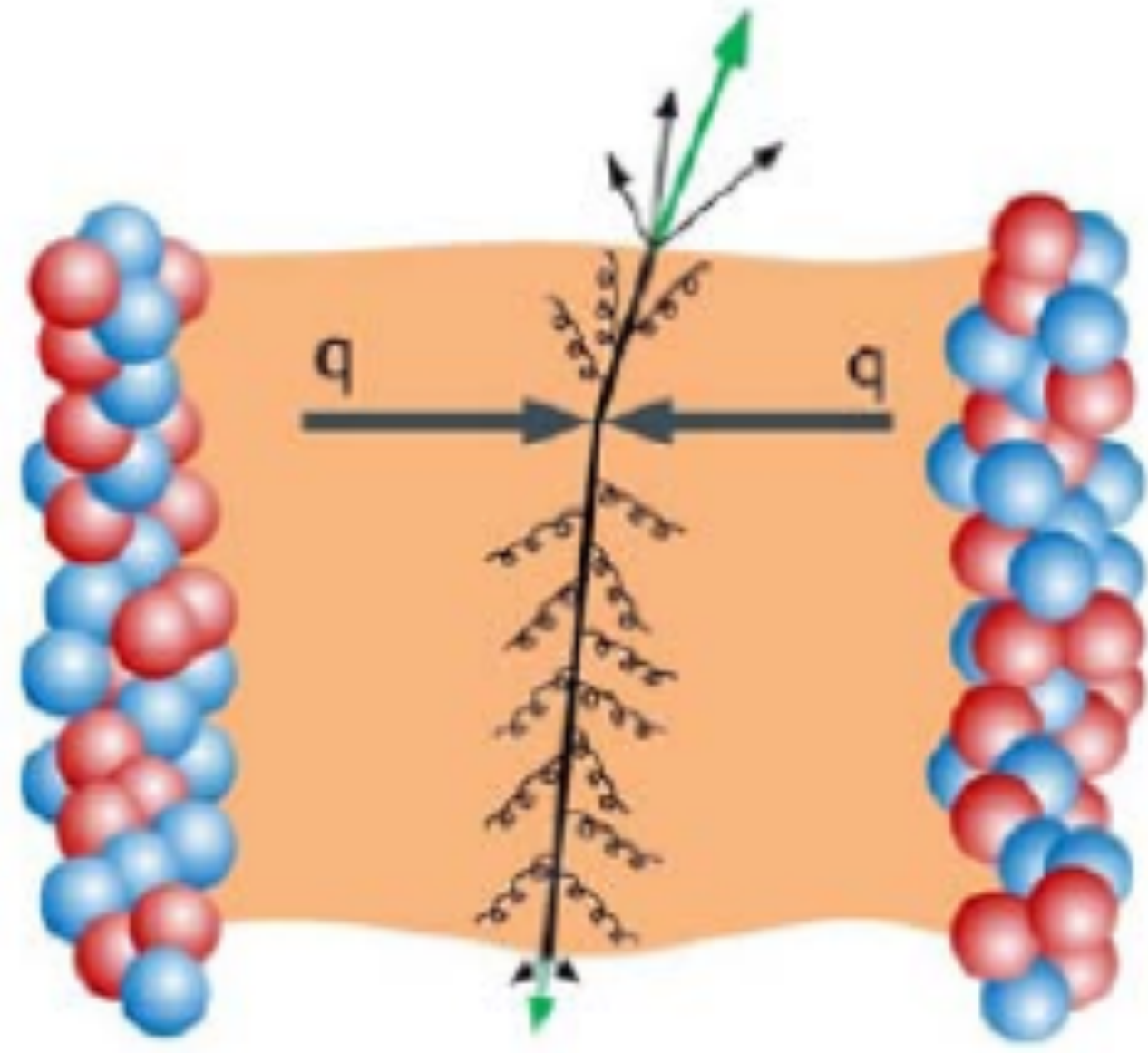


Laura Havener for the ATLAS Collaboration
Columbia University, New York, NY

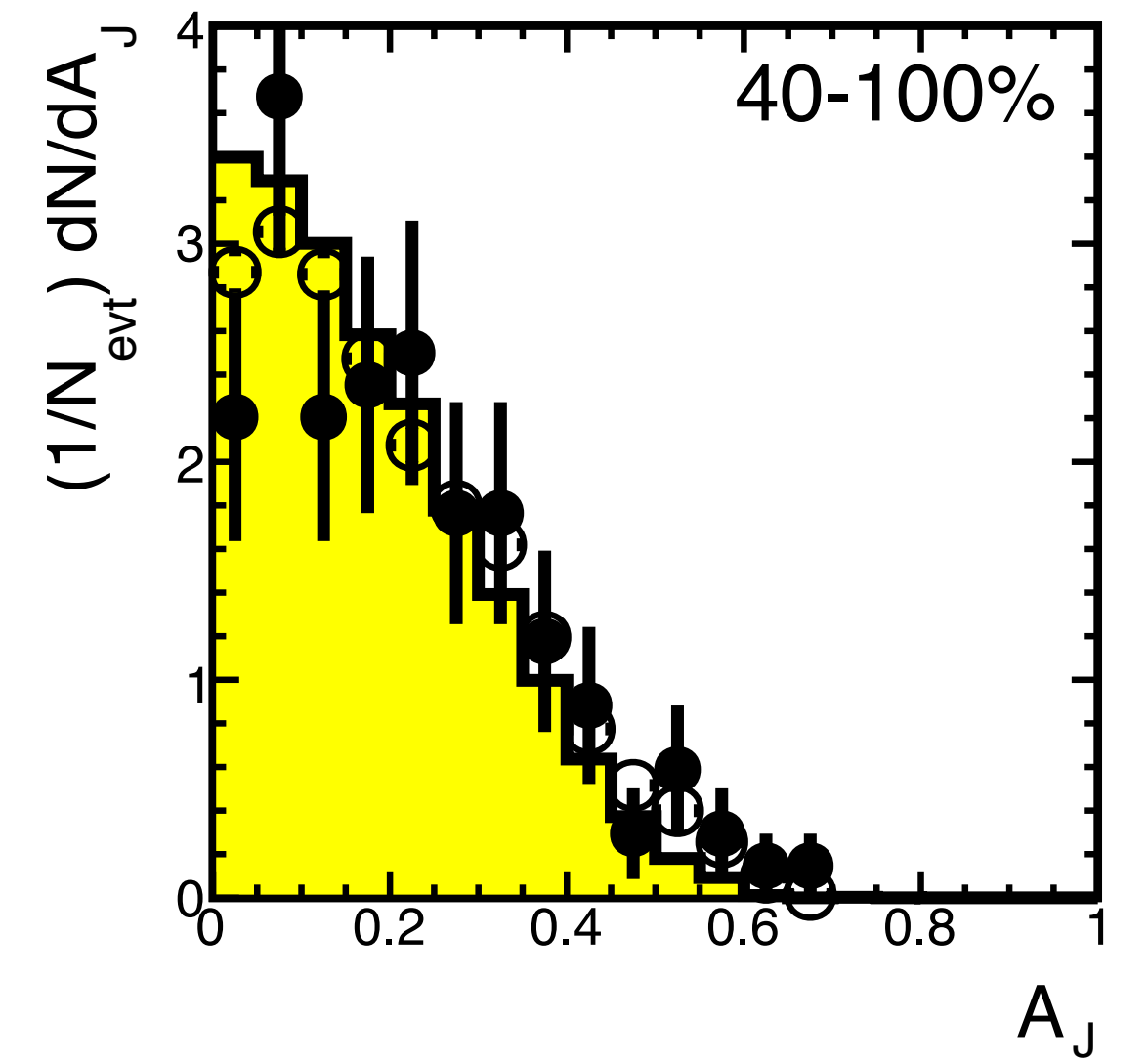
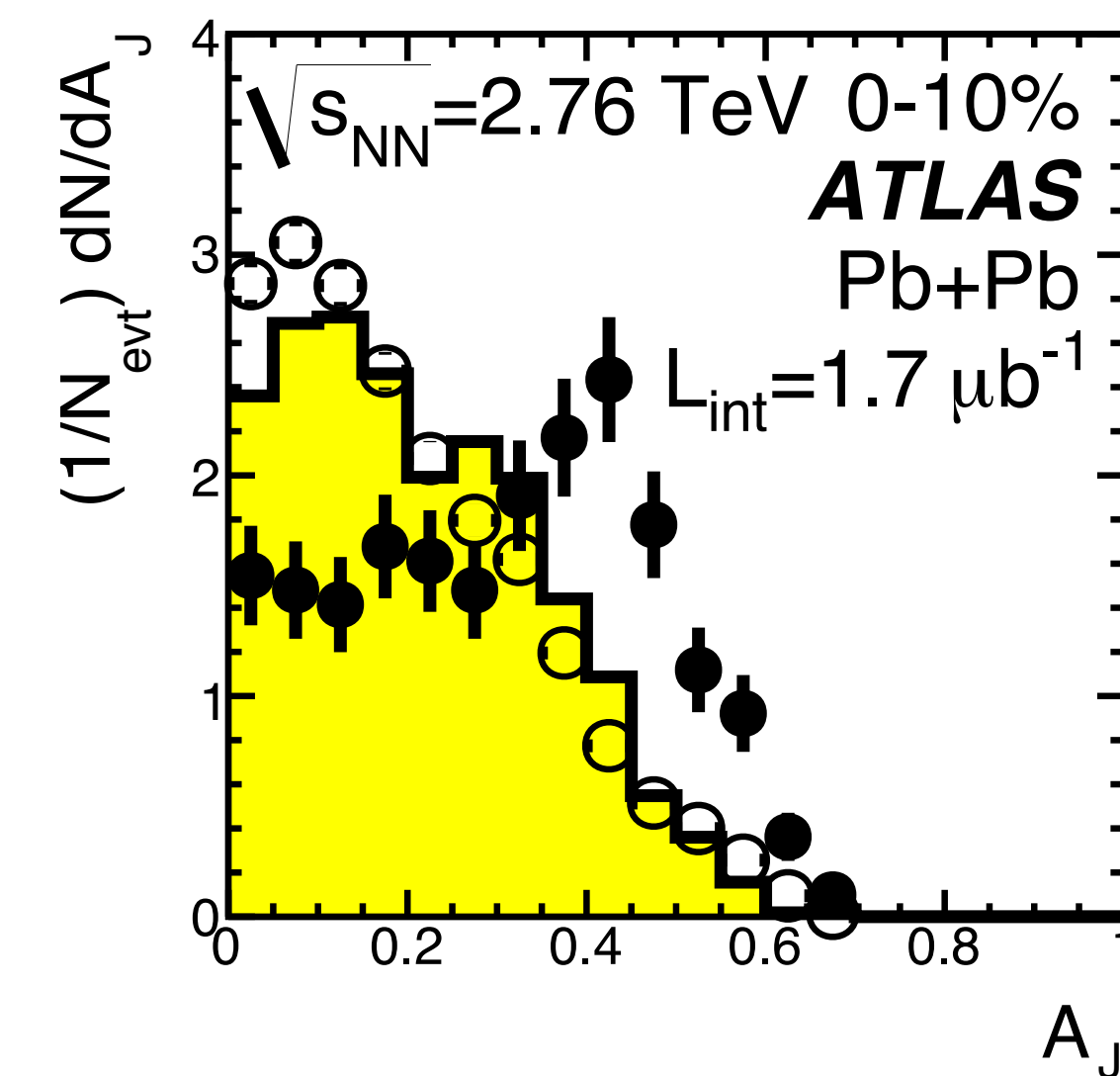
Motivation

- The phenomena in which jets lose energy in the medium produced in heavy ion collisions is called **jet quenching**
 - May result in energy imbalance in dijet pairs because jets can lose different amounts of energy in the plasma



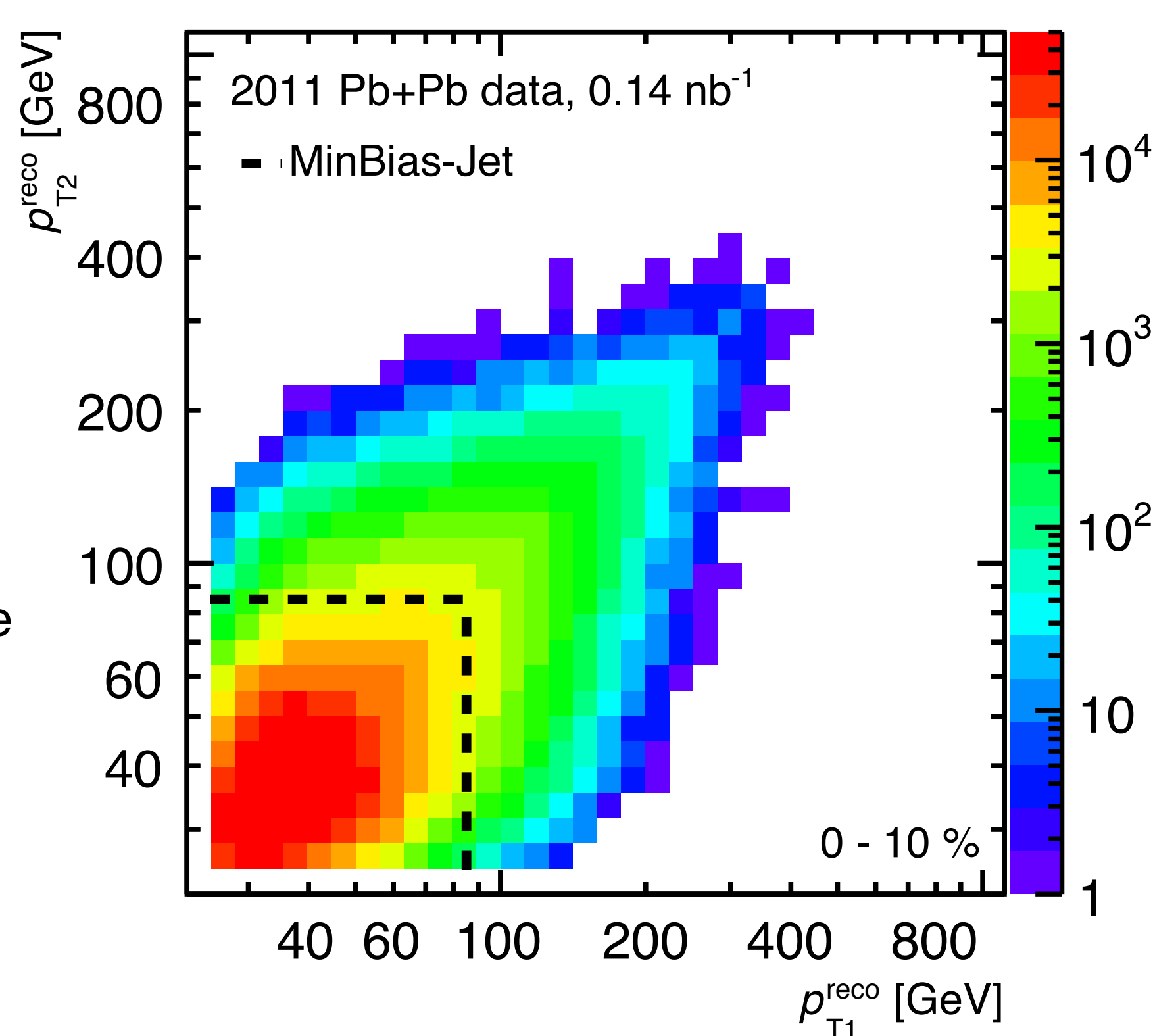
- Previous measurement by ATLAS observed an increase in asymmetric jets in more central collisions
 - Not unfolded for detector effects

ATLAS Collaboration, Phys. Rev. Lett. 105 (2010) 252303, arXiv: 1011.6182 [hep-ex].



Dijet Pair Selection and Background Subtraction

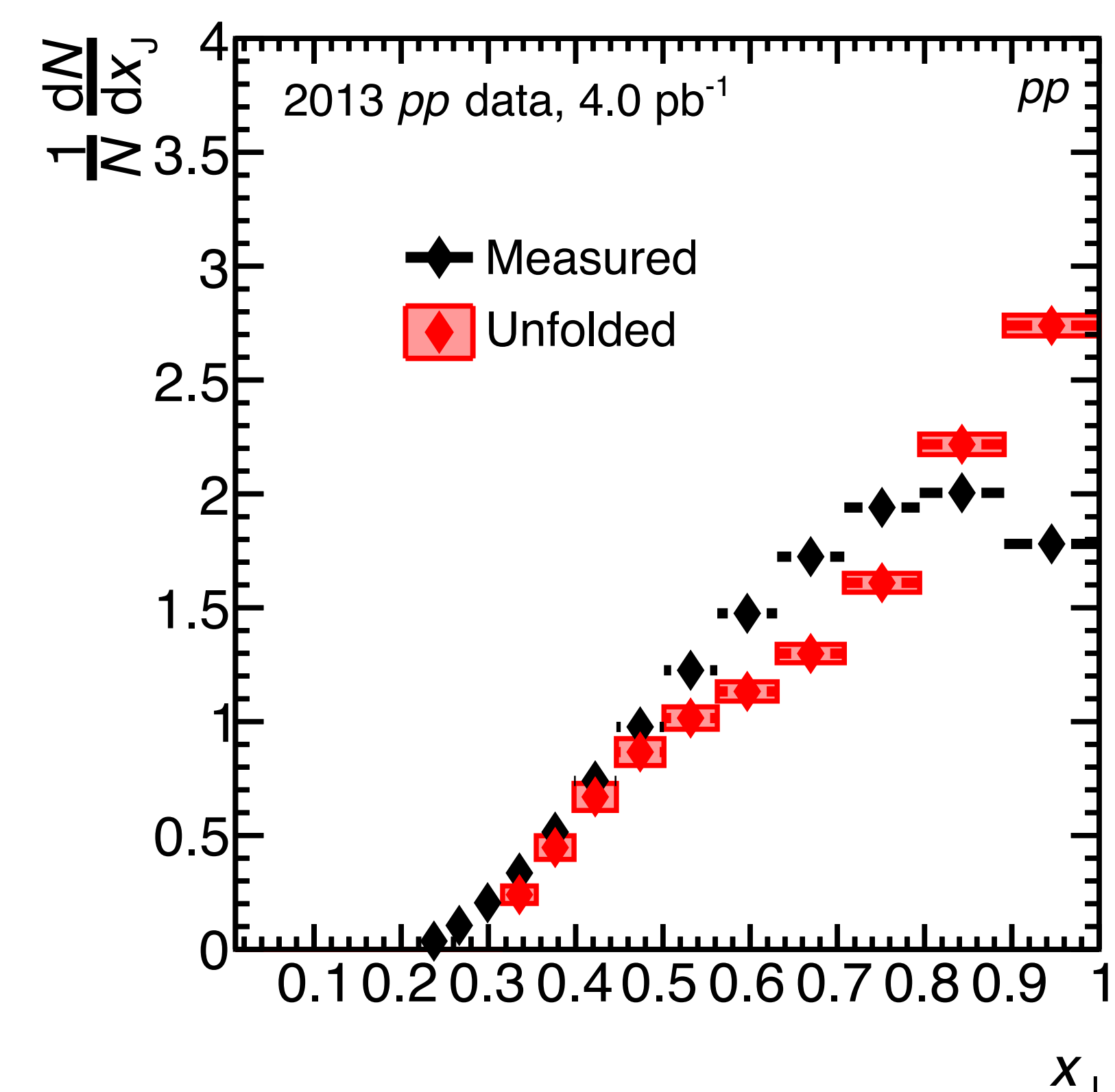
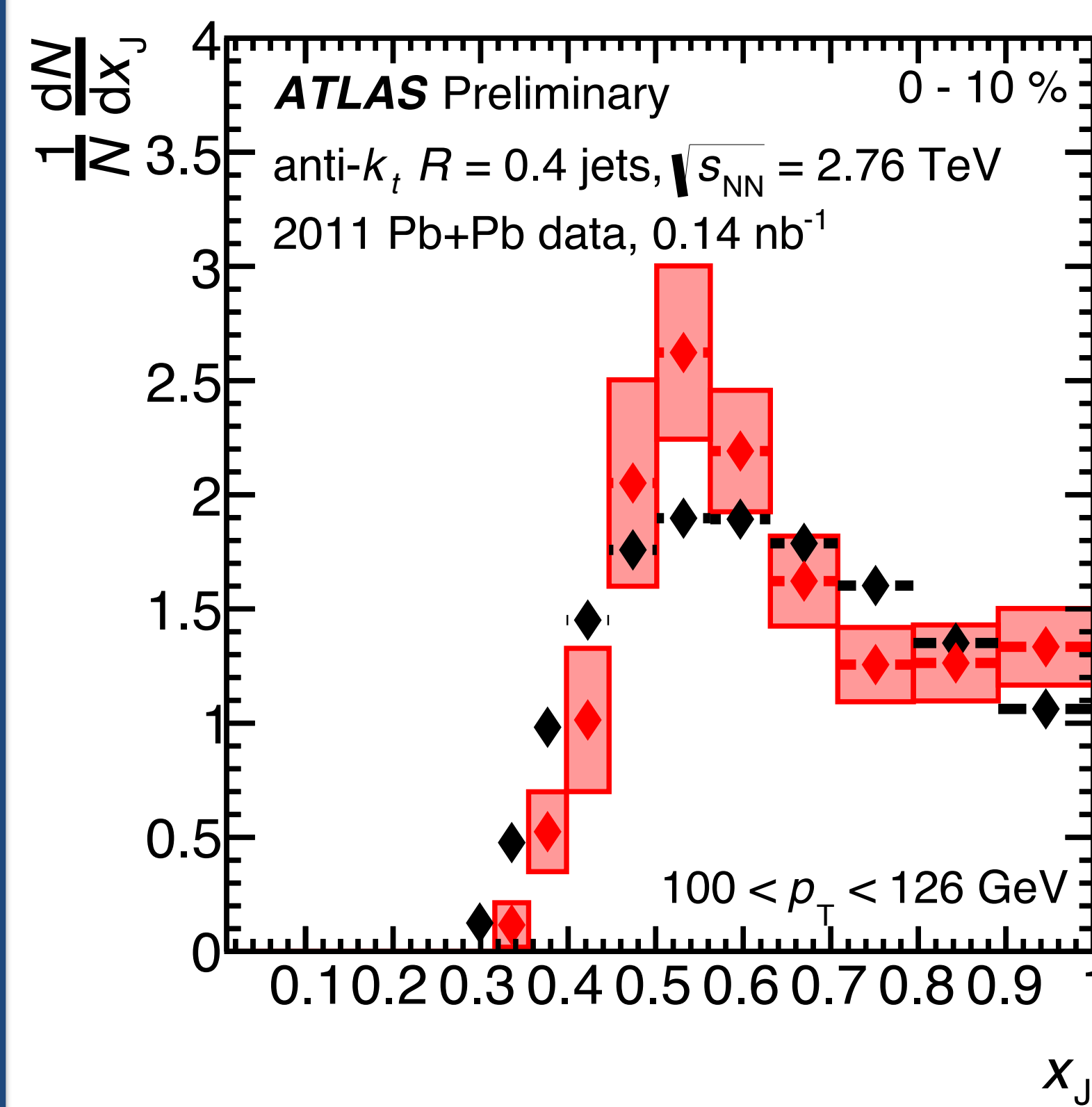
- Measurement performed differentially in Pb+Pb collision centralities and for pp collisions
- Find the two highest jets in the event
 - $p_T > 25$ GeV
 - $|\eta| < 2.1$
 - $\Delta\phi > 7\pi/8$
- Remove background contribution from pairs not originating from the same hard scattering
 - Estimate in uncorrelated region at $\Delta\phi < \pi/2$
 - Subtract from signal region at $\Delta\phi > 7\pi/8$



Unfolding

- 2D Bayesian unfolding applied to account for resolution on both jets' p_T
- Project into the observable x_J

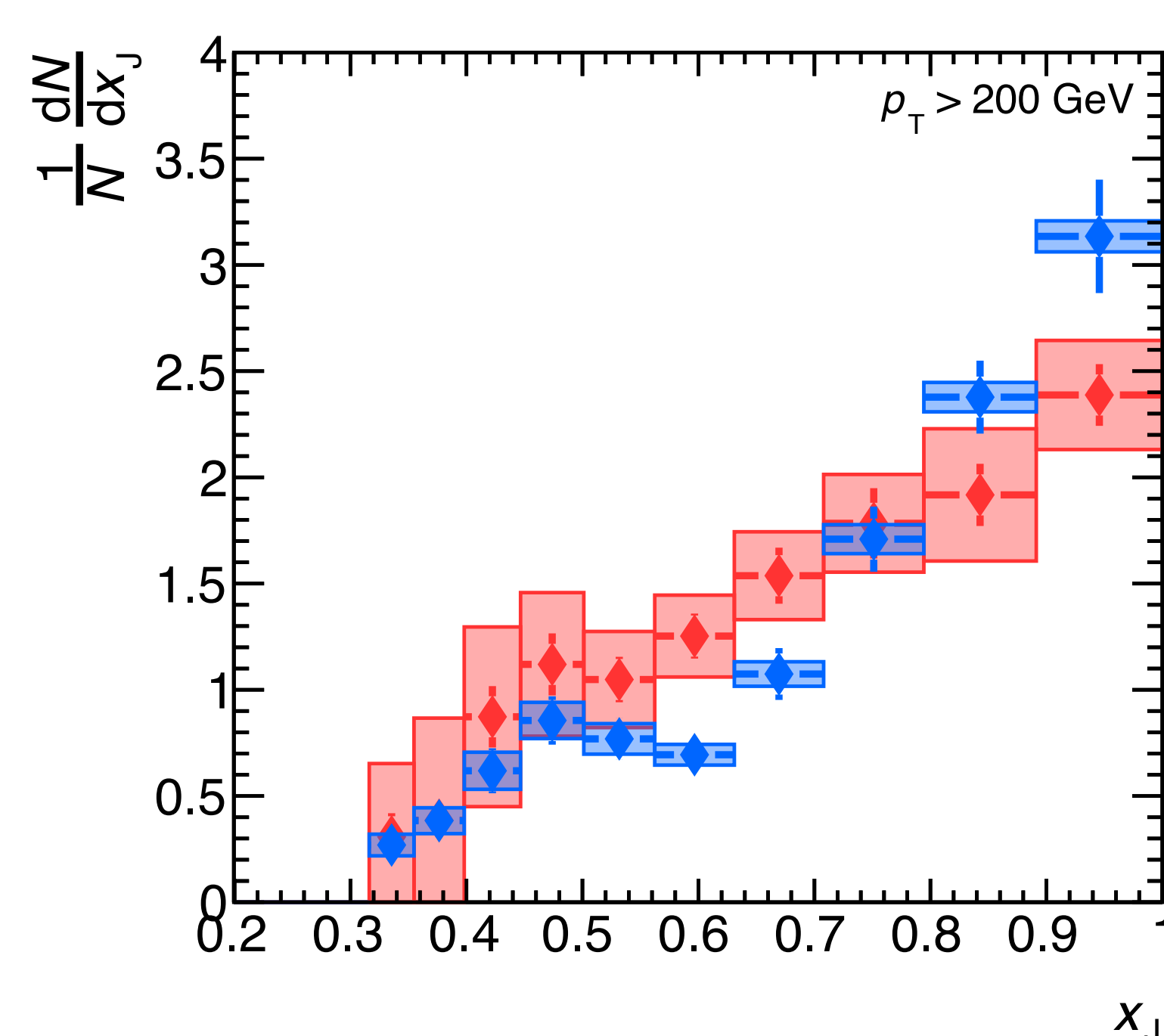
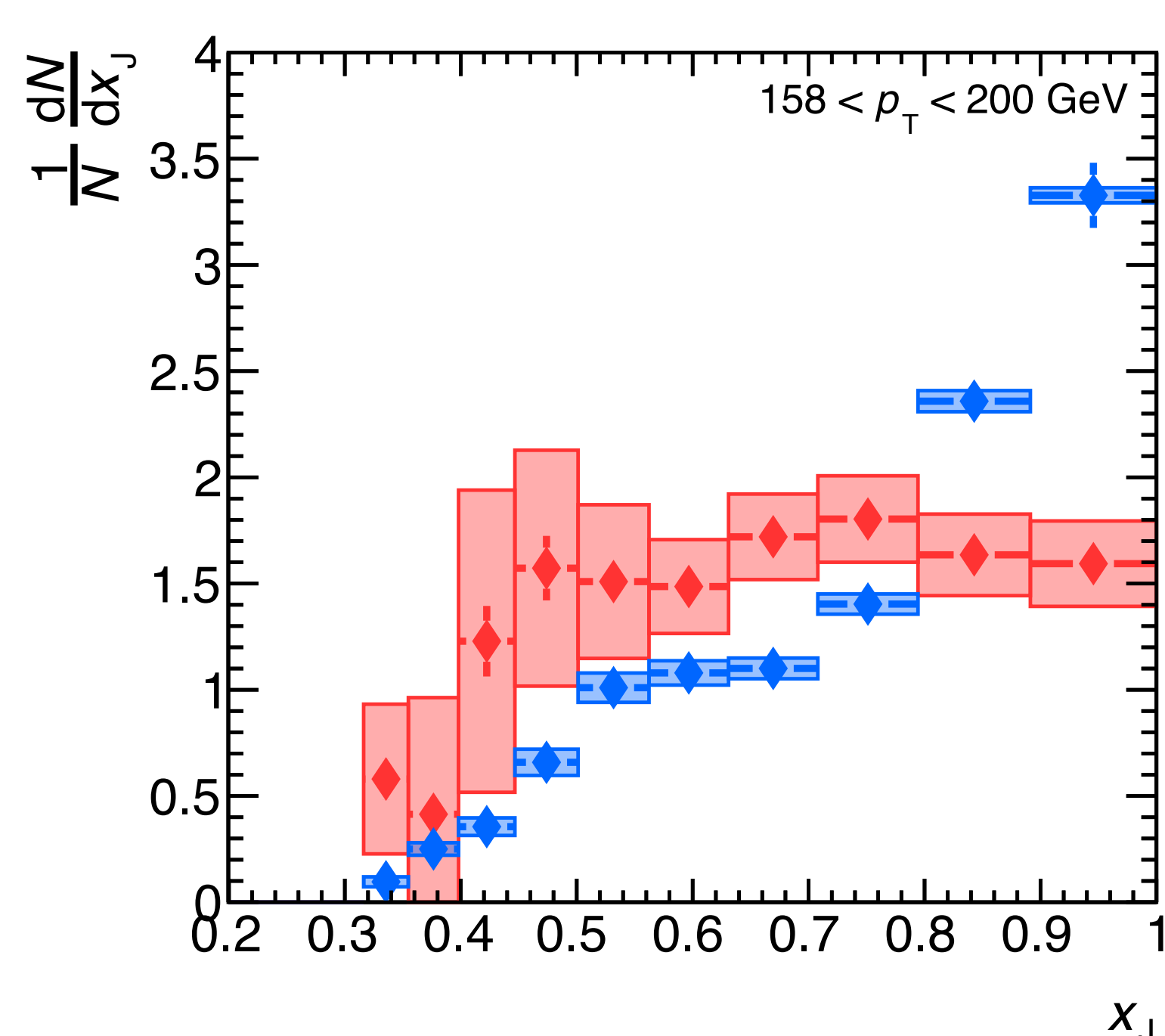
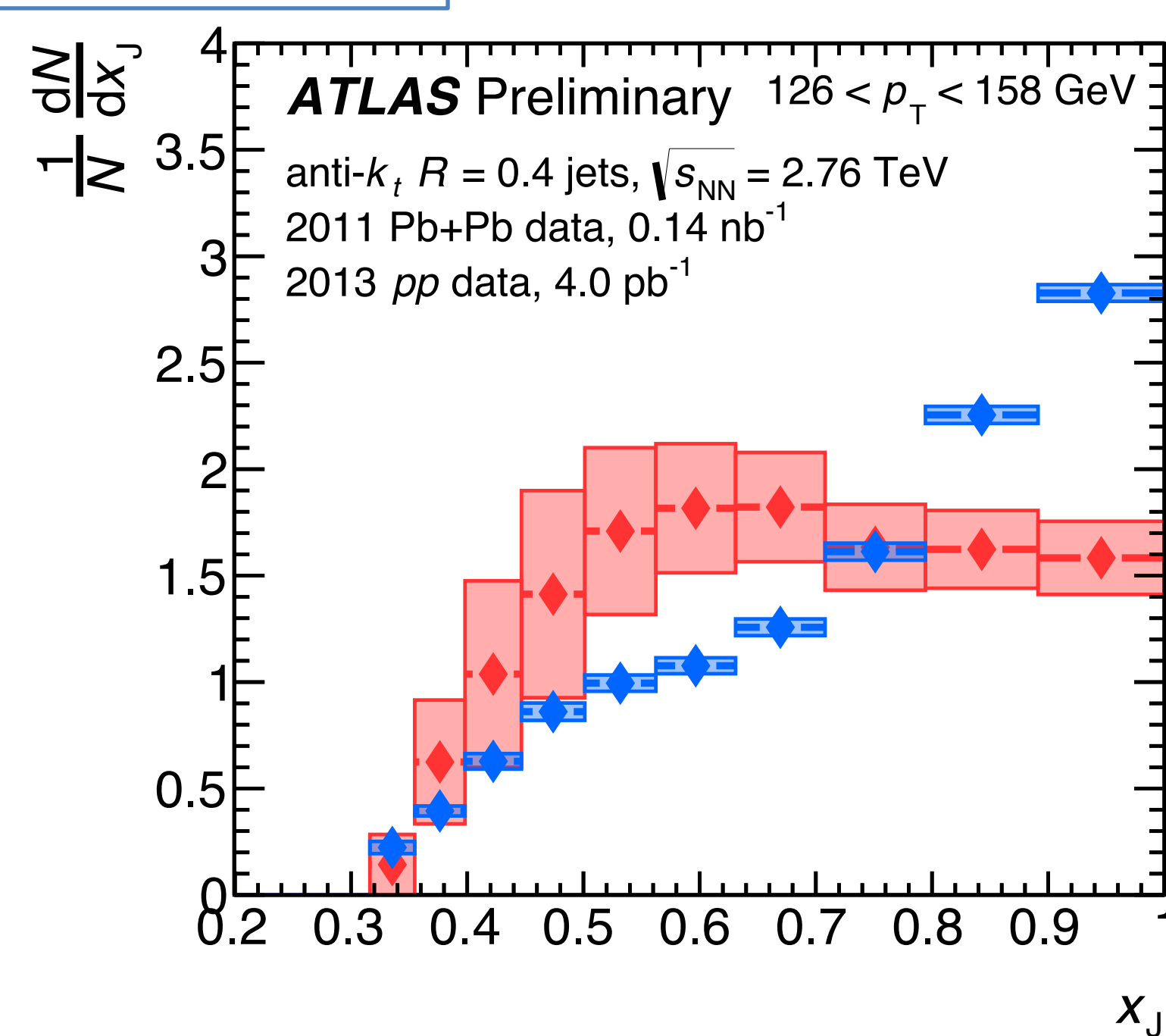
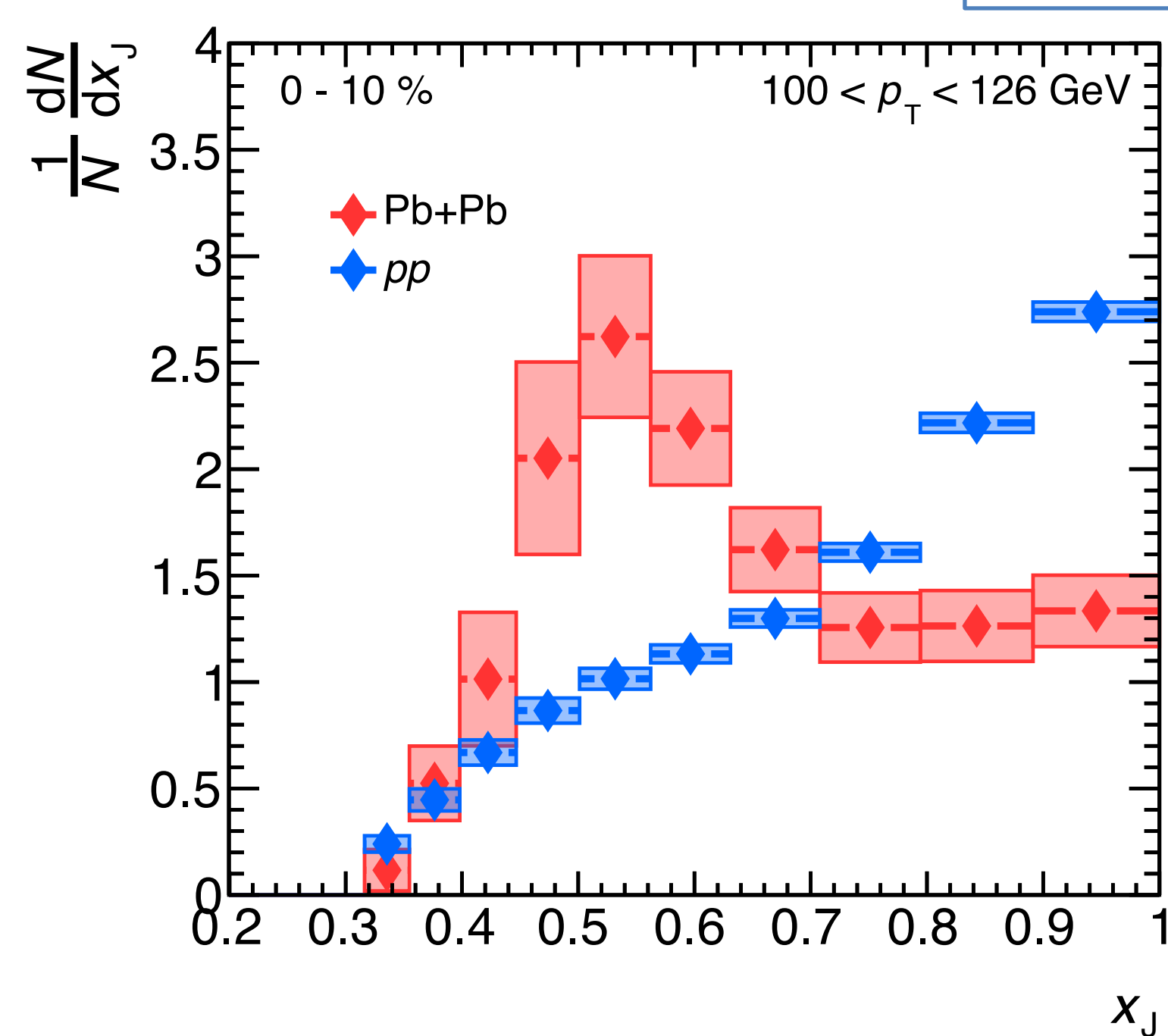
$$x_J = \frac{p_{T2}}{p_{T1}}, p_{T2} < p_{T1}$$



Results and Summary

- Pb+Pb collisions show a larger contribution of asymmetric pairs than in pp collisions except in the most peripheral collisions (60-80%).
- The fraction of asymmetric pairs increases in more central collisions which is consistent with expectations of medium-induced energy loss due to jet quenching.
- Asymmetry decreases with increasing leading jet p_T even in the most central collisions.

Leading jet p_T dependence



Centrality dependence

