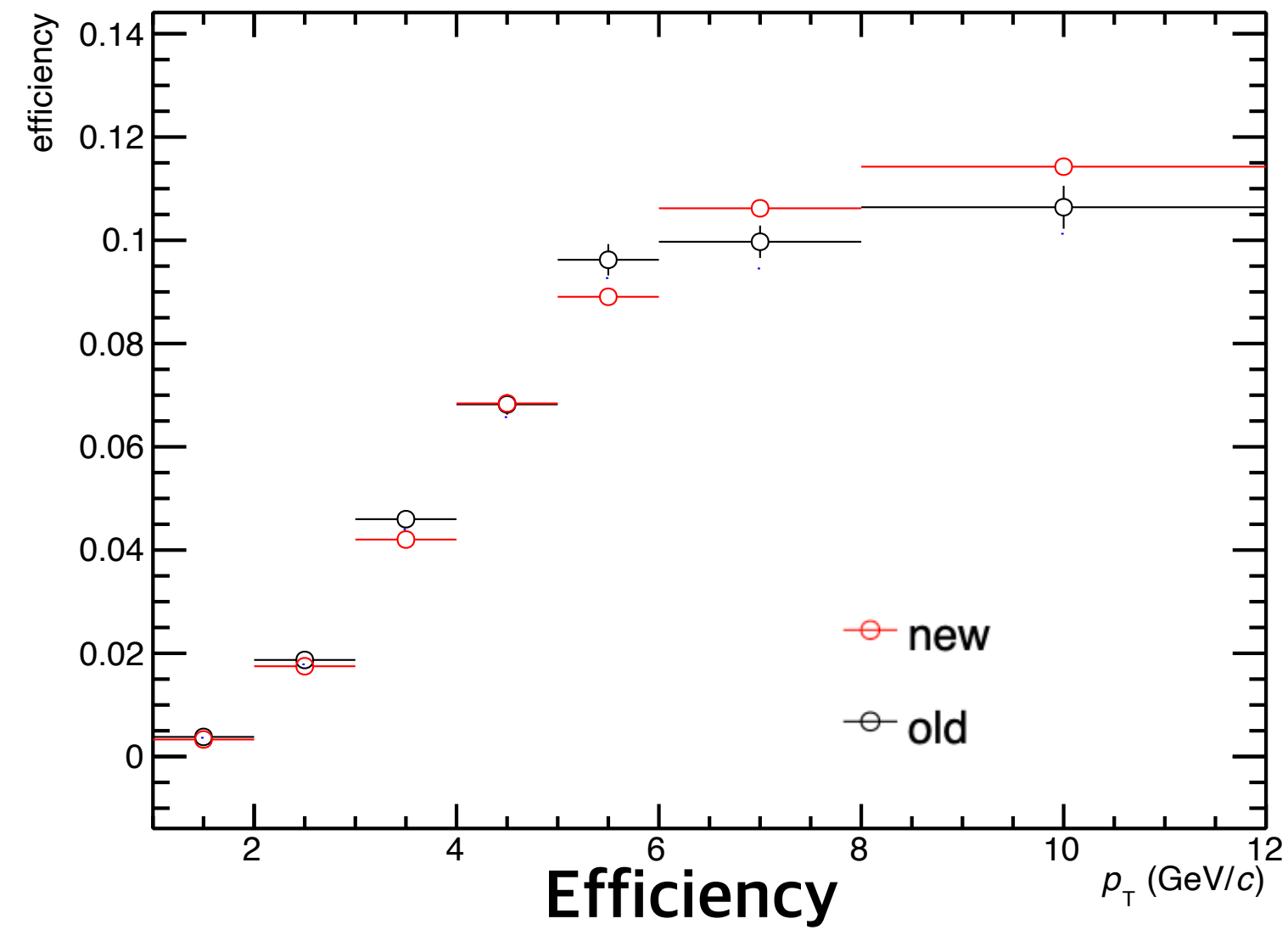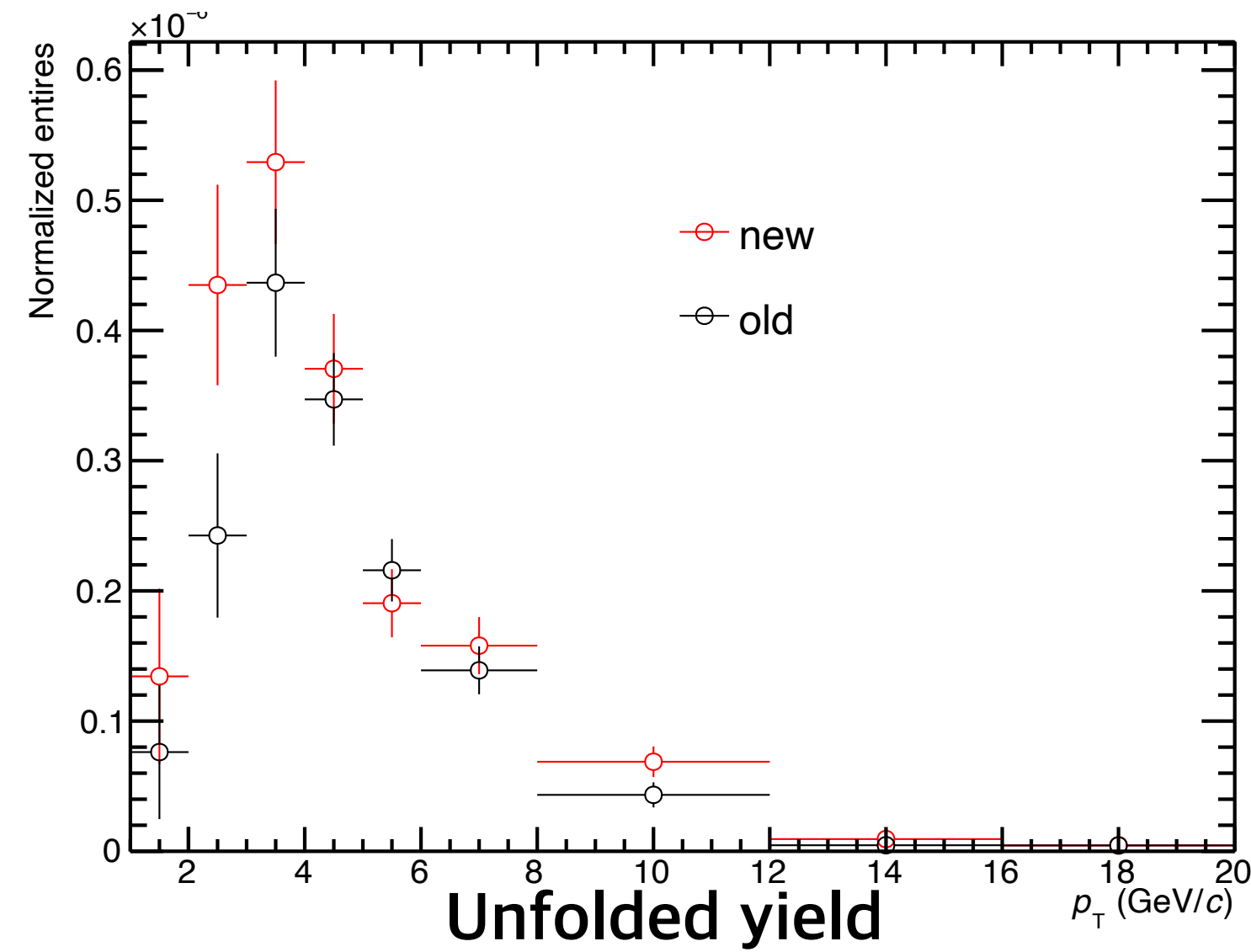# Status Report

Jinjoo Seo*
Inha University*
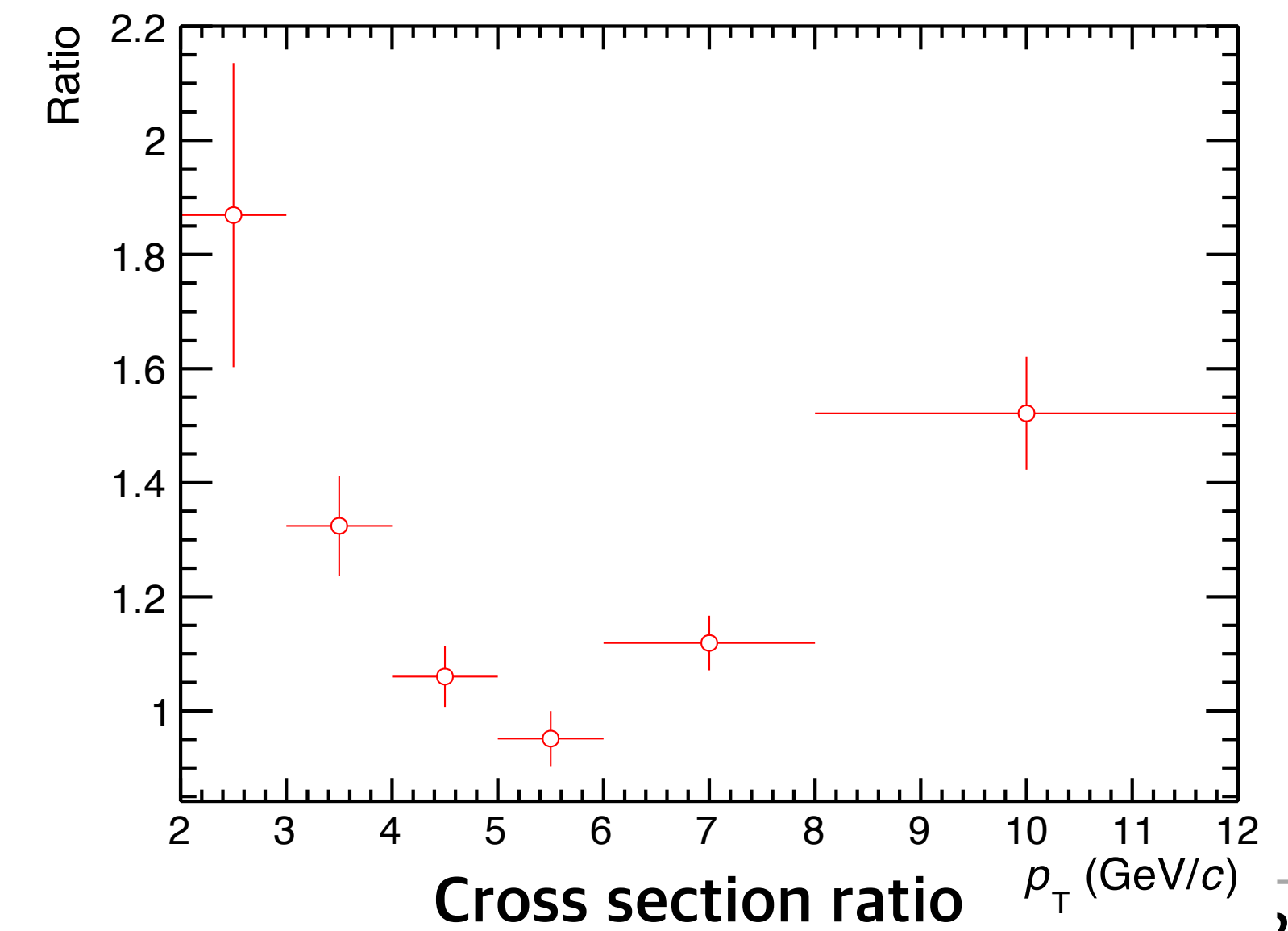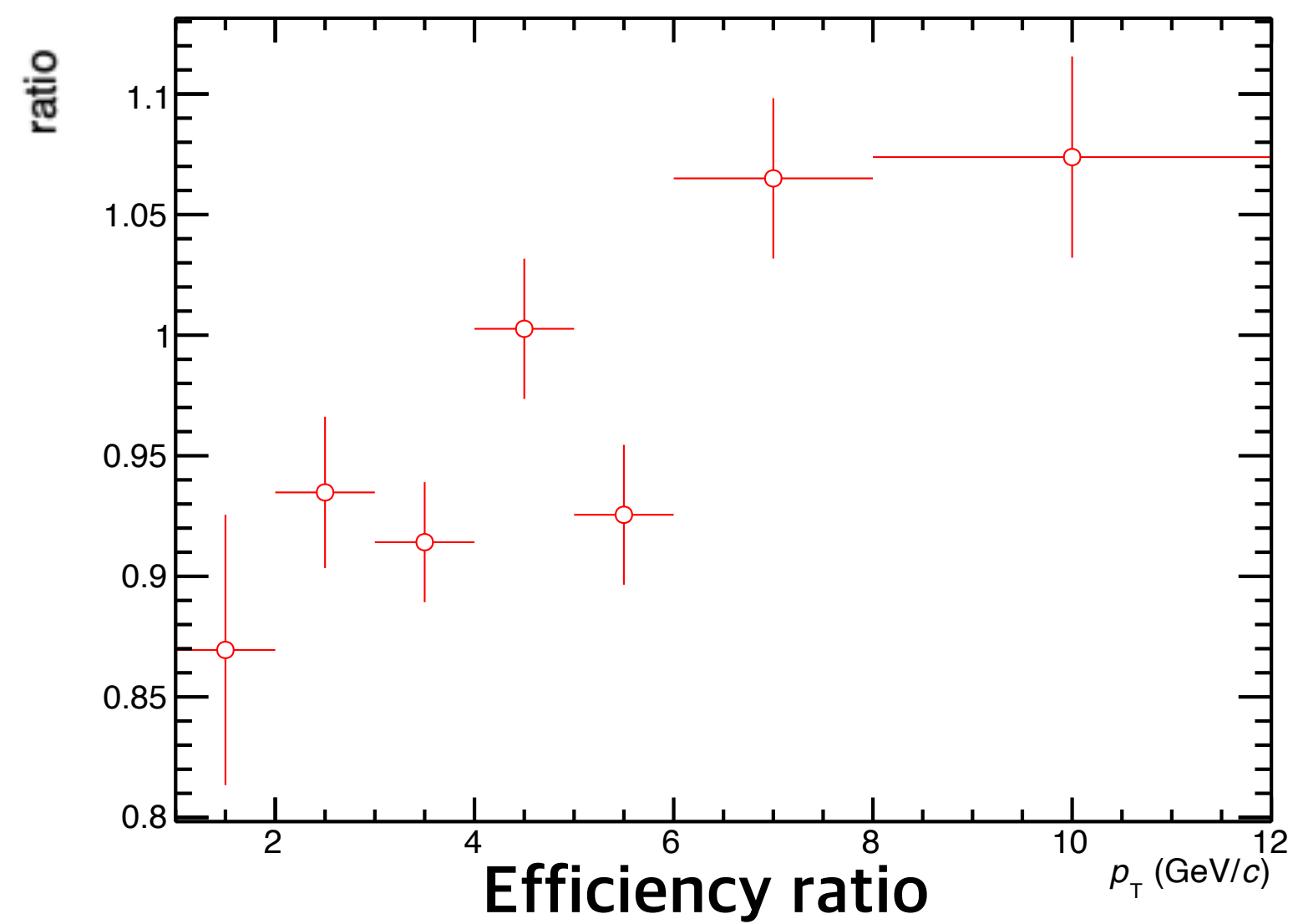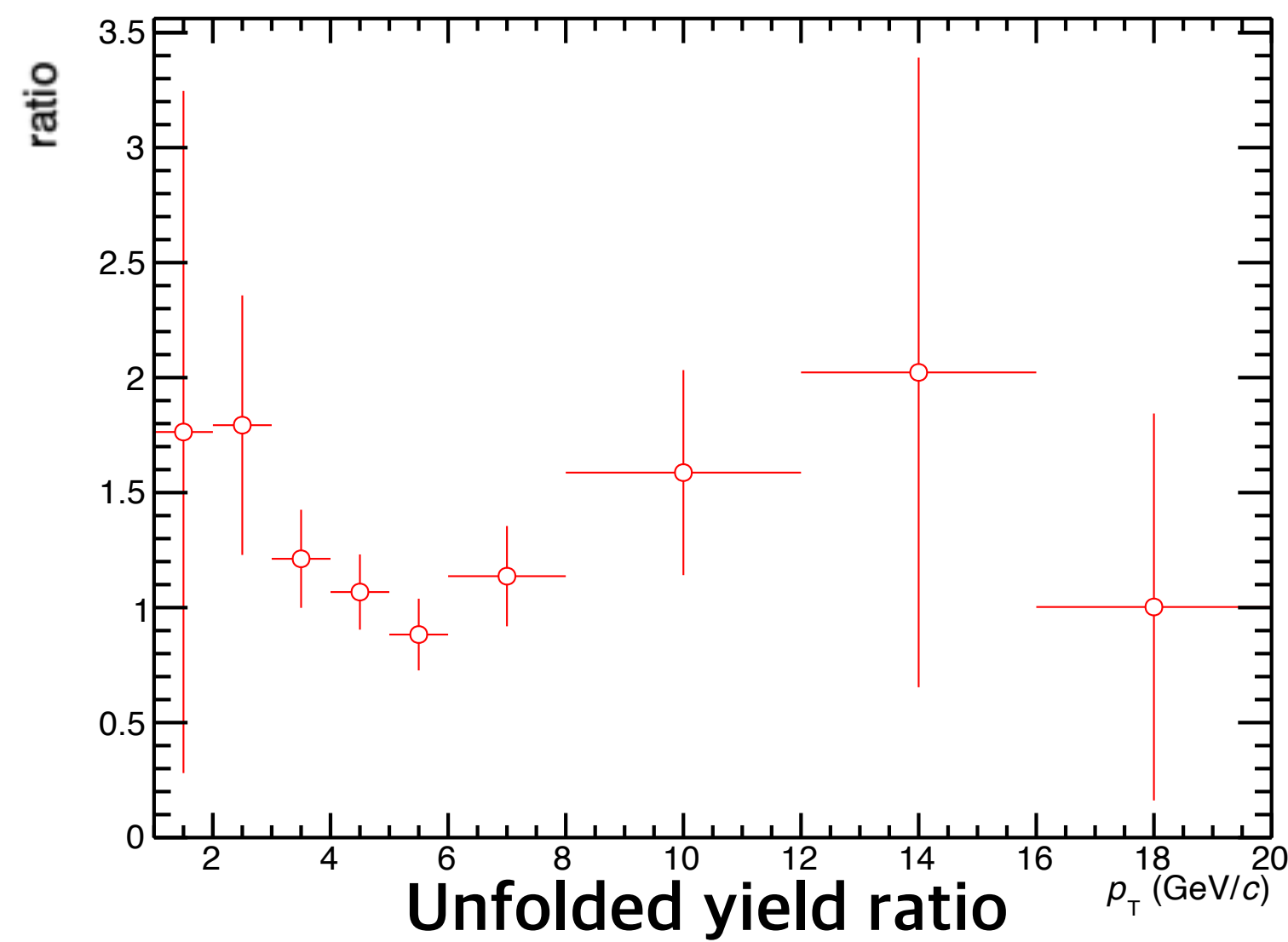
2021.02.18

- **Compare 'old final results' and** **new results**

New bin
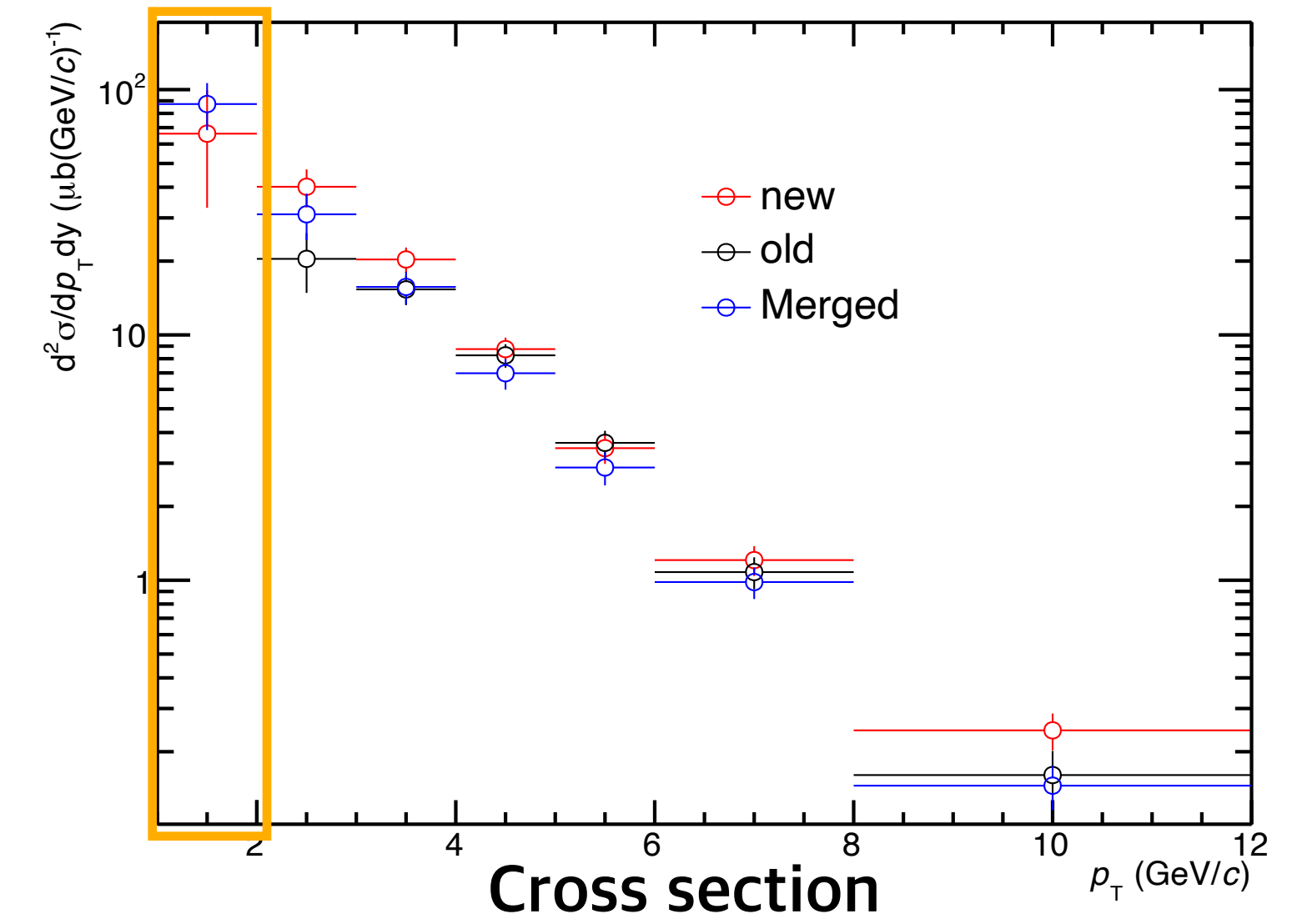
- Check Efficiency effect -> OK

$$Acc * \epsilon * \epsilon_{\Xi tag} = \frac{N_{\Xi_c^0}(MC, Reco)}{N_{\Xi_c^0}(MC, Gen)}$$

$|y|<0.5, \, e|y|<1.2$
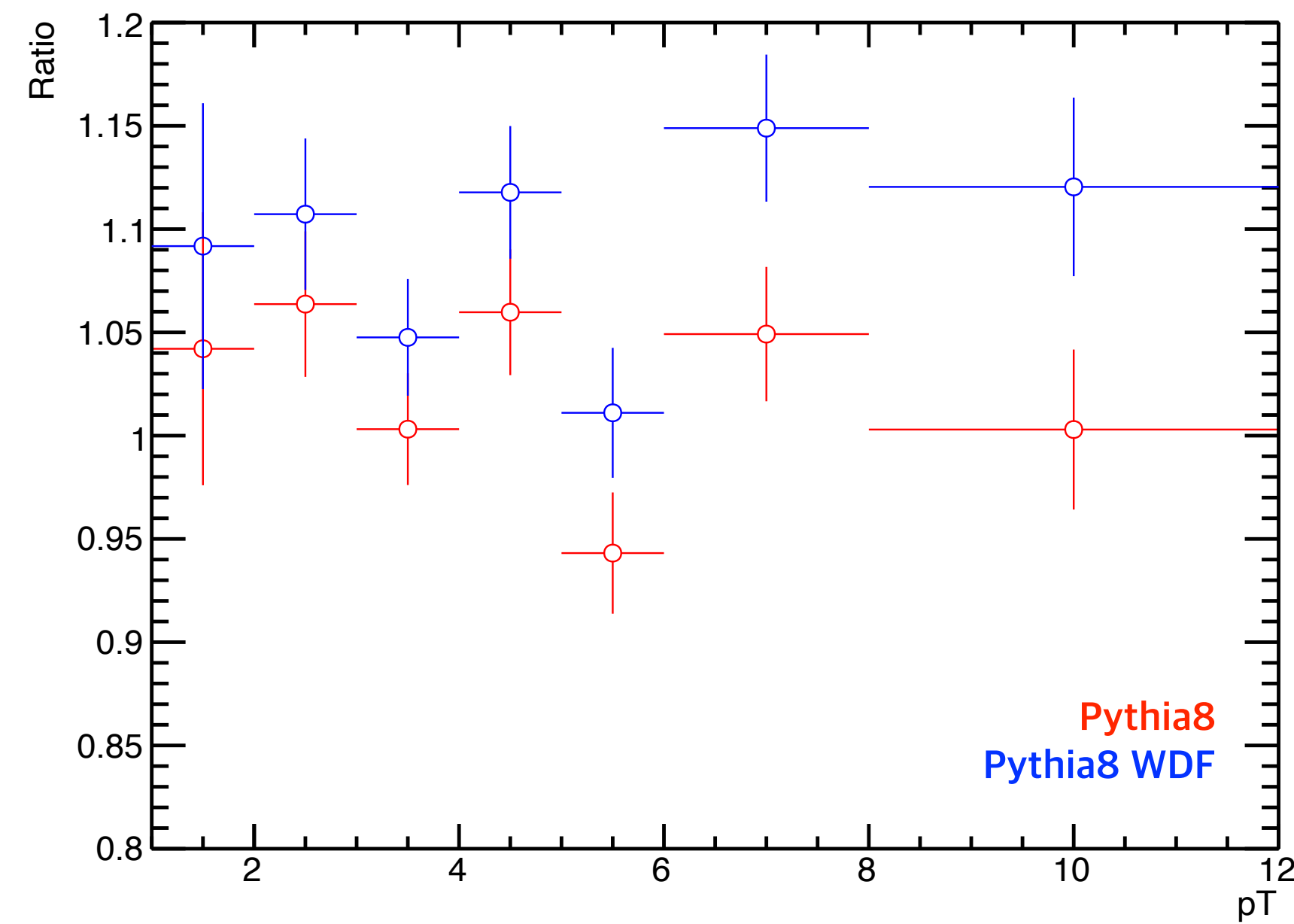
- **Efficiency comparison**

  - Rapidity cut (|y|<1.2) is applied to electrons comes from true Xic0 generated by Pythia8.

  - The difference is ~5% to ~10%.

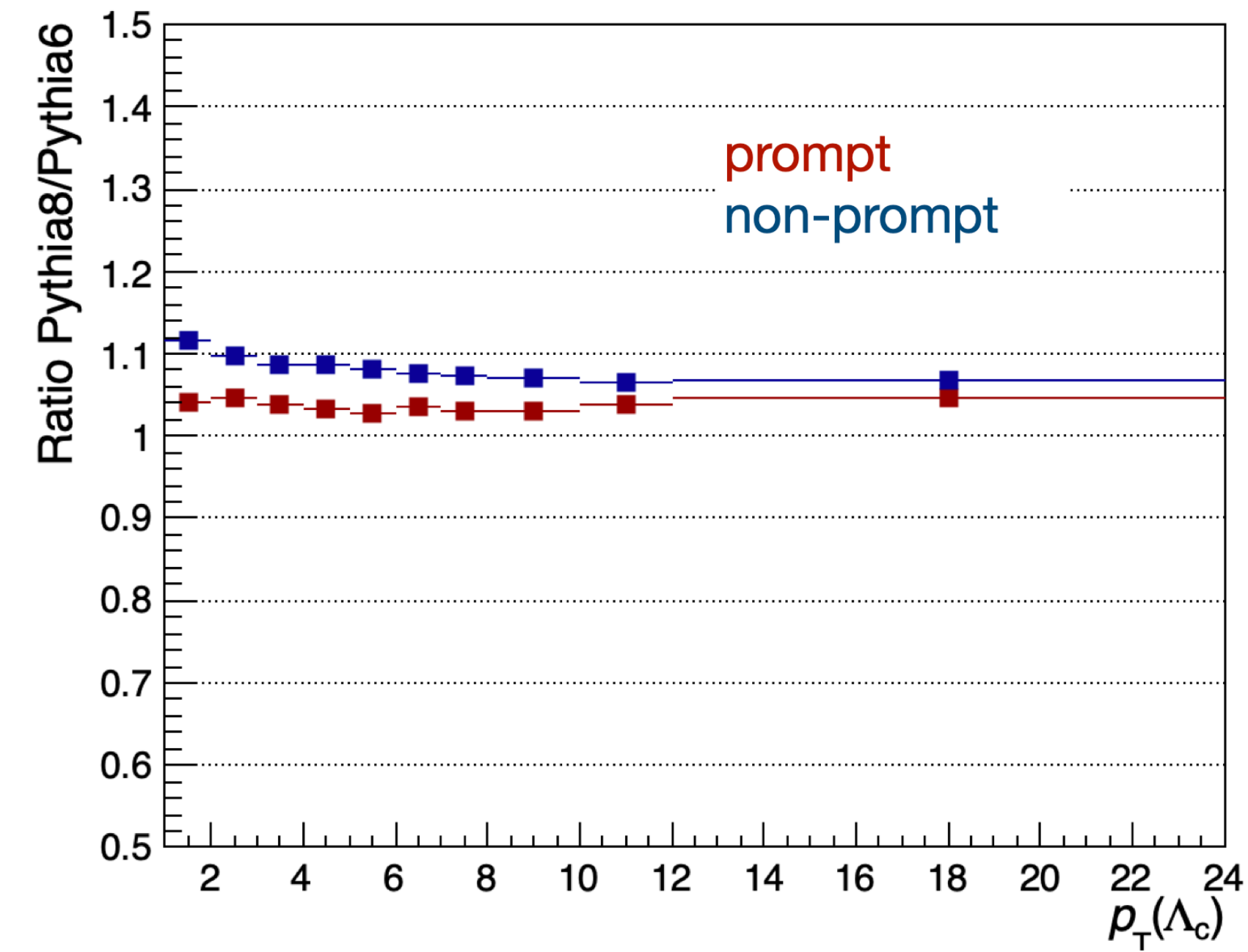 - The result of Xic is good agreement compare with the result of Lc, other analysis.
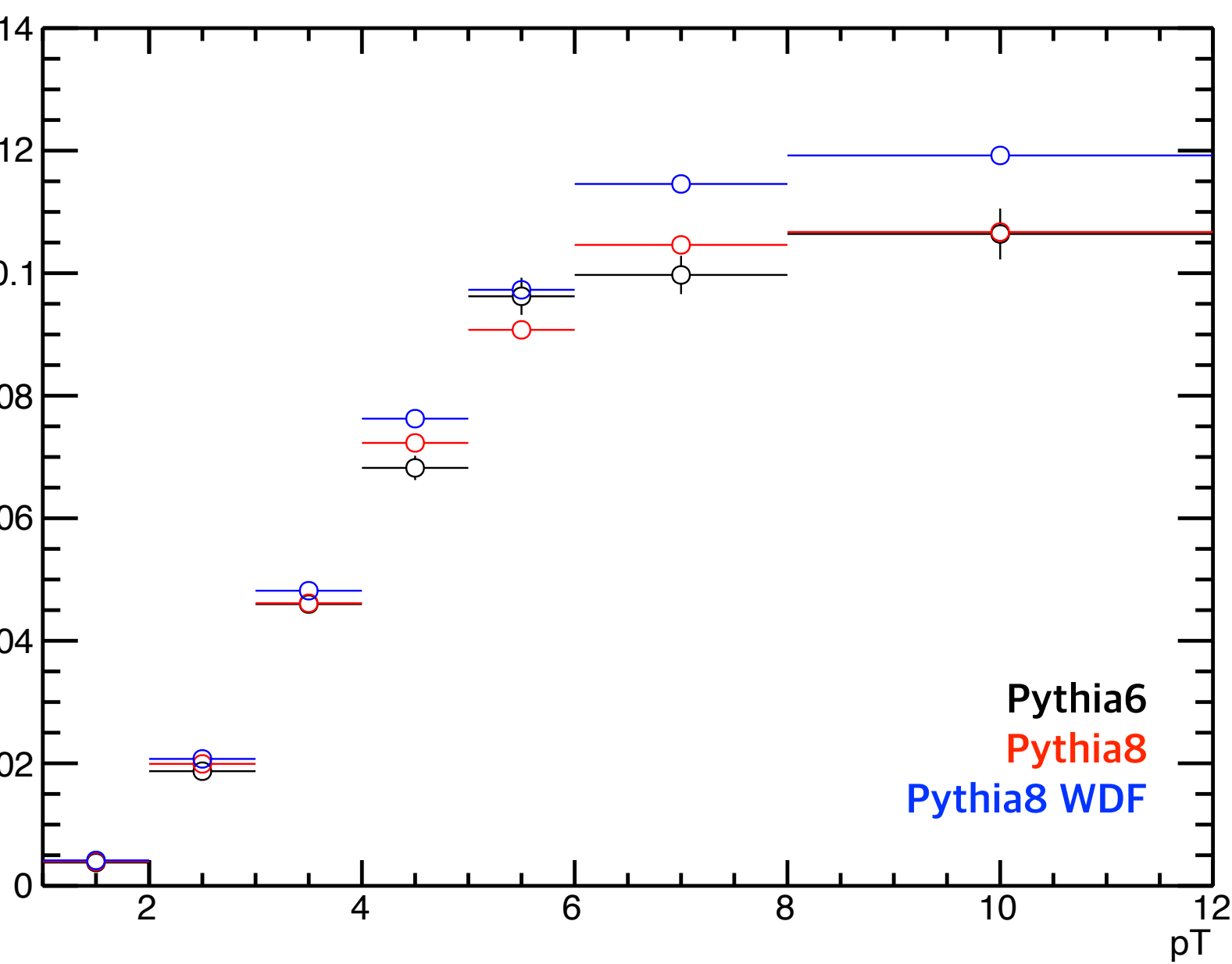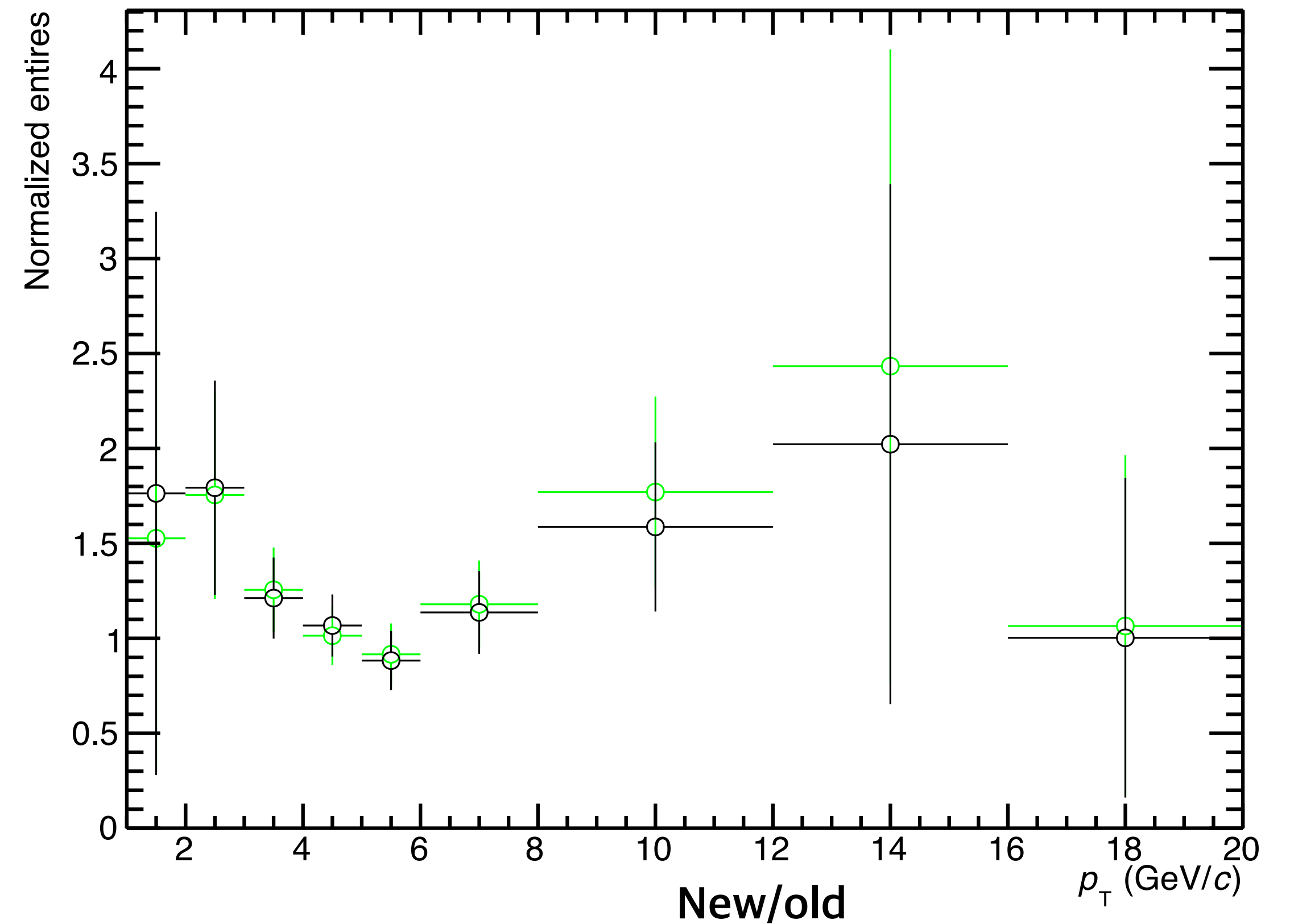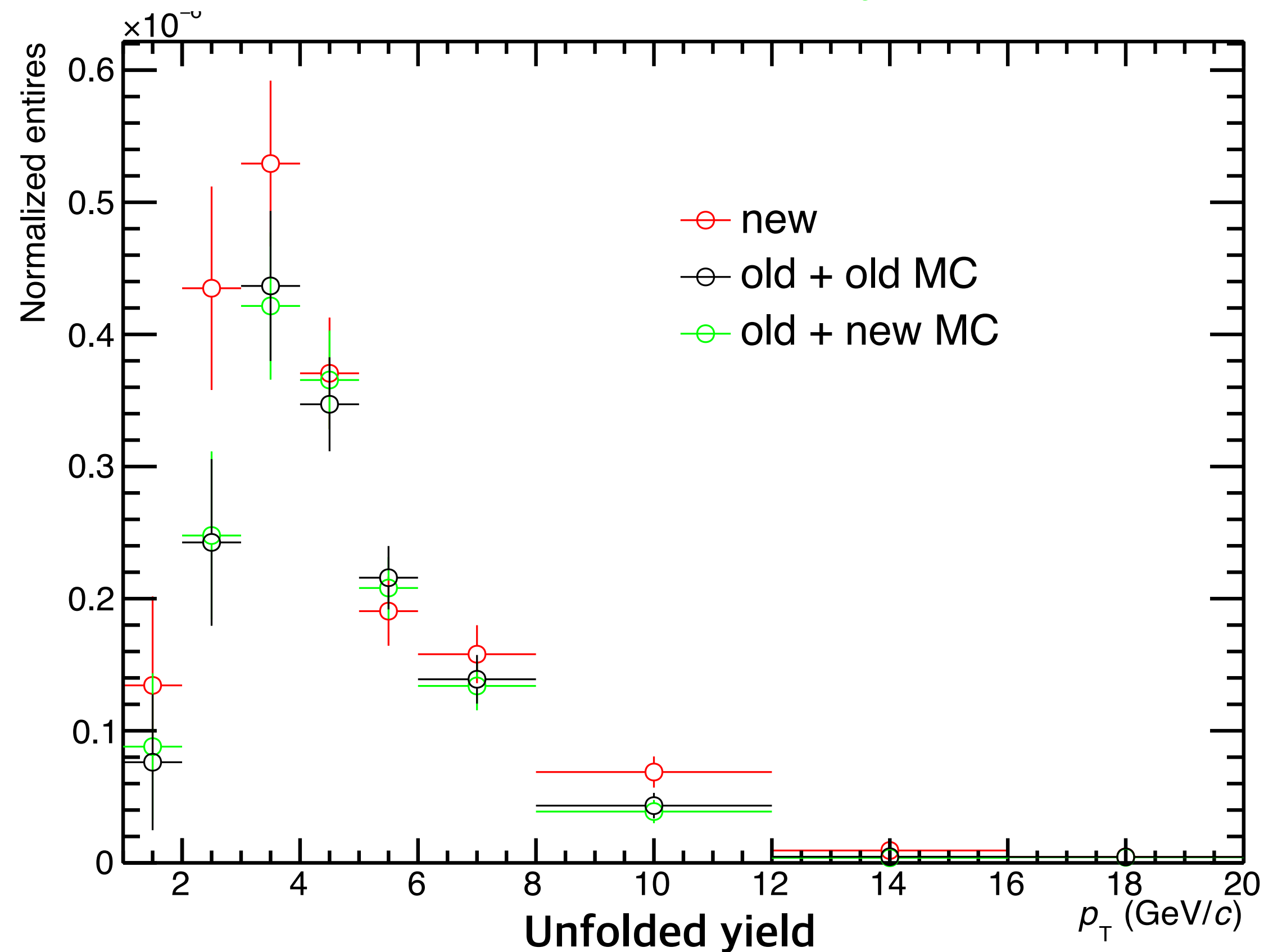

Xic->e Xi nu

Lc -> pK0s

- Check Unfolding effect -> OK

- **Unfolding**

    - New : Data(AOD234) + MC(Pythia8, AOD235)

    - old + old MC : Data(AOD208) + MC(Pythia6, AOD208)

    - old + new MC : Data(AOD208) + MC(Pythia8, AOD225)

- Check raw yield effect -> still debugging

- **Raw yield**

  - Lc analysis is consistent with old and new.

  - Xic analysis show enhancement of raw yield.

  ➡ Check if MB trigger is applied correctly

    - OK, but need to some minor modification

```
//V0-Related topological selections
taskWDV -> SetV0VertexerDCAFirstToPV(0.03);
taskWDV -> SetV0VertexerDCASecondtoPV(0.03);
taskWDV -> SetV0VertexerDCAV0Daughters(2.00);
taskWDV -> SetV0VertexerCosinePA(0.95);
taskWDV -> SetV0VertexerMinRadius(0.2);
taskWDV -> SetV0VertexerMaxRadius(200);
//Cascade-Related topological selections
taskWDV -> SetCascVertexerMinV0ImpactParameter(0.05);
taskWDV -> SetCascVertexerV0MassWindow(0.008);
taskWDV -> SetCascVertexerDCABachToPV(0.05);
taskWDV -> SetCascVertexerDCACascadeDaughters(2.0);
taskWDV -> SetCascVertexerCascadeMinRadius(.5);
taskWDV -> SetCascVertexerCascadeCosinePA(.95);
taskWDV -> SetRevertexAllEvents(kTRUE); // needed for ..
```
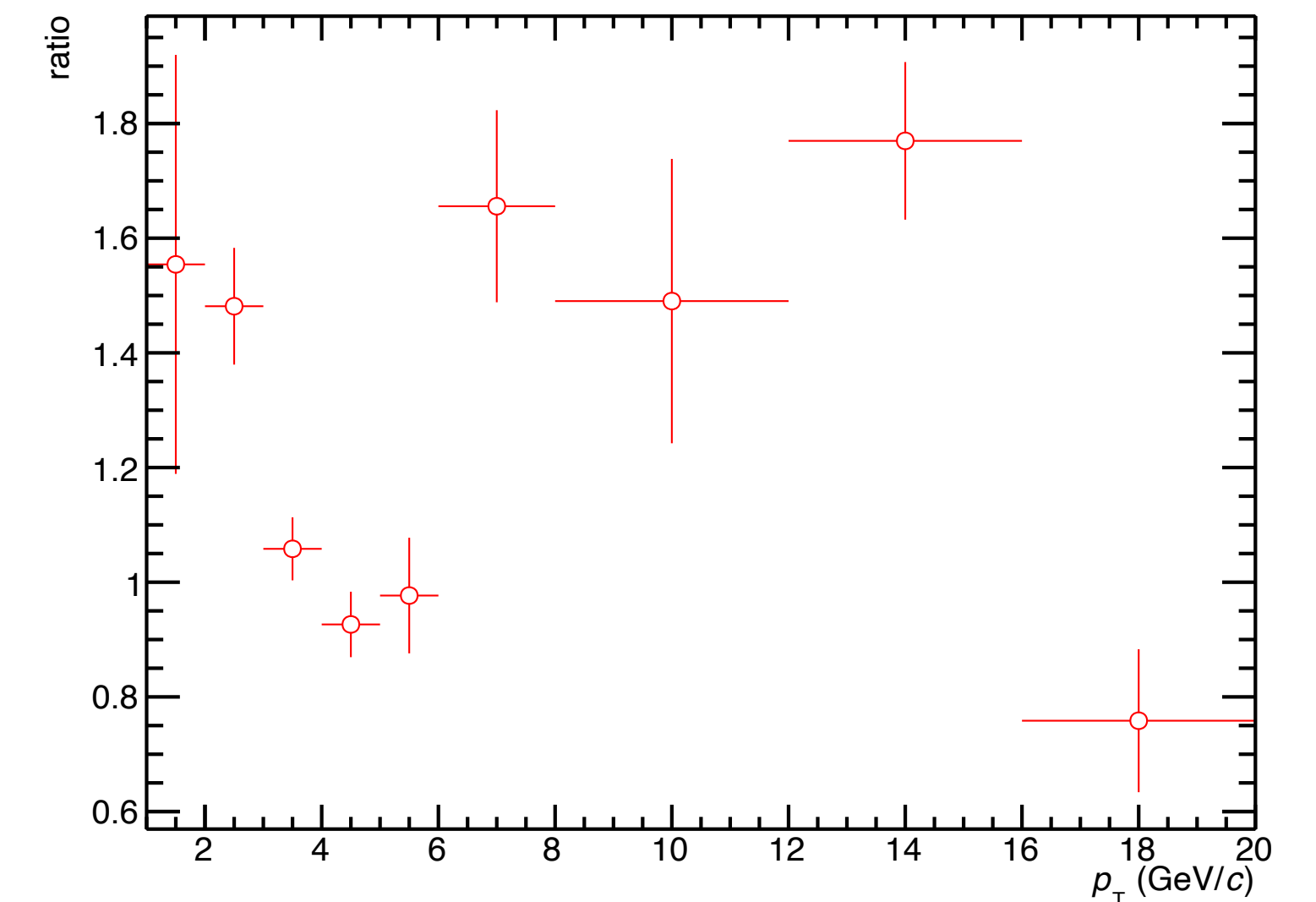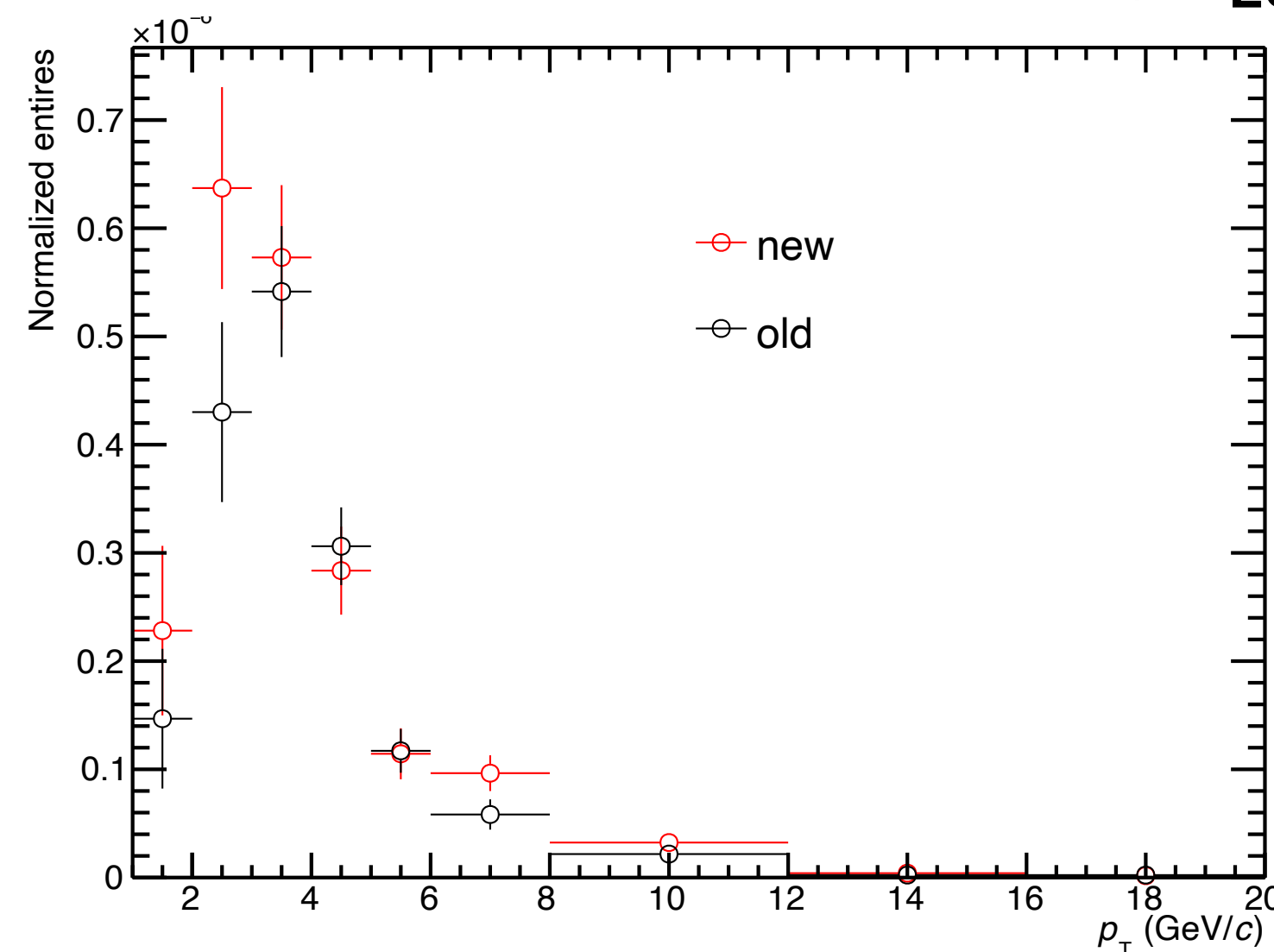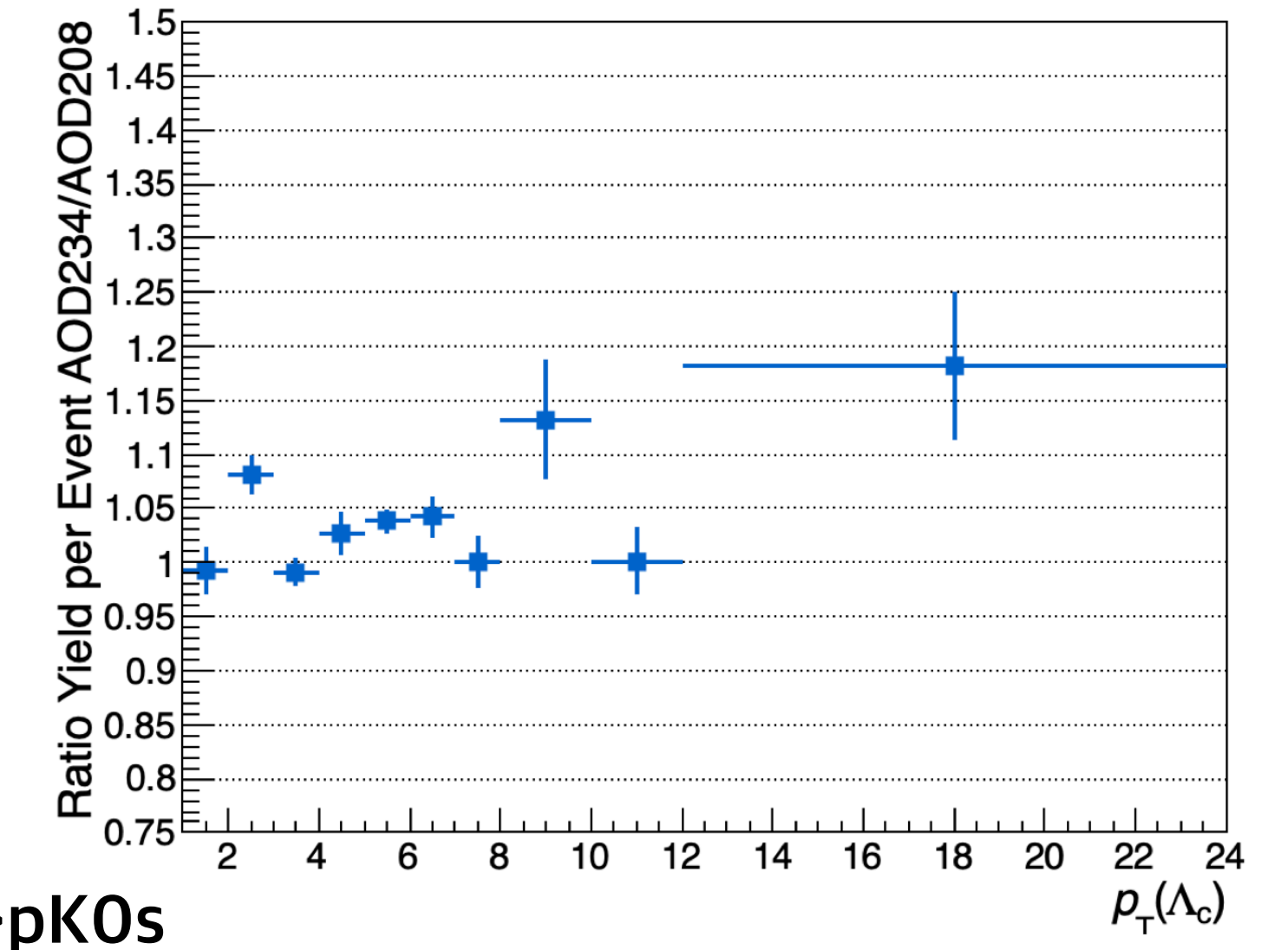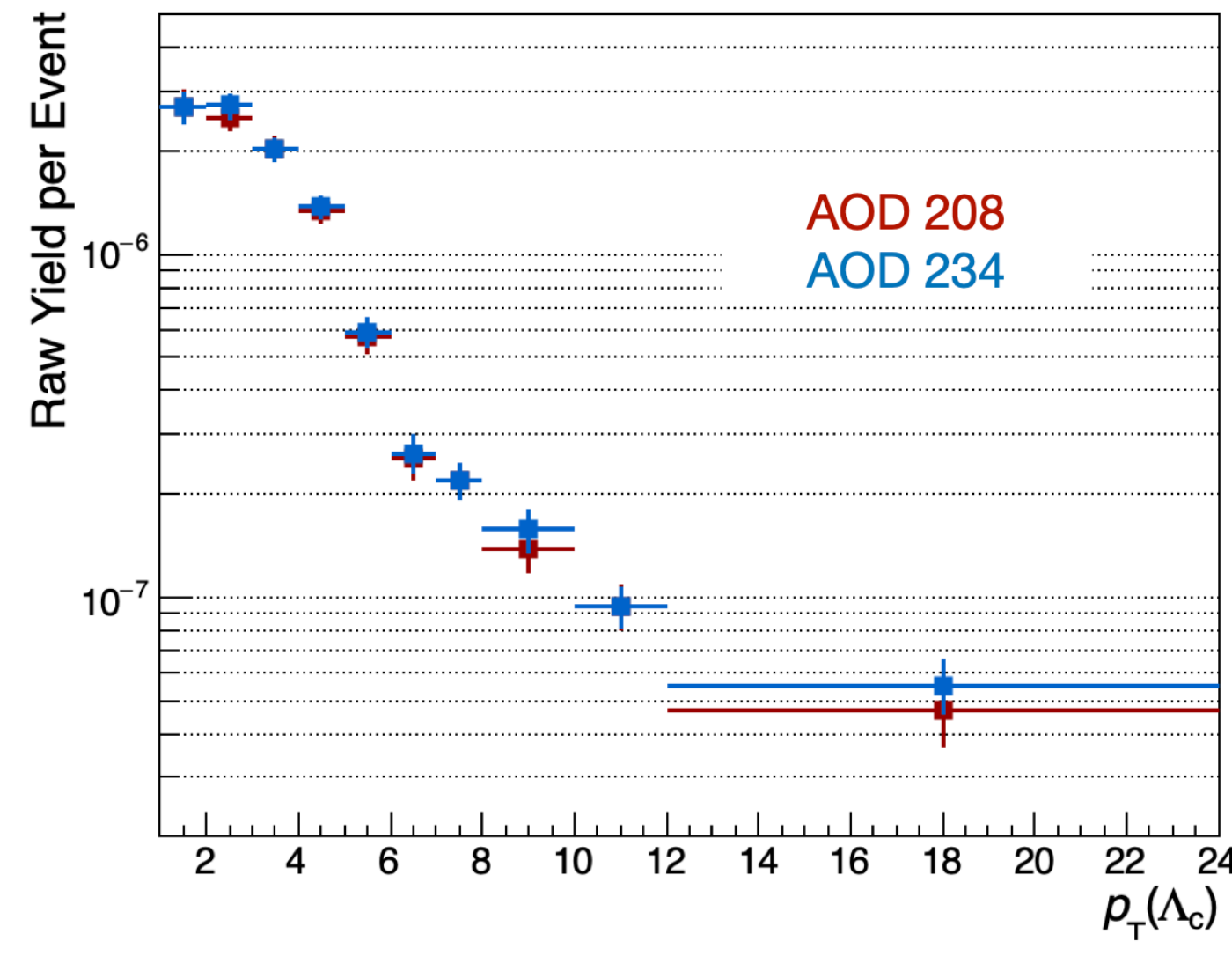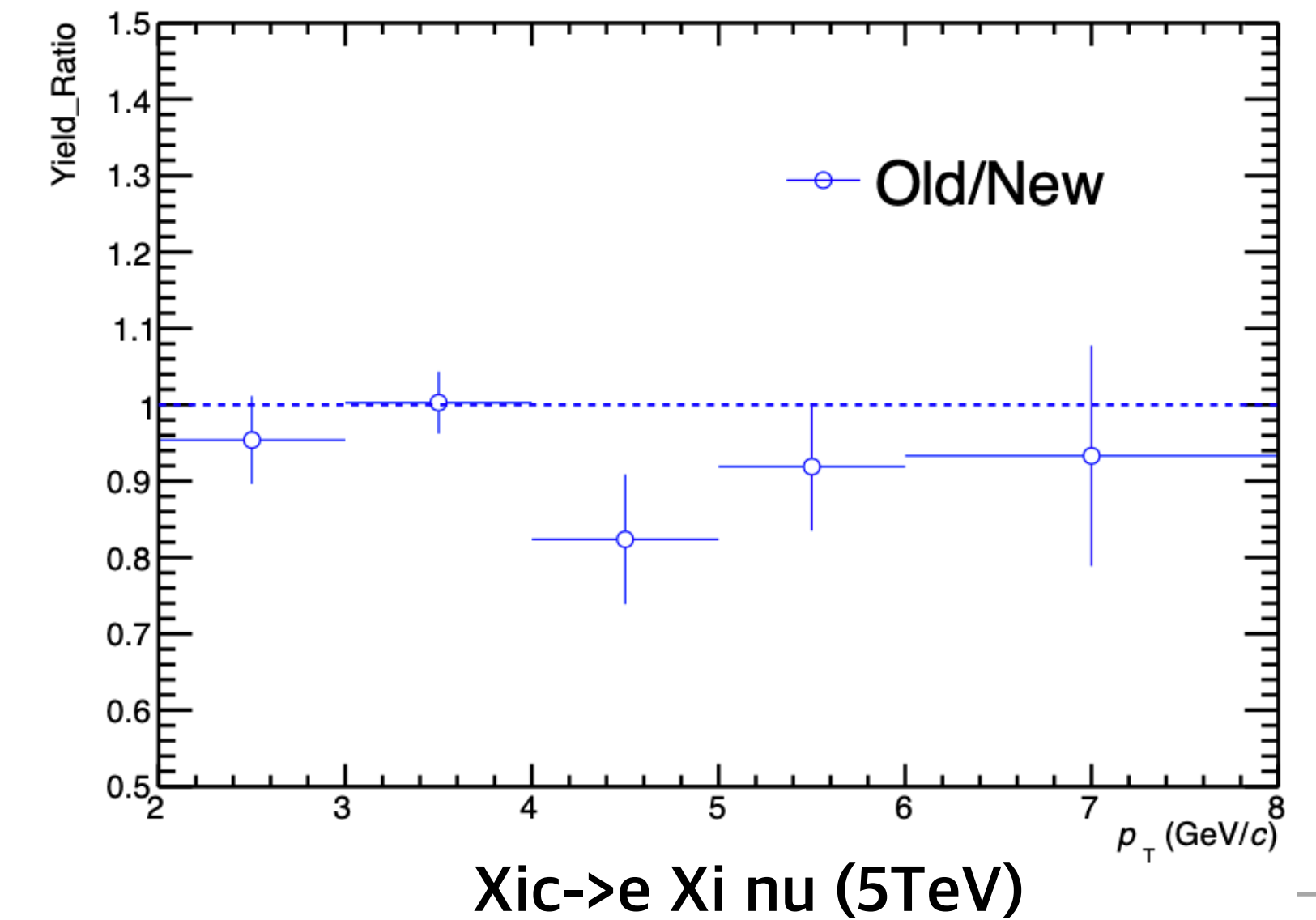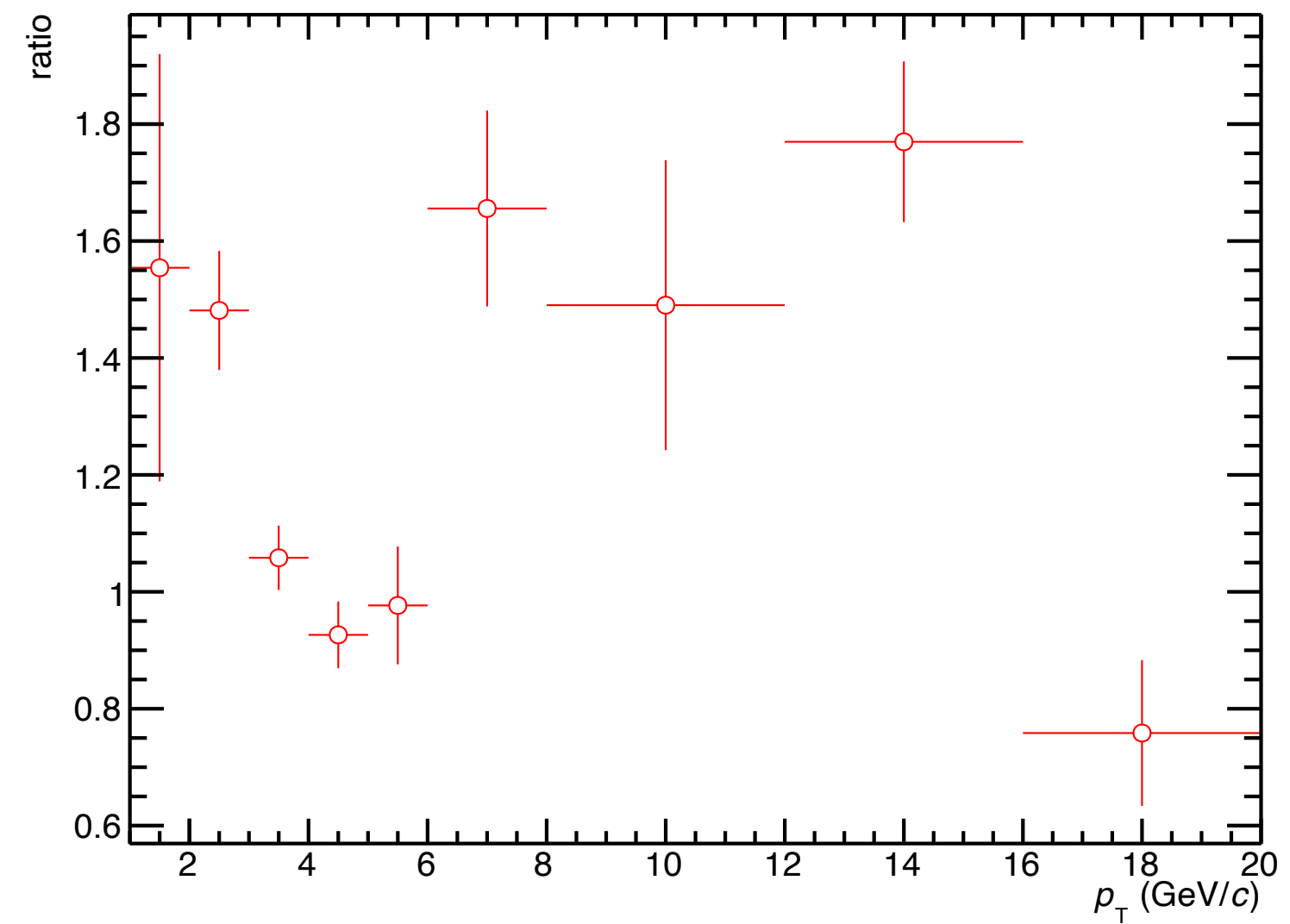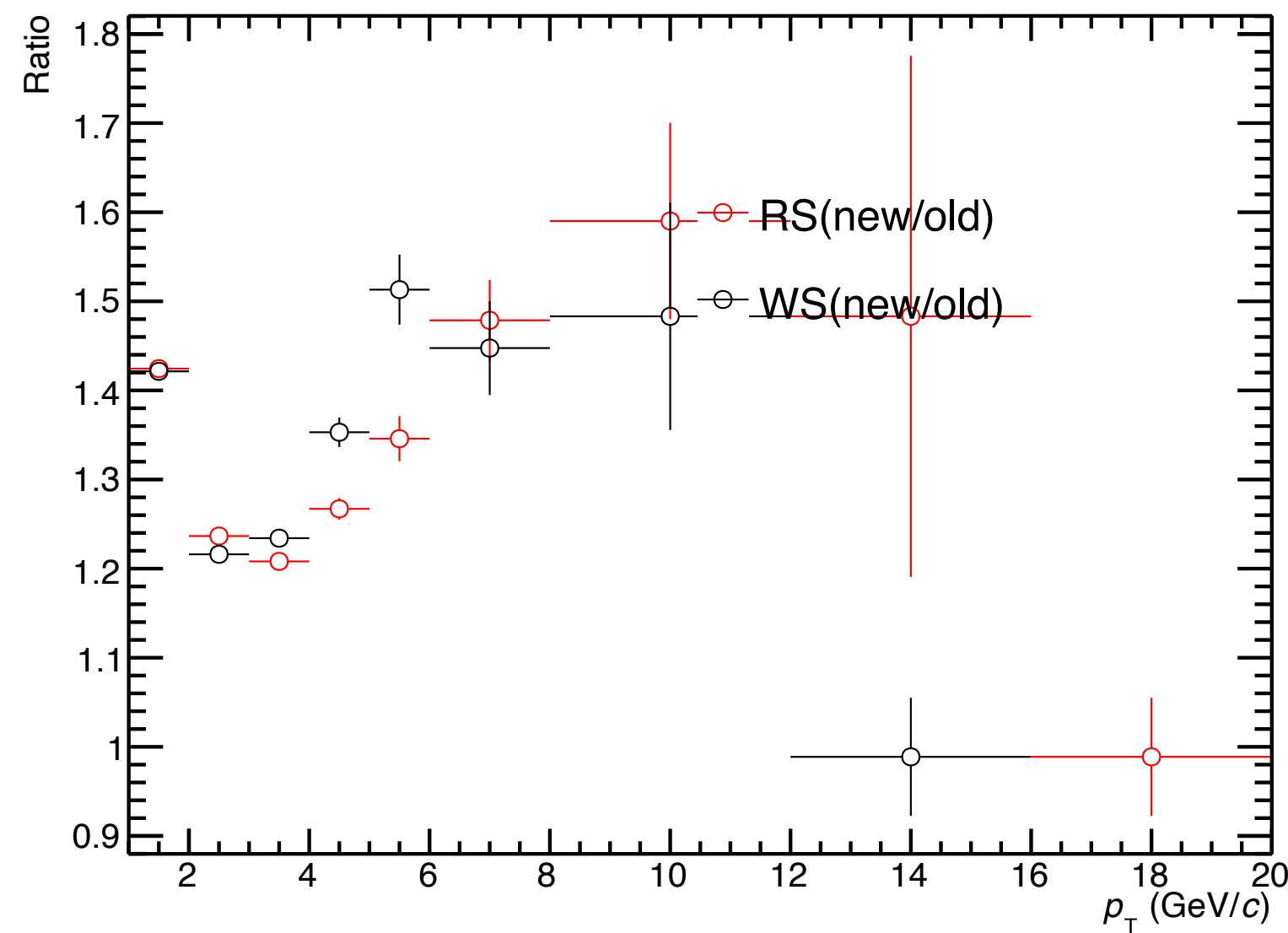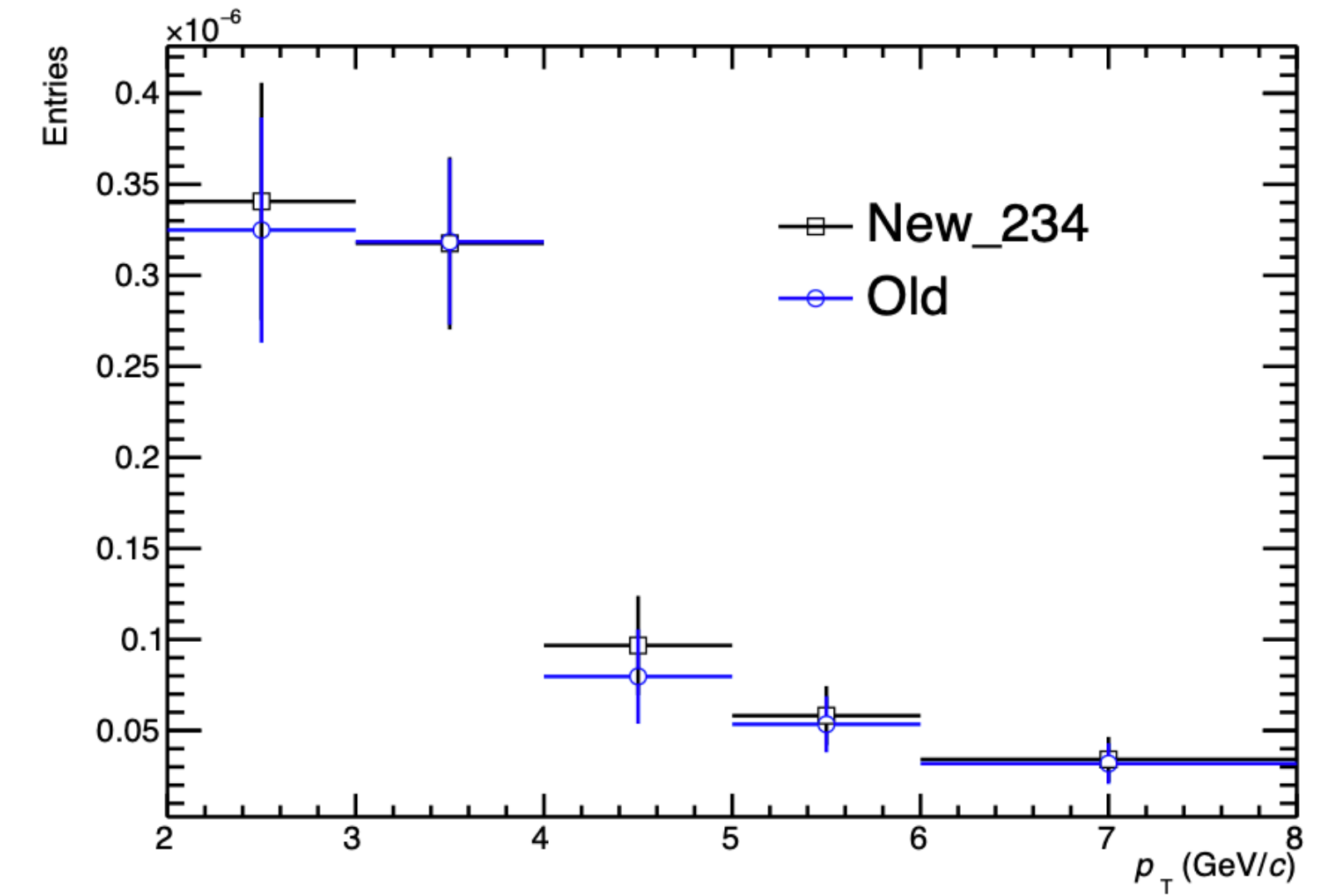

Lc->pK0s
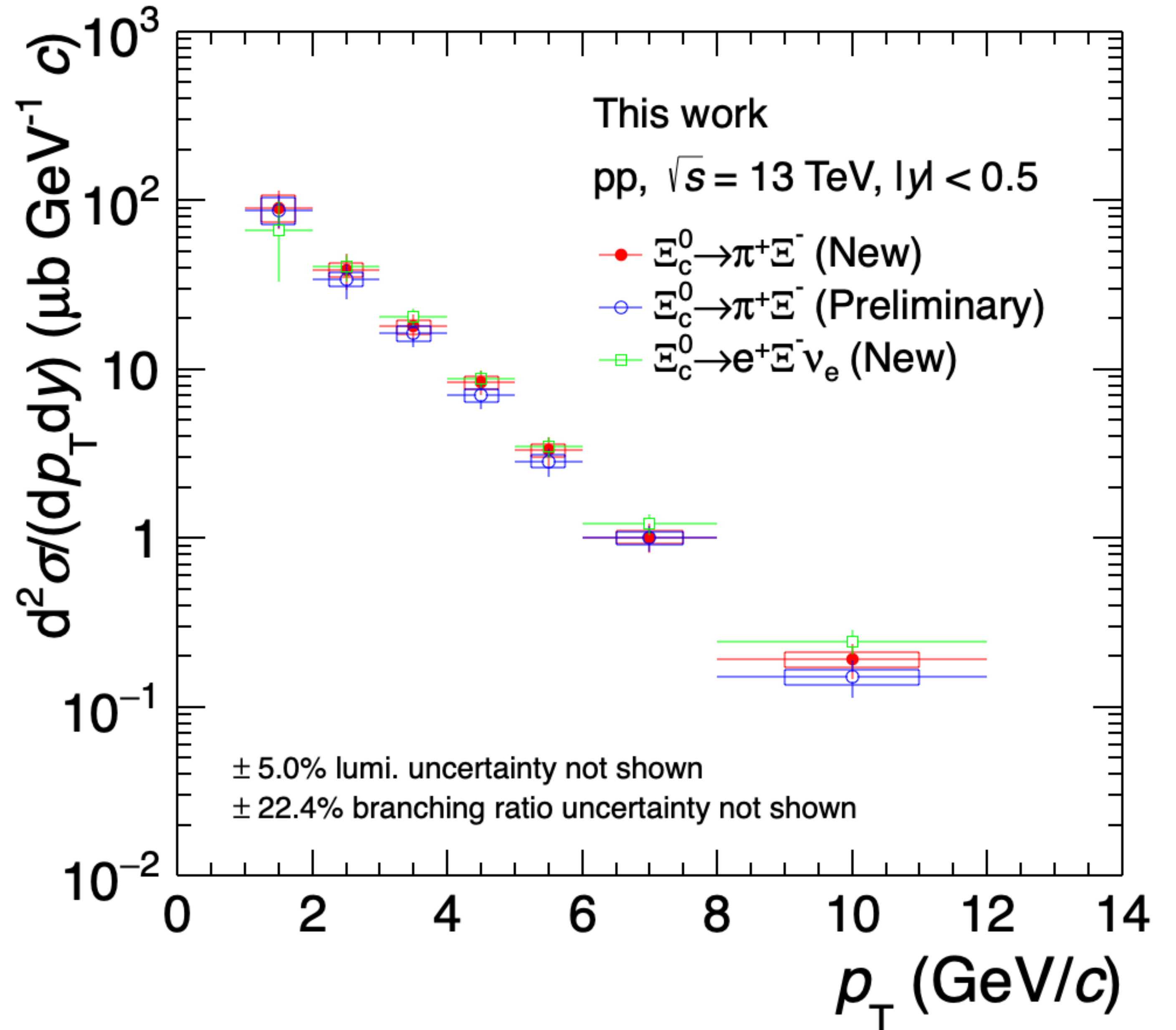

Xic->e Xi nu

- Check raw yield effect -> still debugging
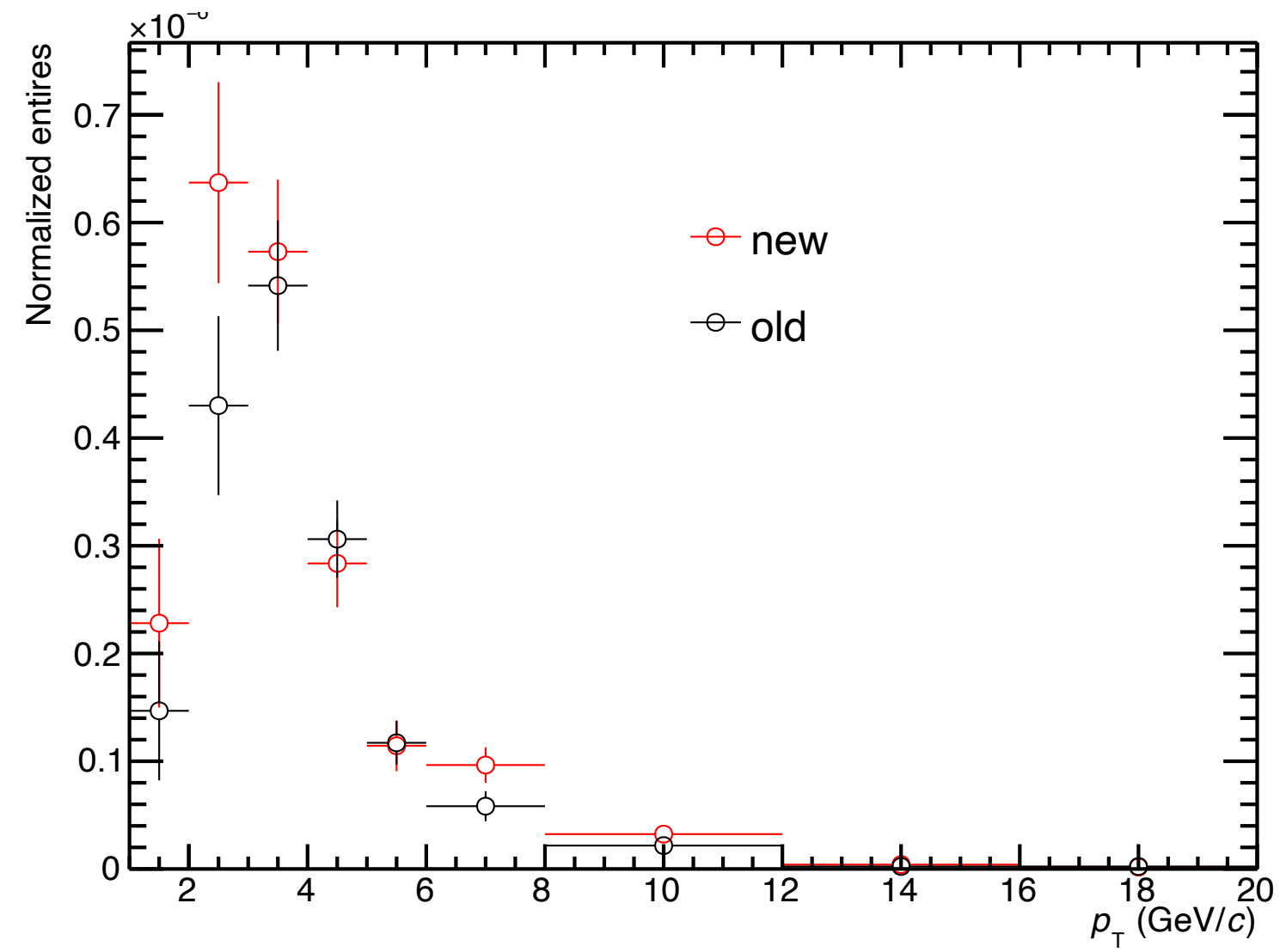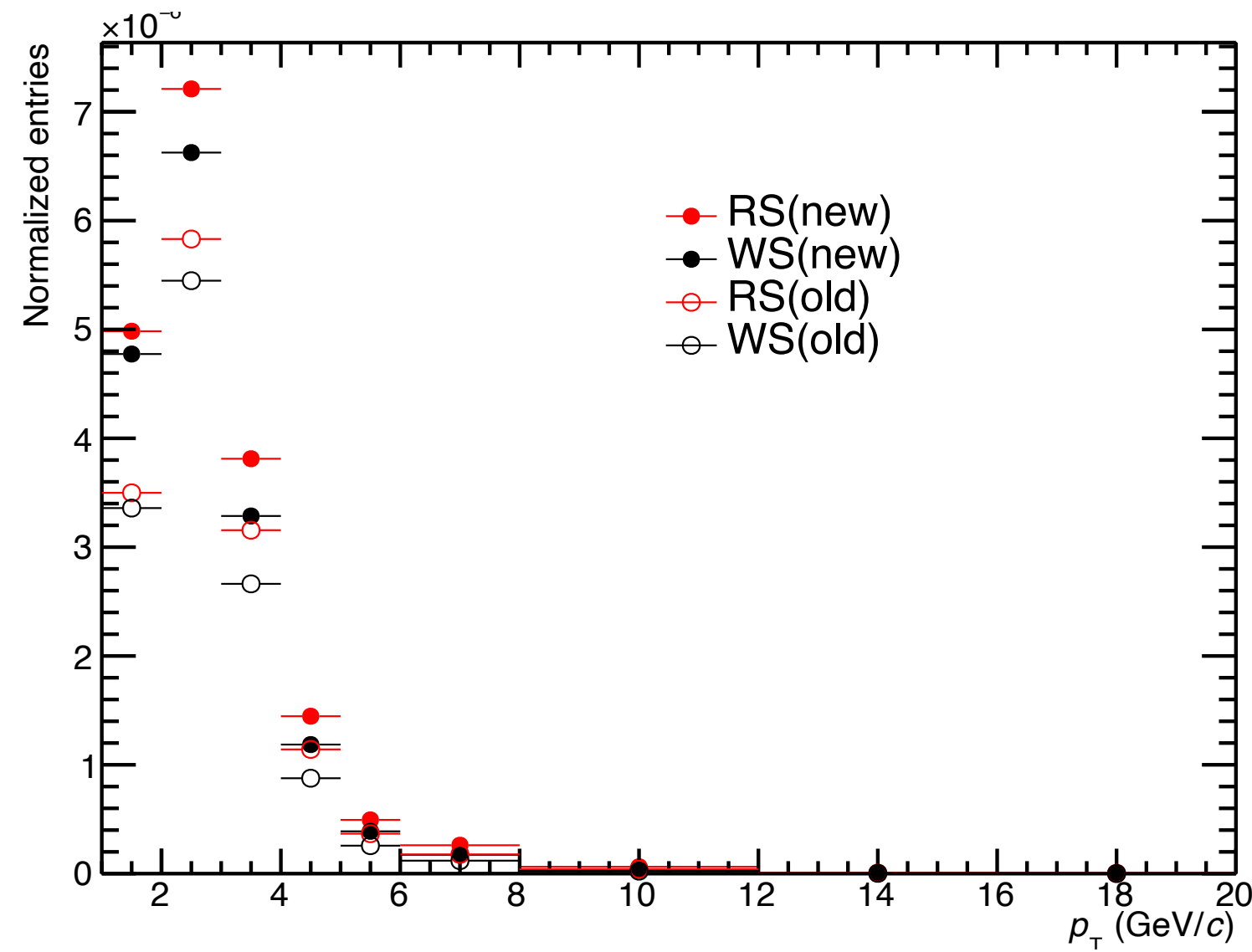
Xic->e Xi nu (13TeV)

Xic->e Xi nu (5TeV)
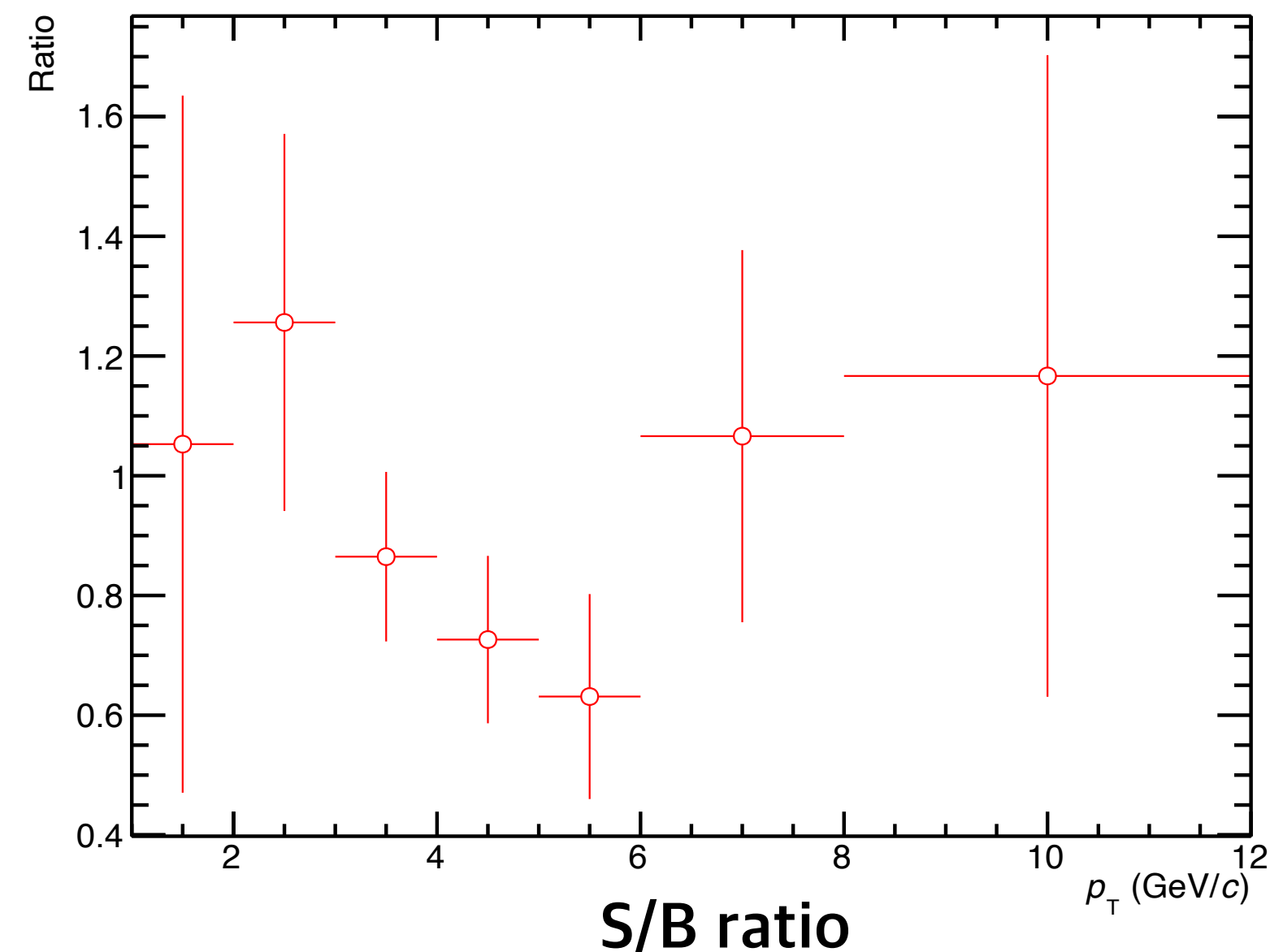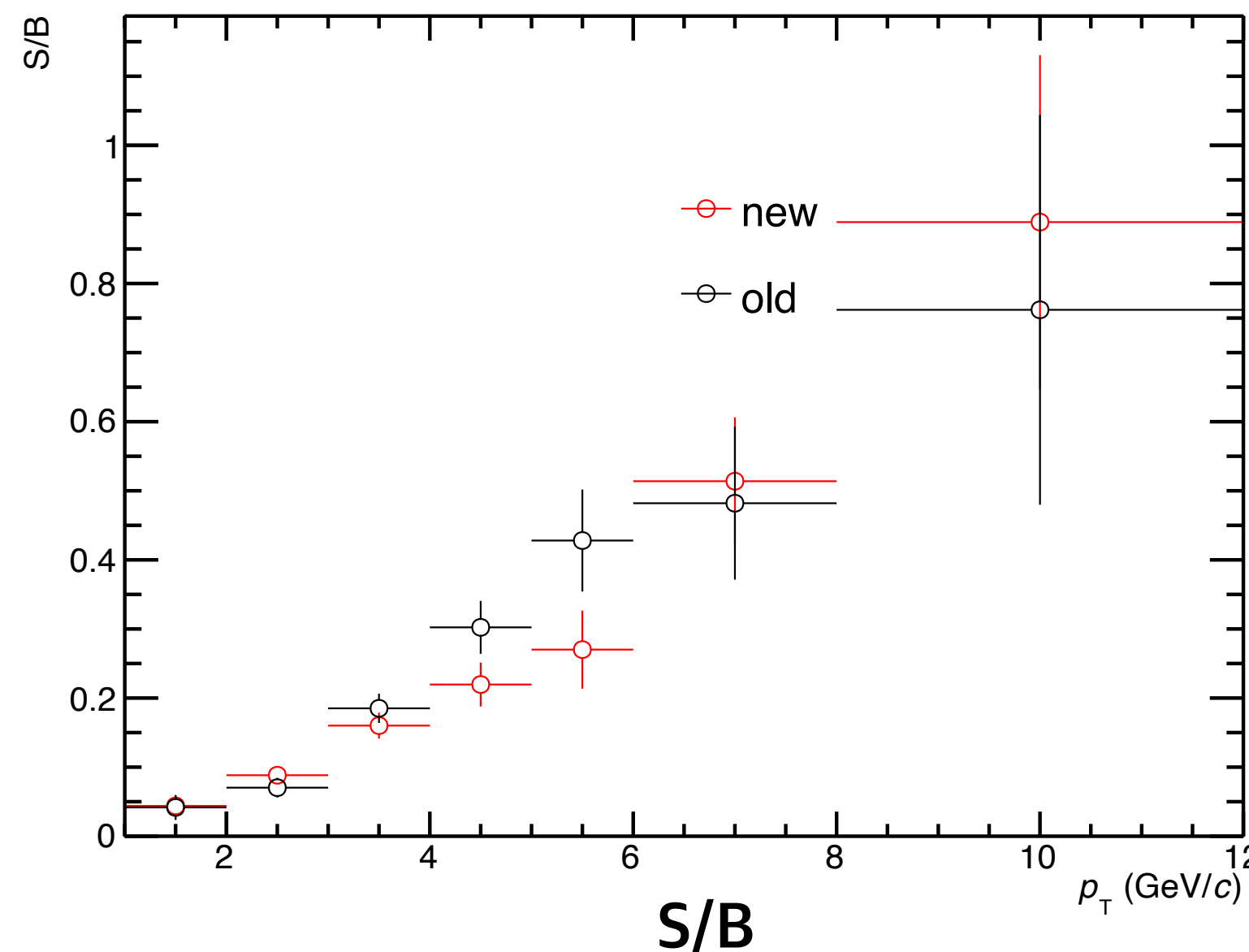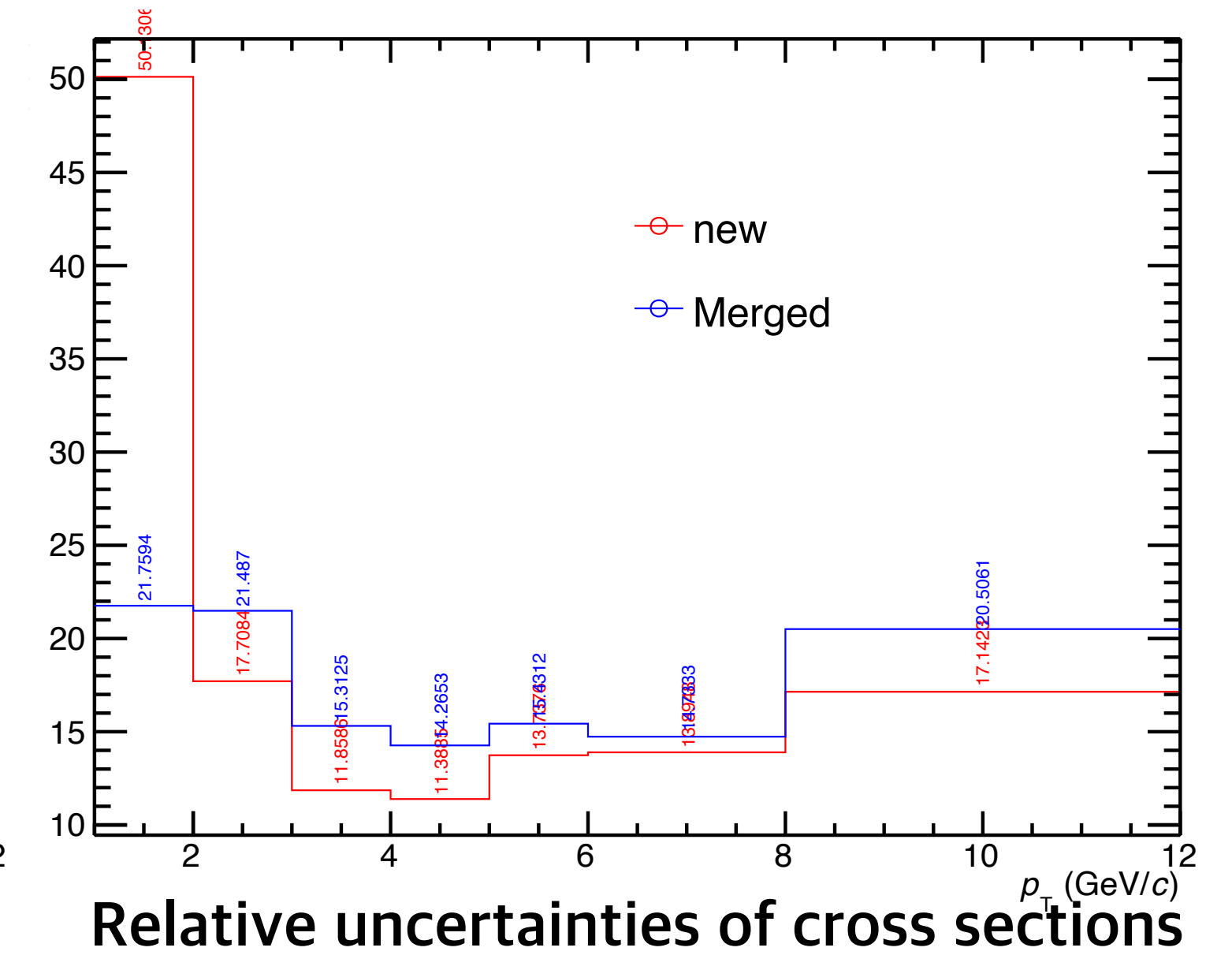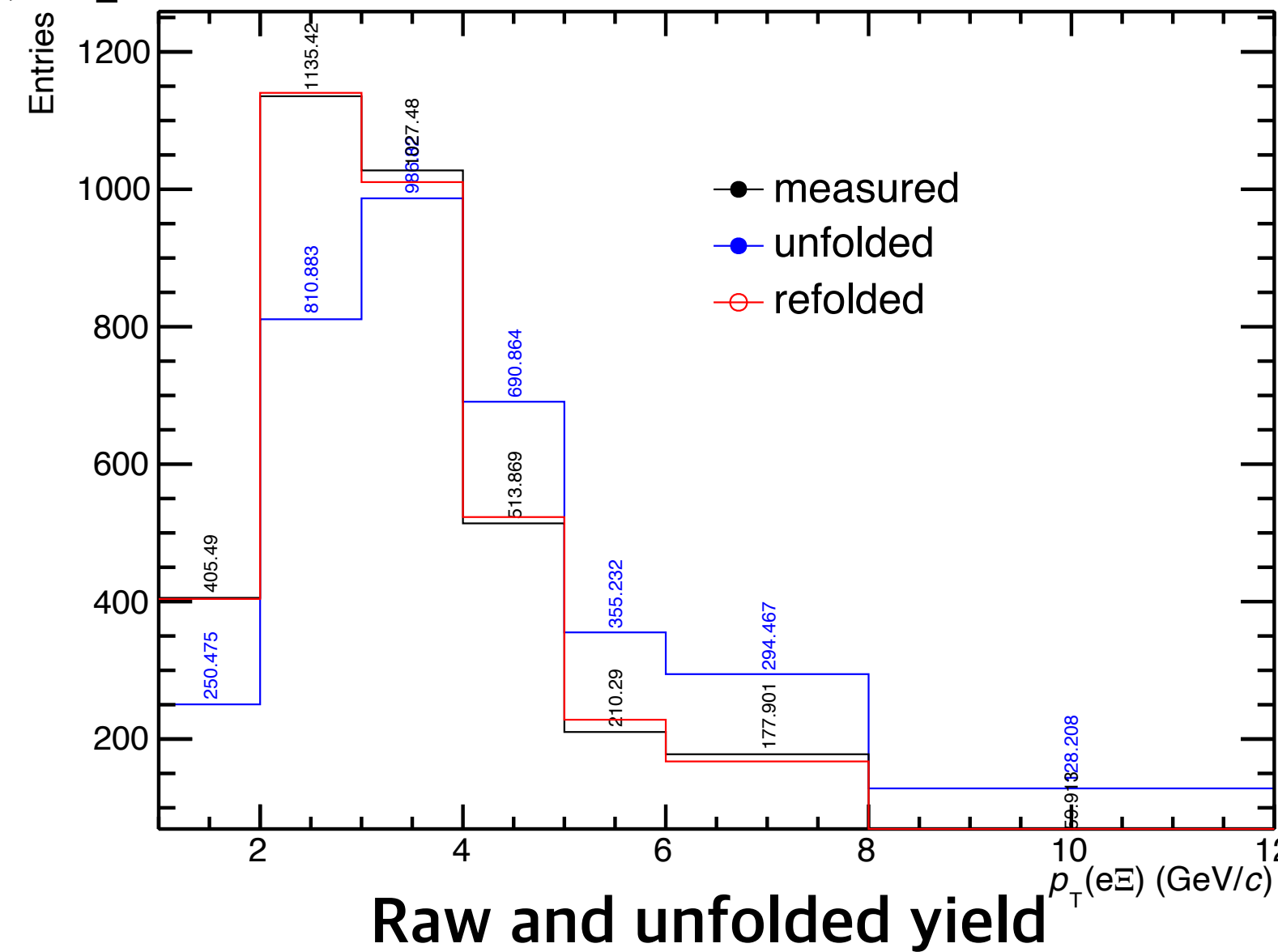
- Compare cross sections

- **Cross section**
  - The new cross section of hadronic channel and semileptonic channel are consistent.
    - It is shown of increase at low and high pT region both of them.
  - For semileptonic channel, [1,2] pT bin is shown with new data, but sizable error.
    - Will be discussed at D2H.

7

- Investigate the first bin [1,2]

- **Investigate the first bin [1,2]**

  - The count of raw yield is 405 and the count of unfolded yield is 250 in the first bin.

  - The relativity uncertainty of new semileptonic cross section is 50% and the merged one is 21%.

  - In new data, the statistics increase due to WDF, but S/B is consistent in the first bin.

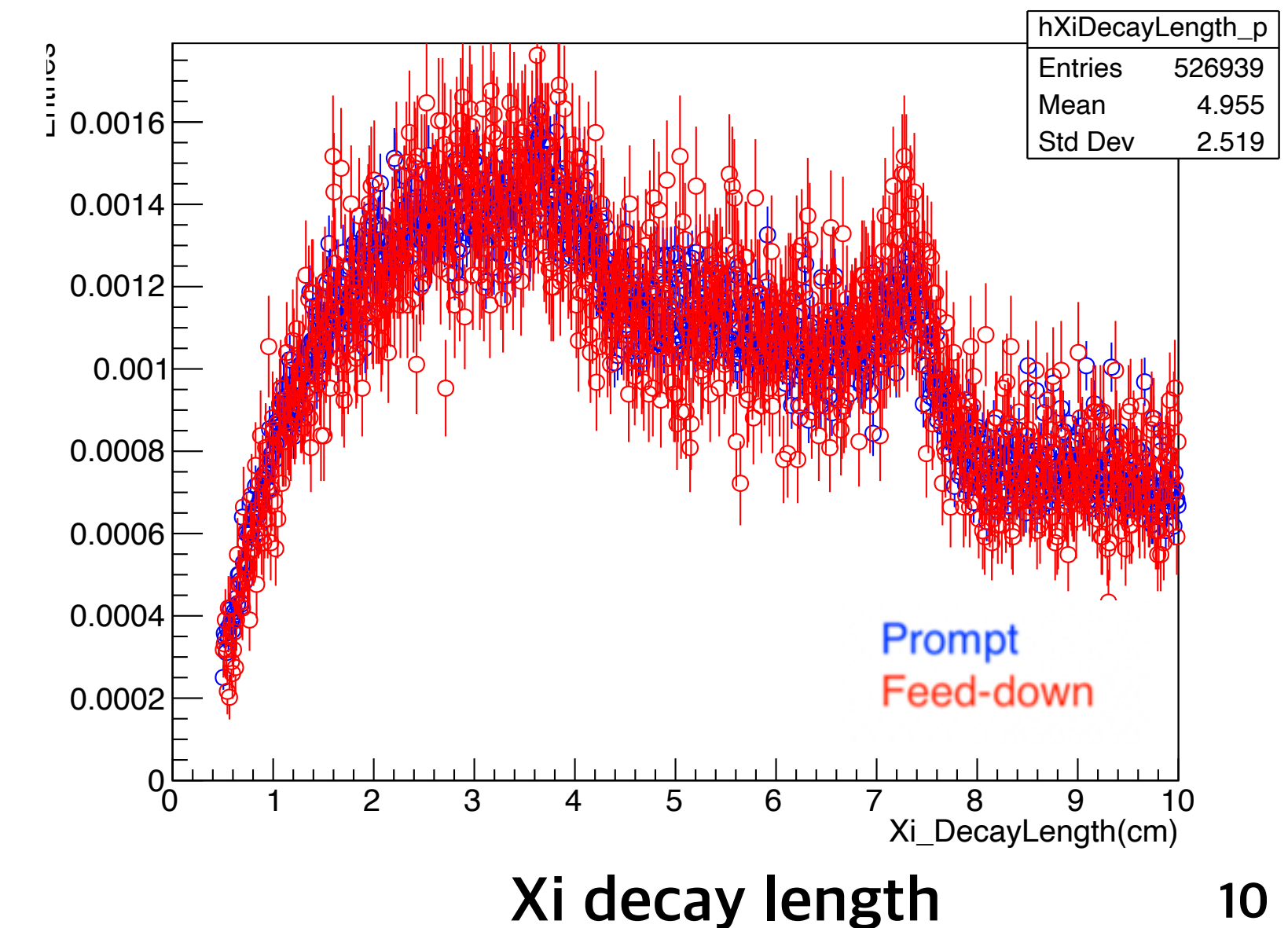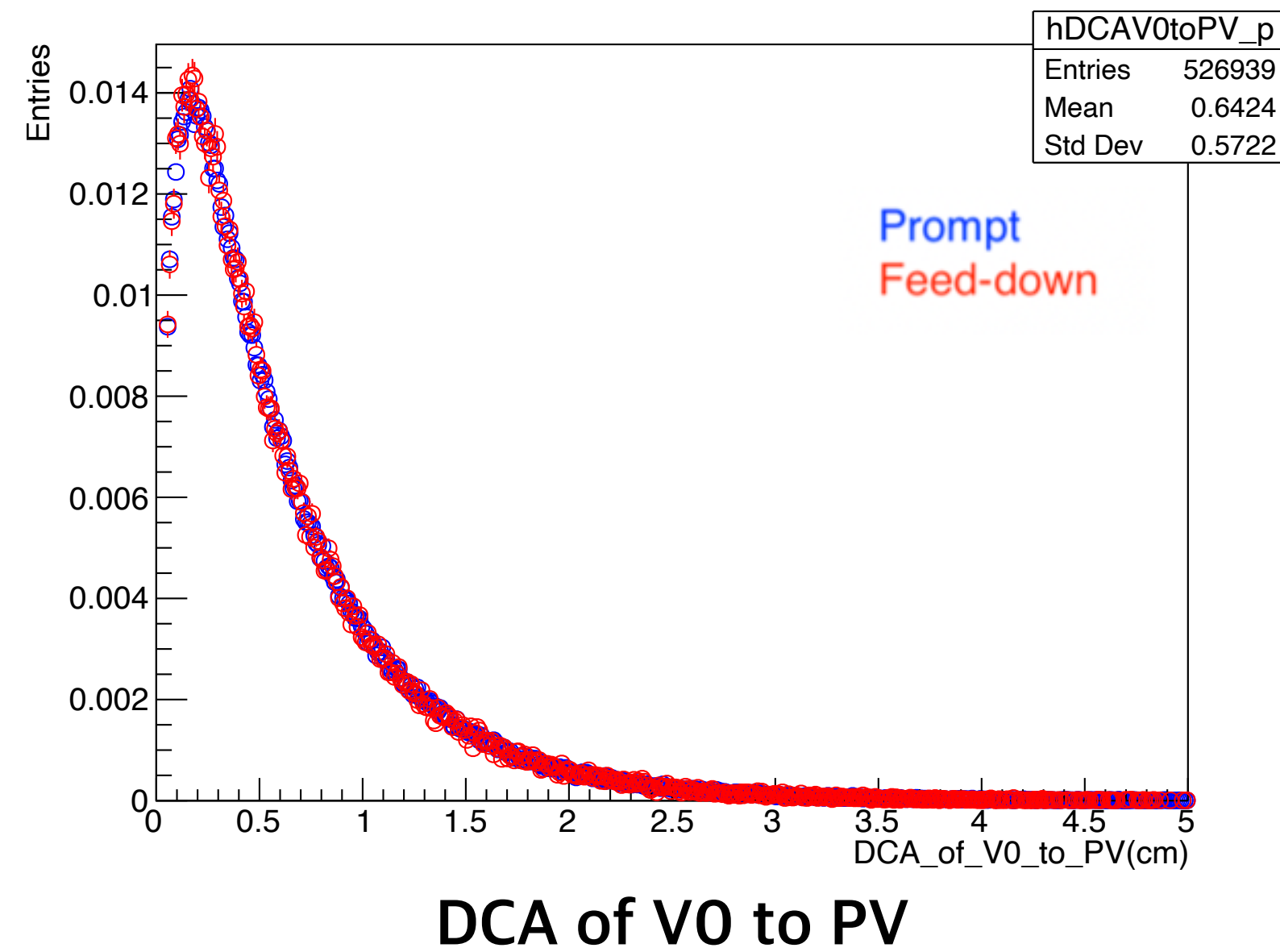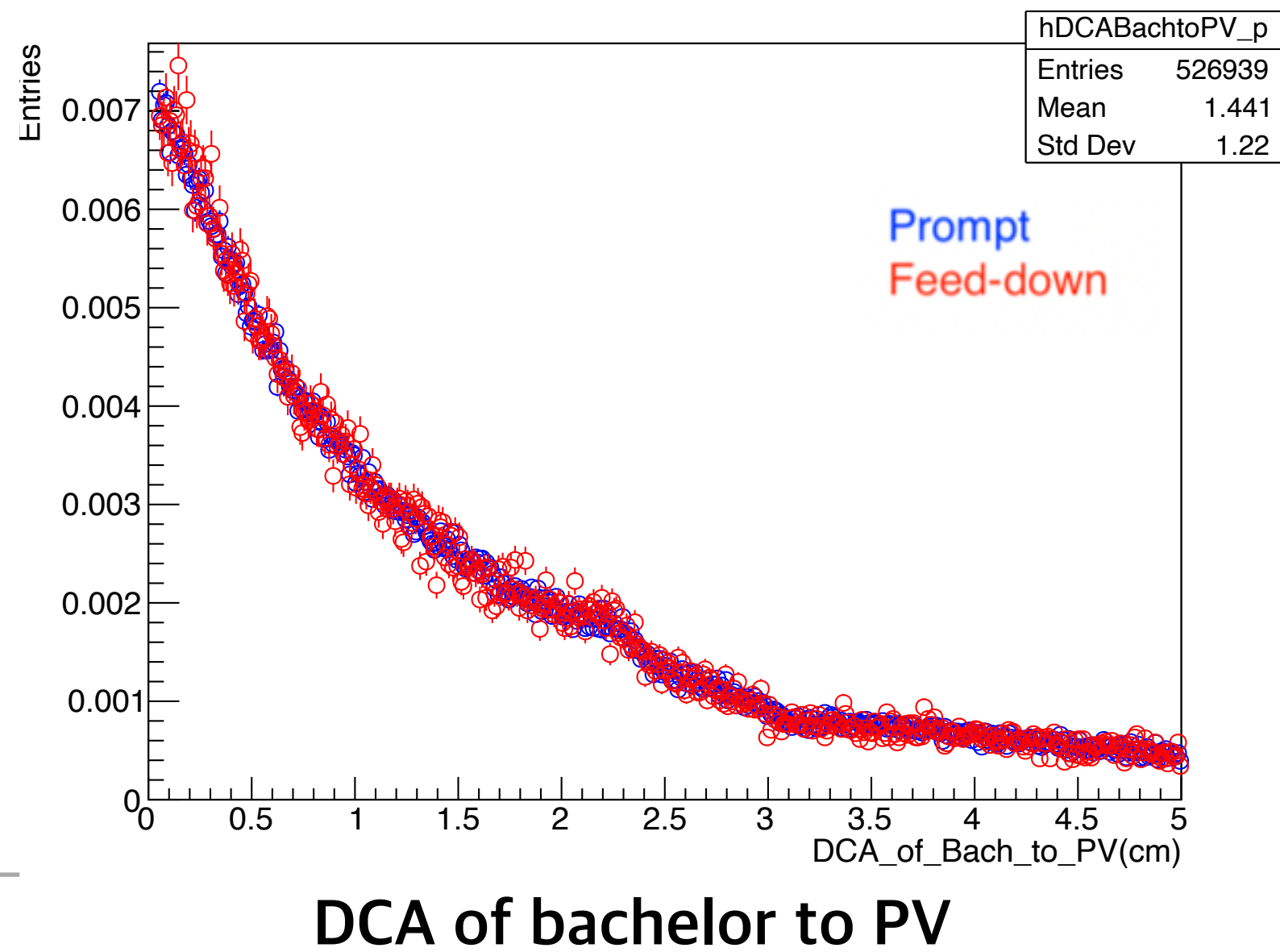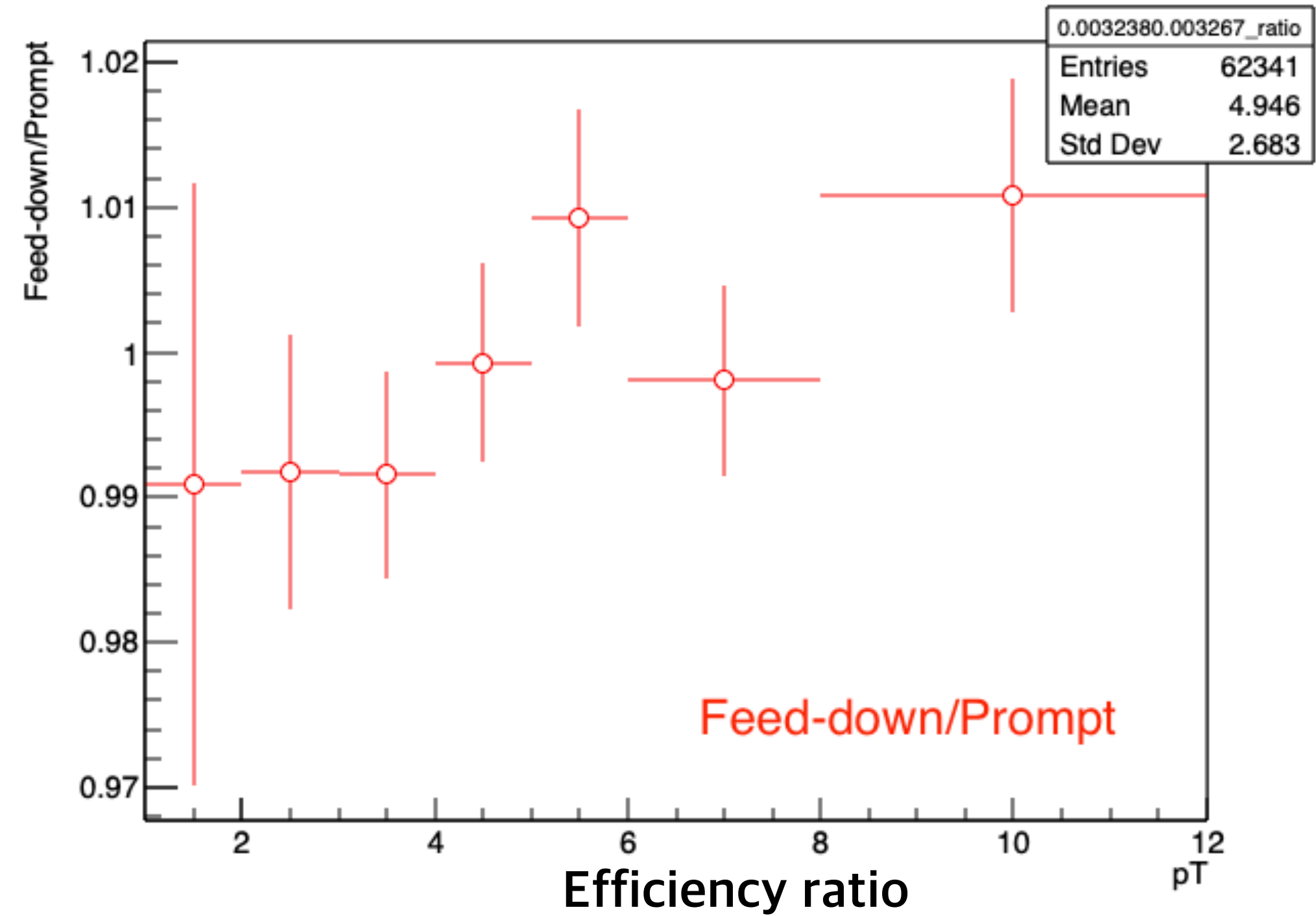   - Large uncertainty is coming from the background subtraction

Raw and unfolded yield

Relative uncertainties of cross sections

S/B

S/B ratio

Back up

Efficiency at 13TeV

Efficiency ratio

DCA of bachelor to PV

DCA of V0 to PV

Xi decay length

10
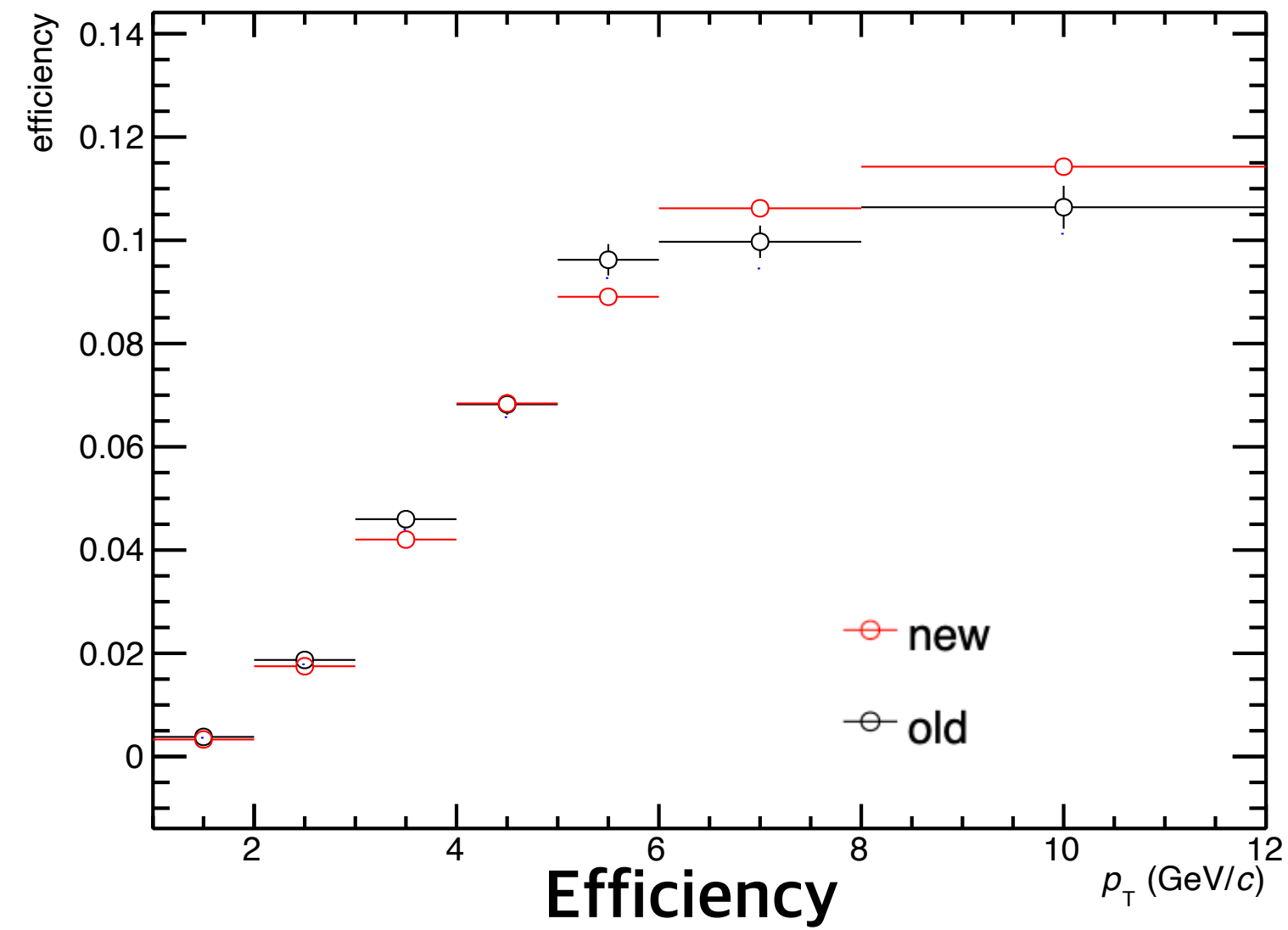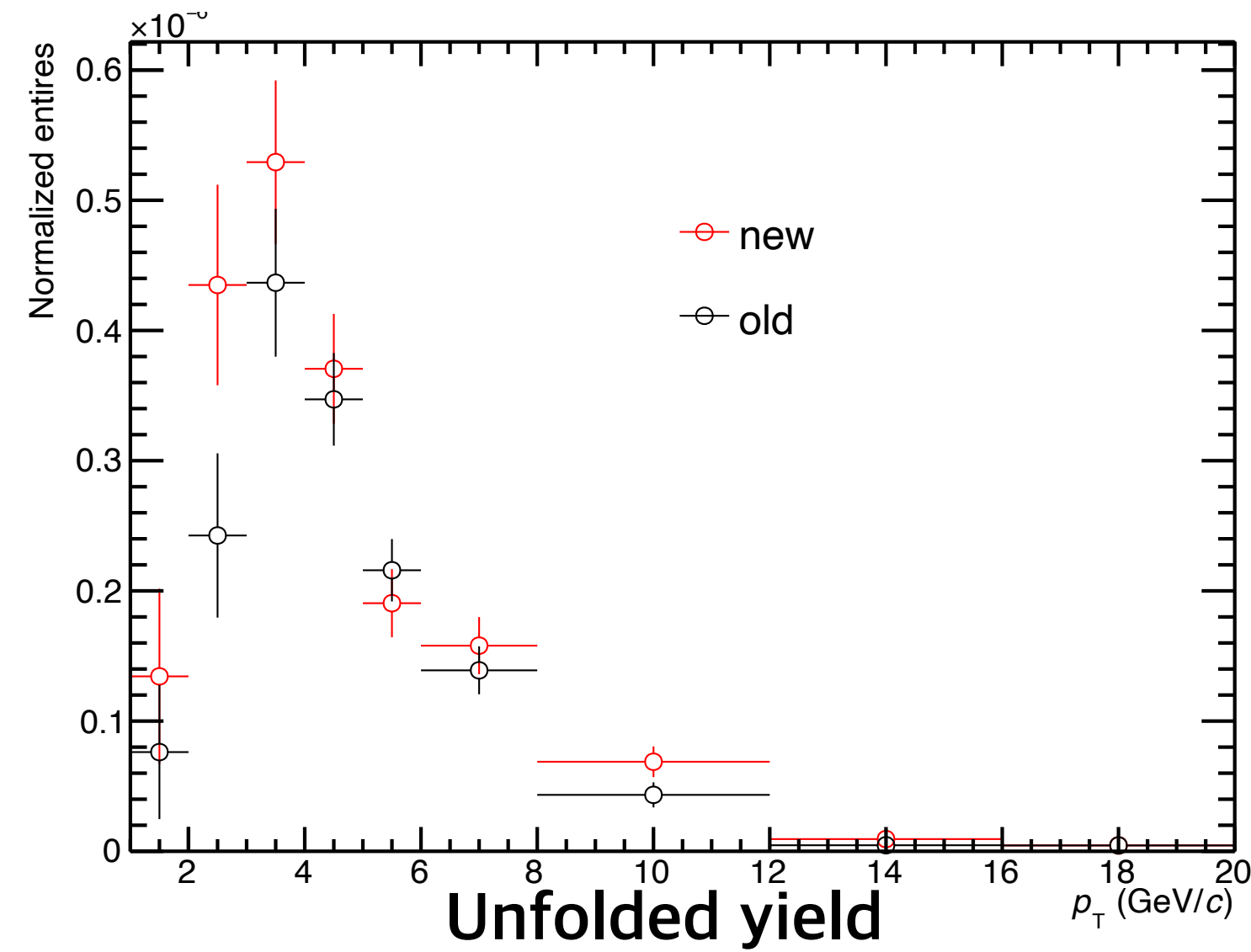
- **Compare 'old final results' and new results**

- Compare 'old final results' and new results

New bin

Unfolded yield

Efficiency

Cross section

Unfolded yield ratio

Efficiency ratio

Cross section ratio

.2