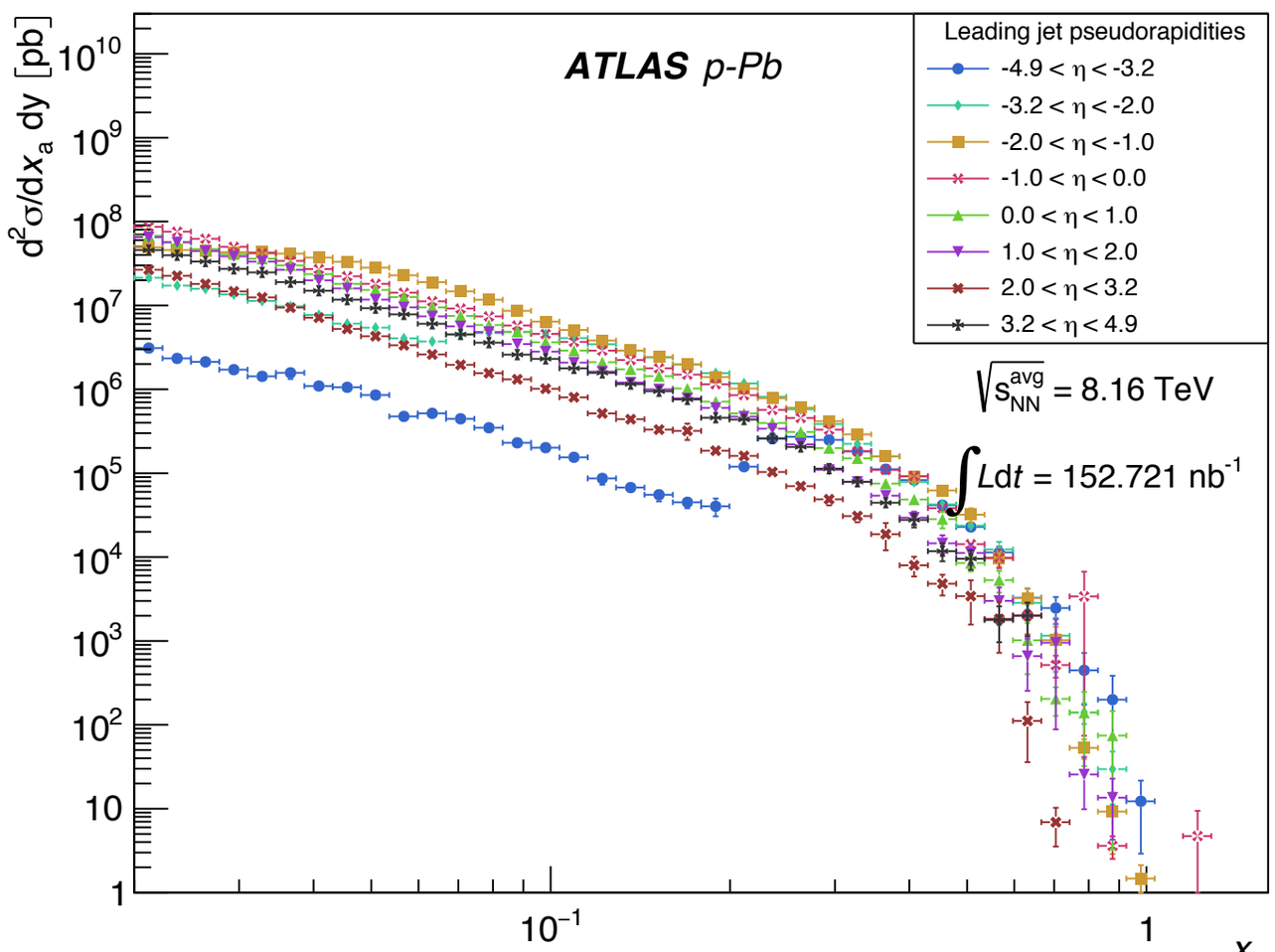


(Less luminosity, fewer triggers)

Kinematics reversed



(Higher luminosity, more triggers)

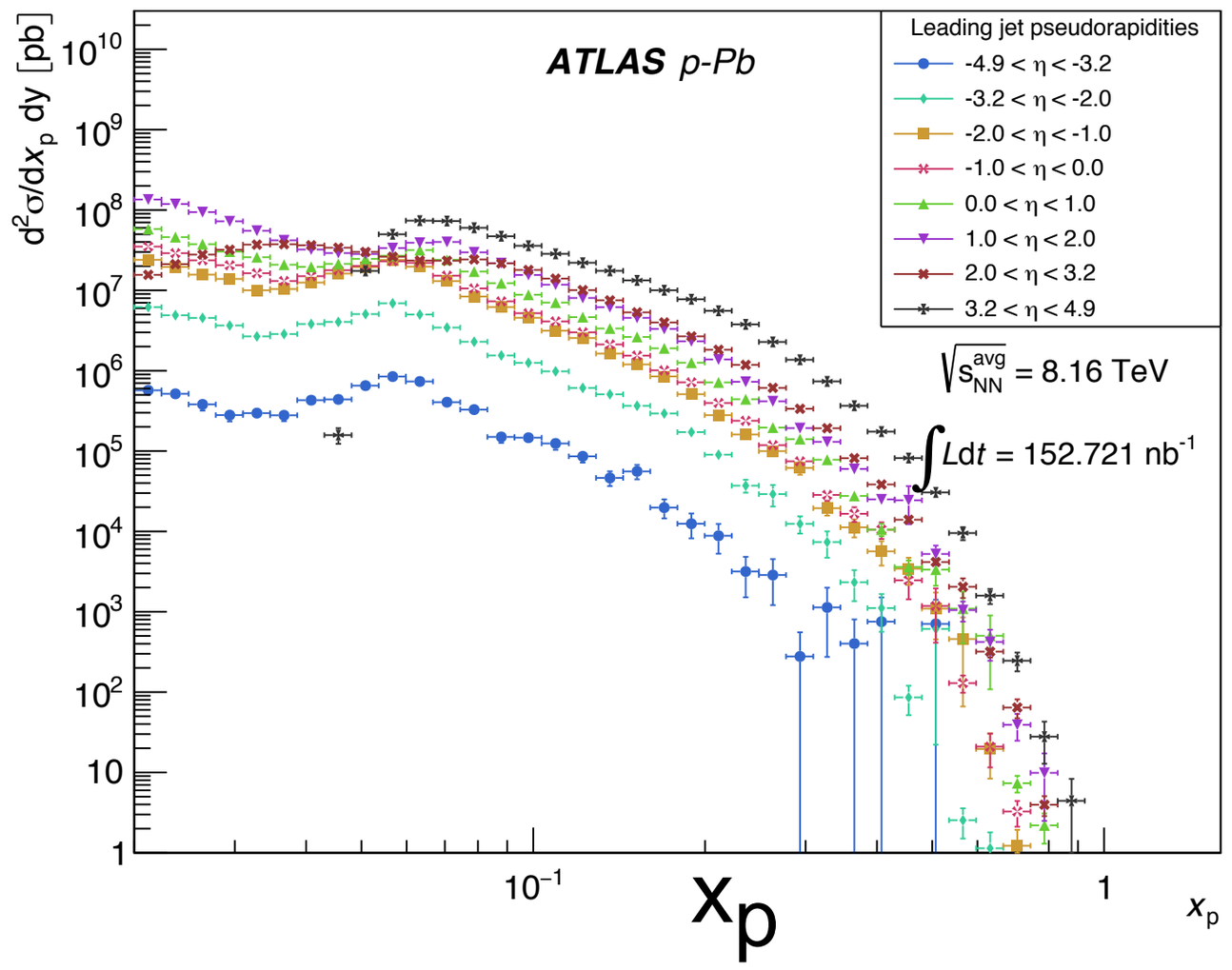


In Period B kinematics,

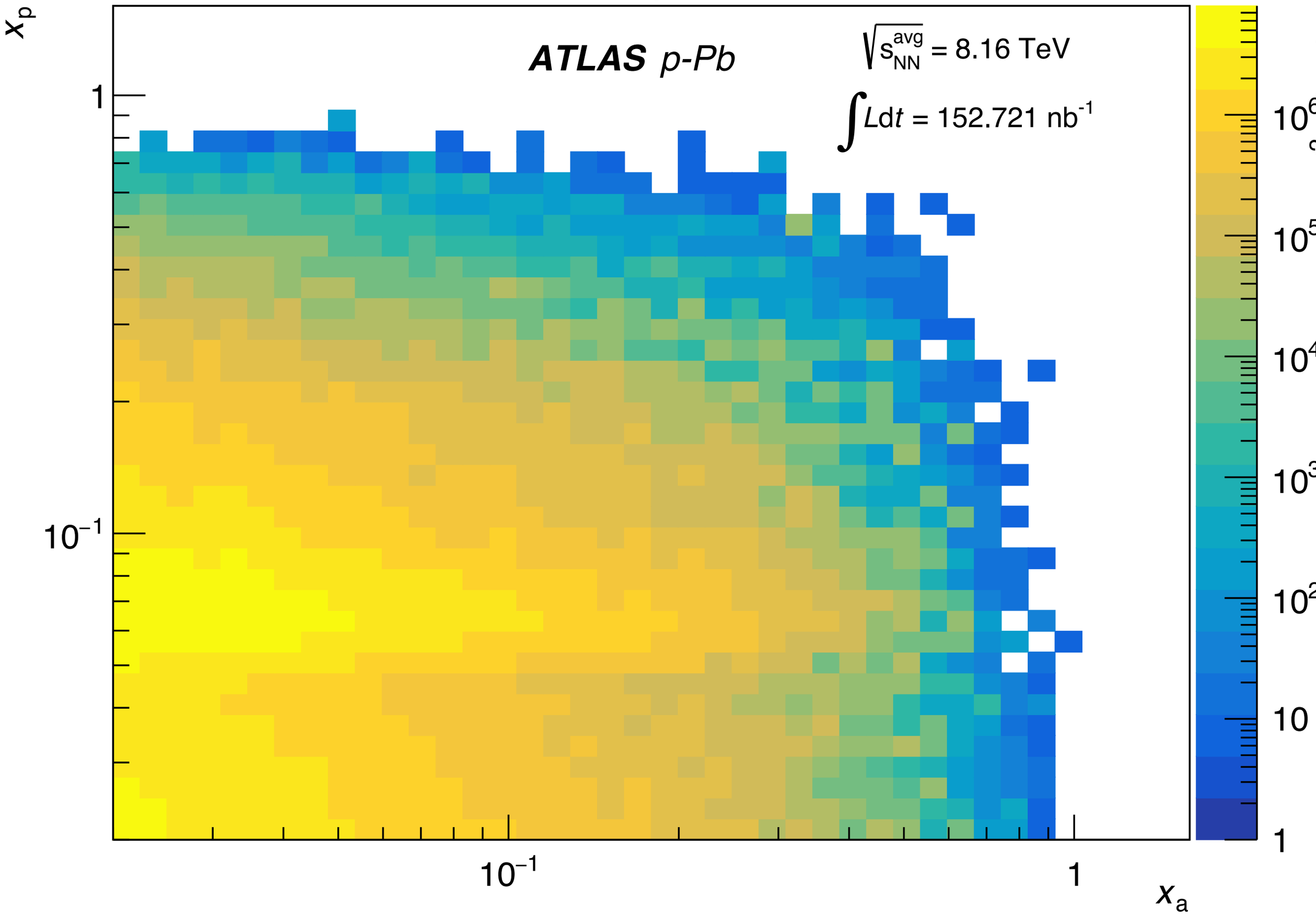
$$x_p = \frac{1}{\sqrt{s_{NN}^{avg}}} \sqrt{\frac{Z}{A}} \left(p_{T3} e^{\eta_3} + p_{T4} e^{\eta_4} \right)$$

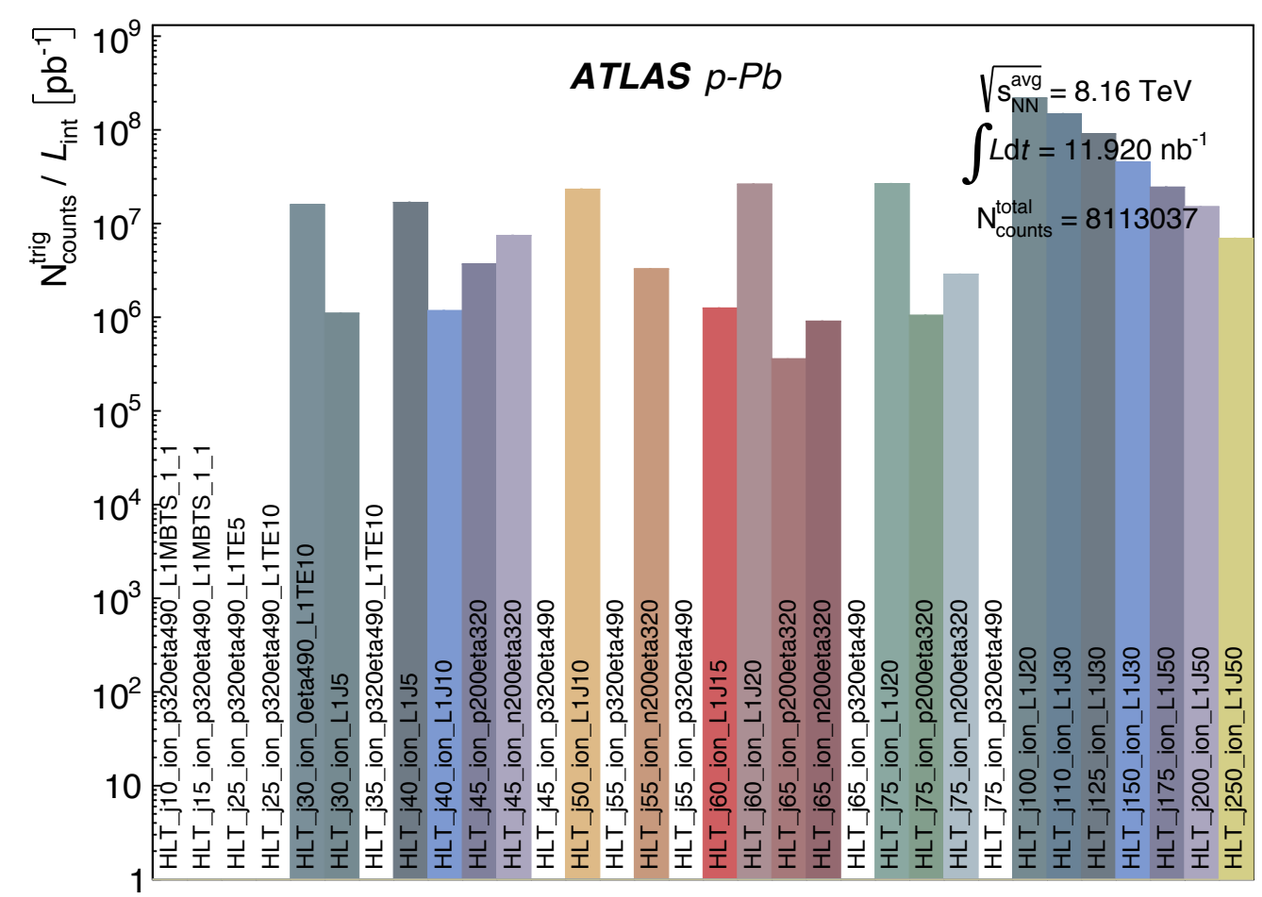
$$x_a = \frac{1}{\sqrt{s_{NN}^{avg}}} \sqrt{\frac{A}{Z}} \left(p_{T3} e^{-\eta_3} + p_{T4} e^{-\eta_4} \right)$$

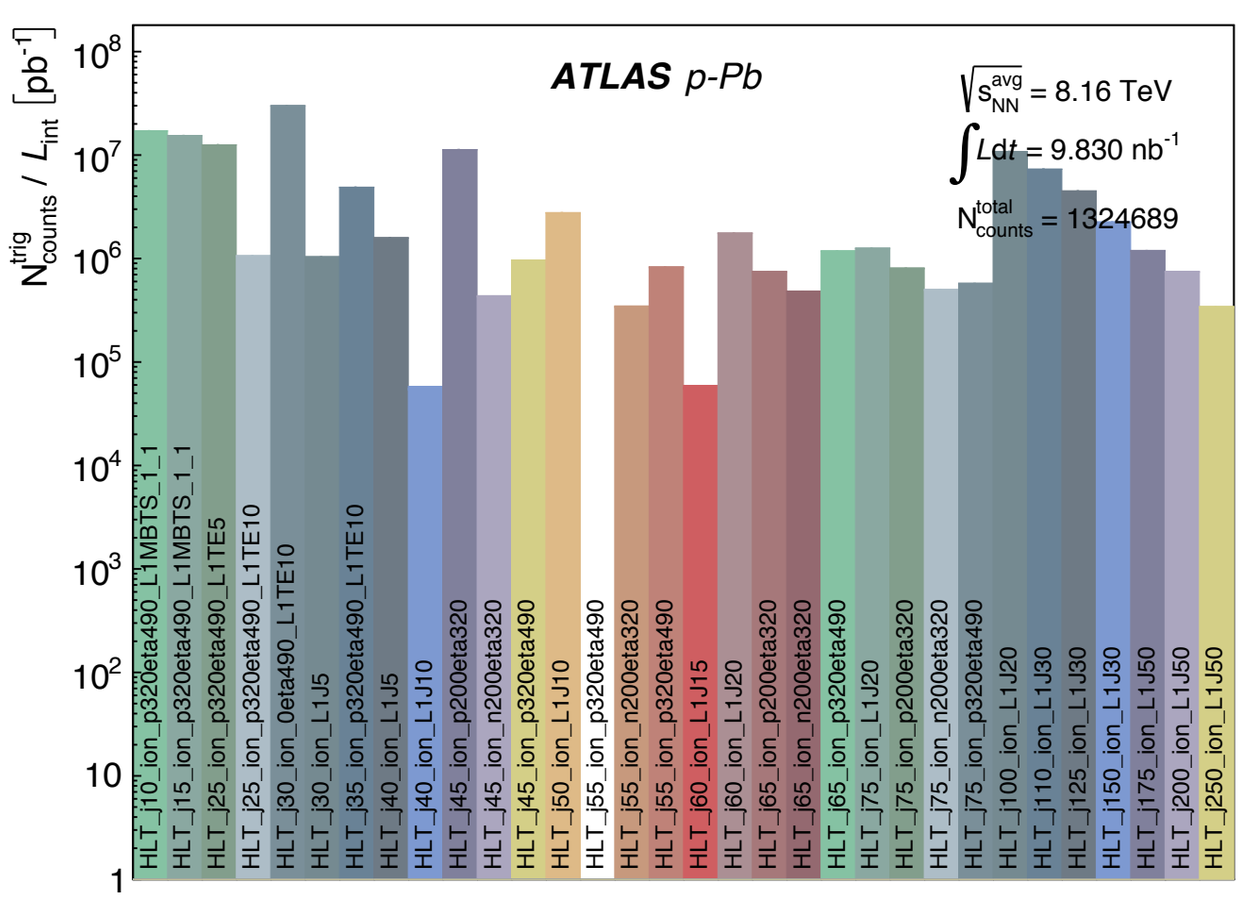
Dijet condition: $\frac{p_T^{subleading}}{p_T^{leading}} \geq 0.7$



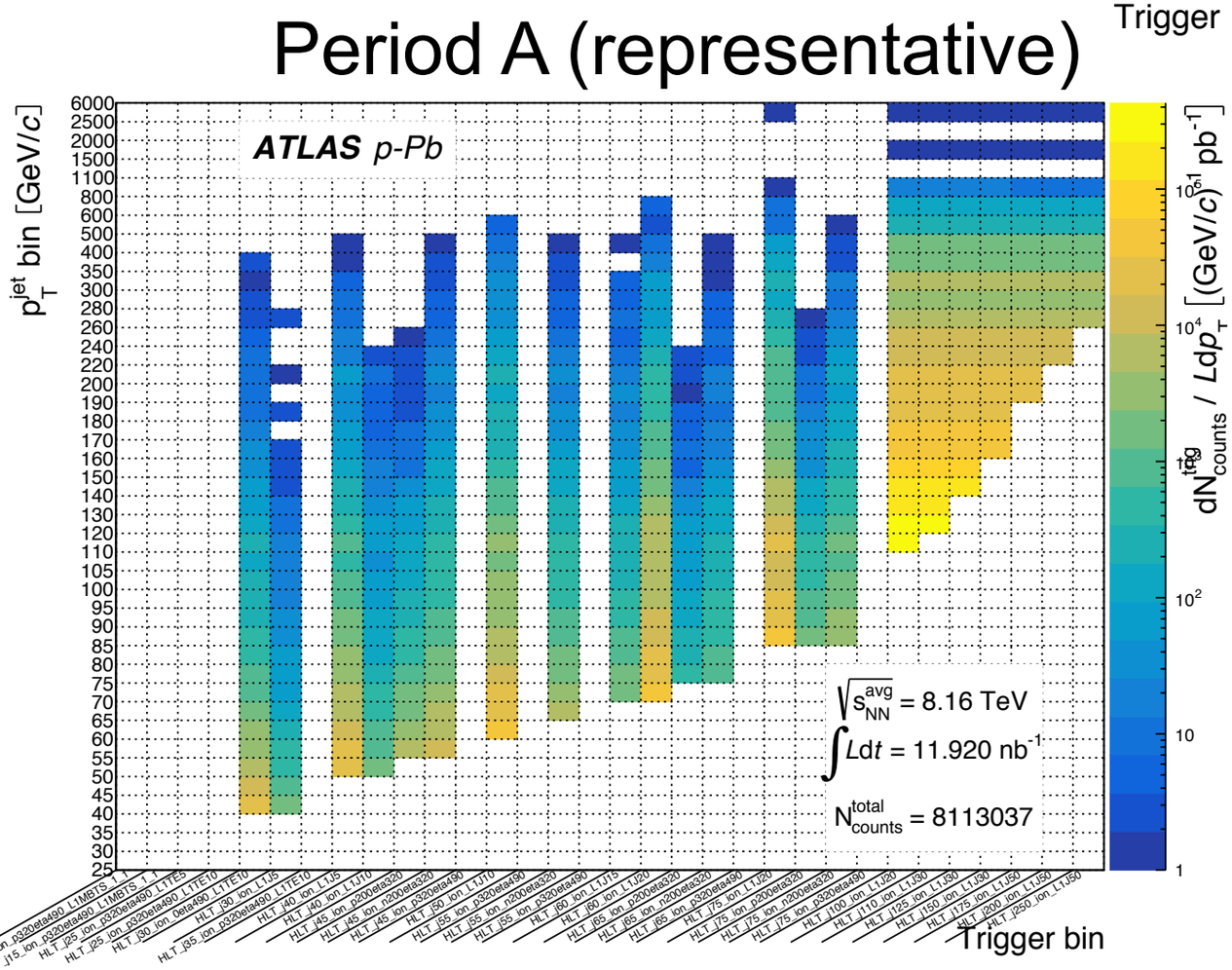
Dijet x_A-x_p cross-correlation



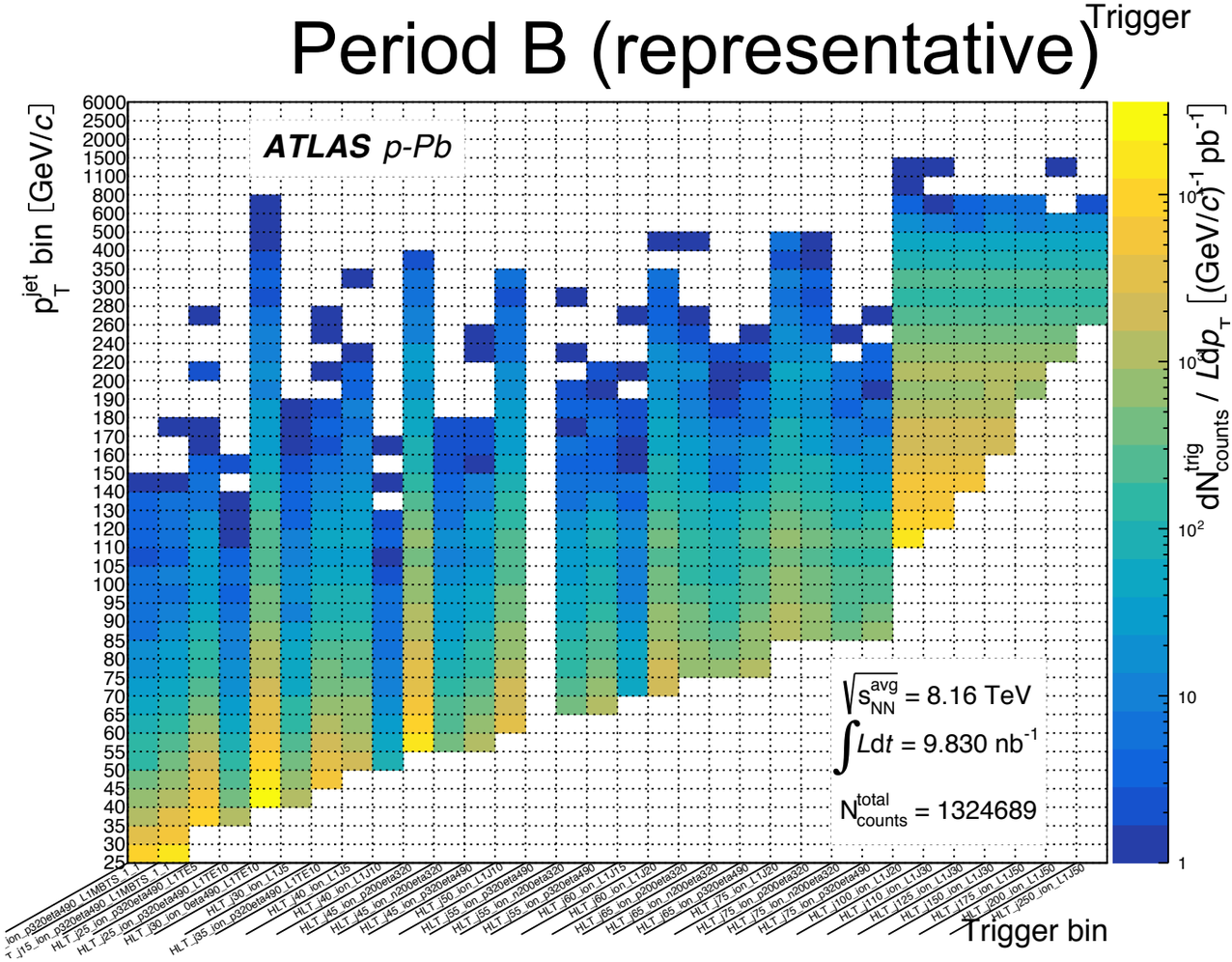




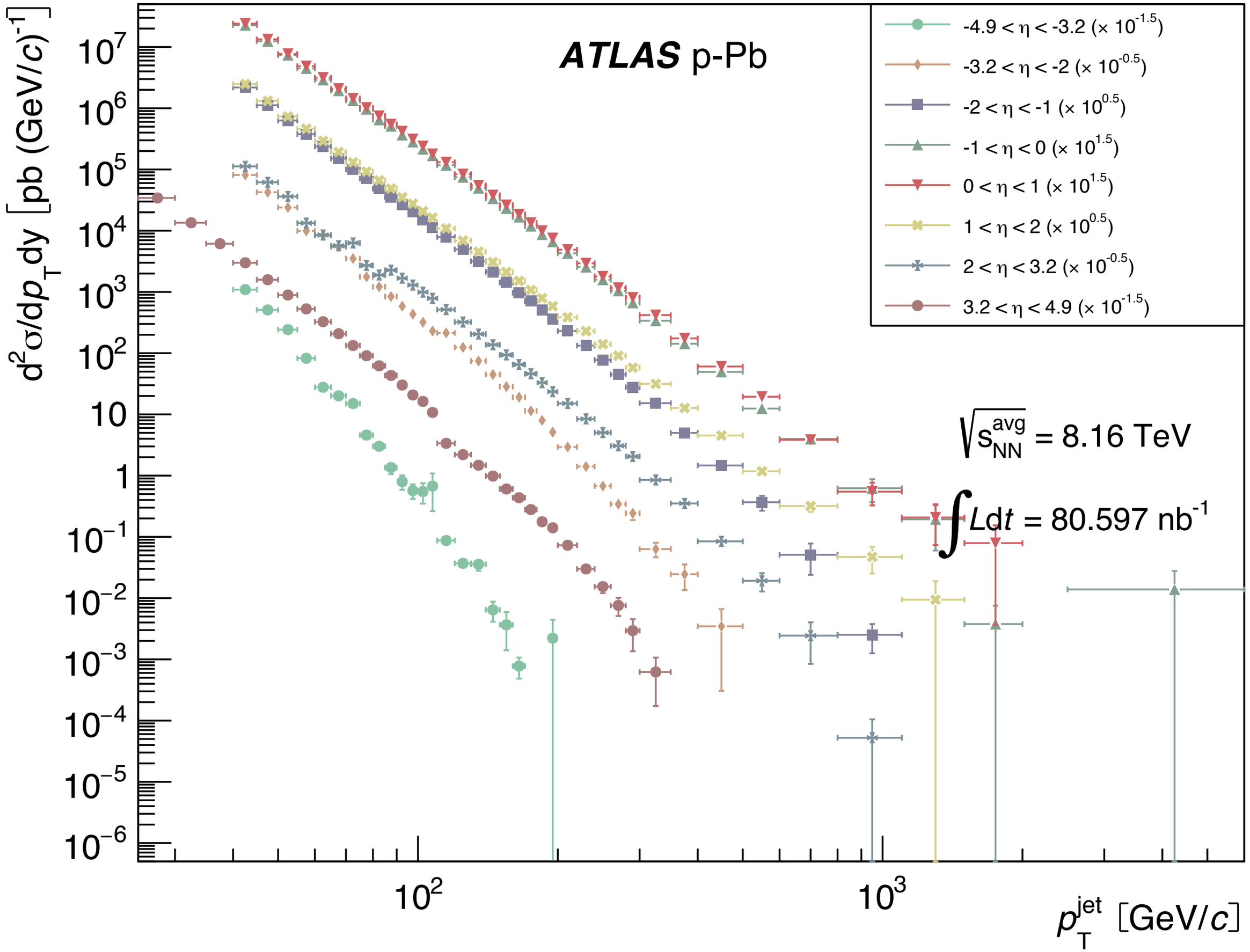
Period A (representative)



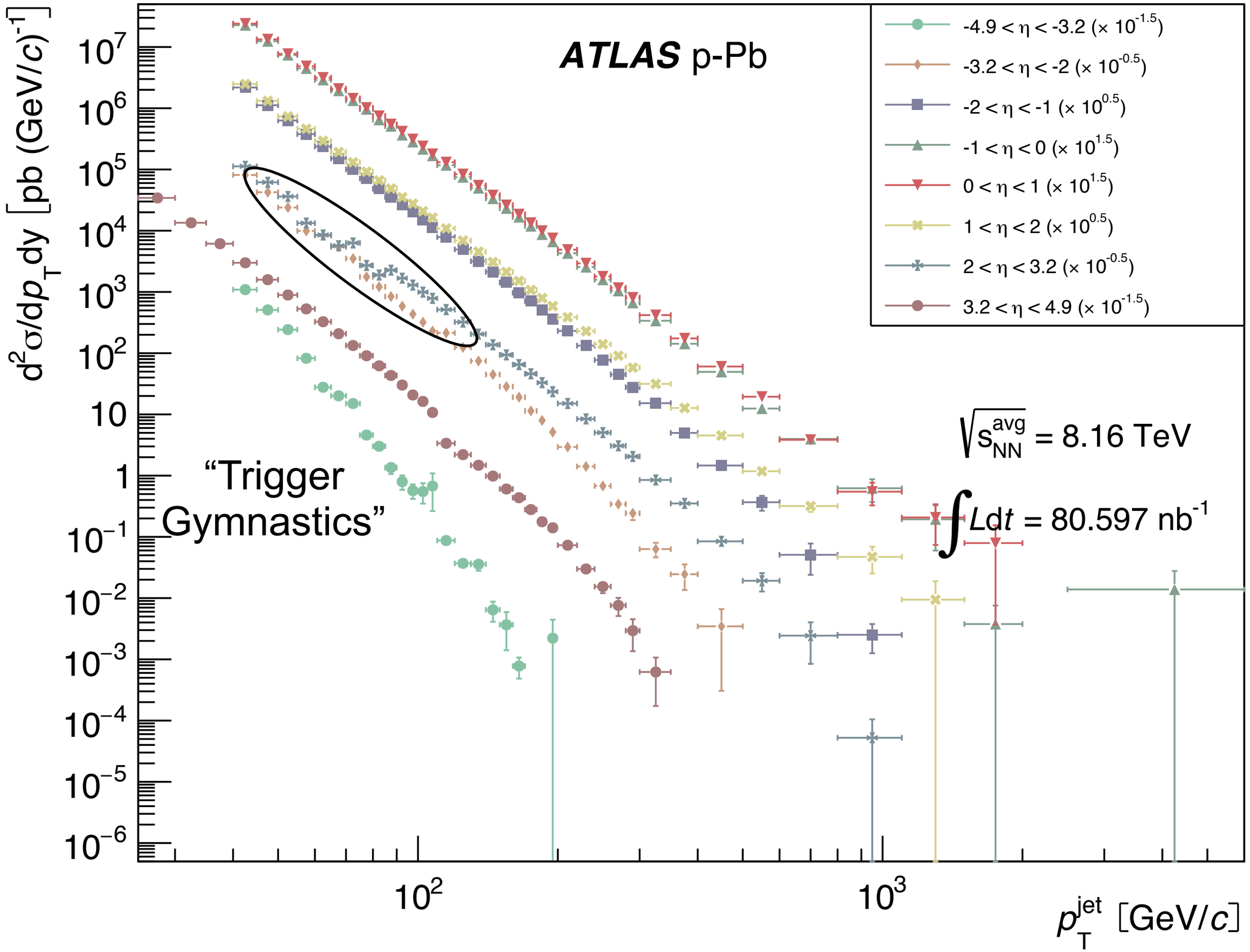
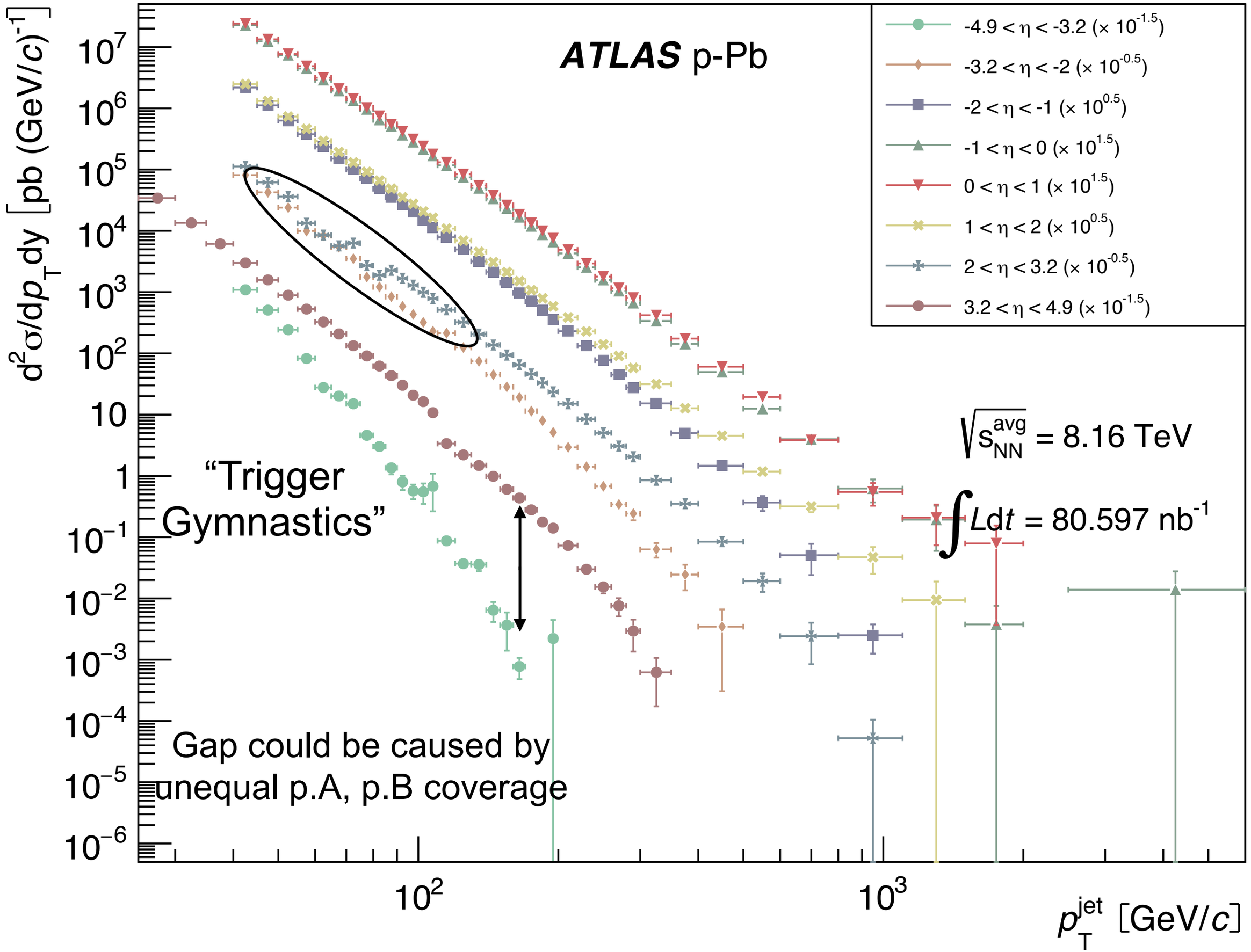
Period B (representative)



Inclusive Jet p_T Spectra binned in η



Inclusive Jet p_T Spectra binned in η



Inclusive Jet p_T Spectra binned in η