

# Publication status

## Combined charm cross section in 5TeV $pp$ collisions

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# Paper draft

## First draft close to complete

- Explanation of datasets, measurements and models
- Parameterization for PYTHIA calculations
  - [details](#)
- Extrapolation strategy and final results
  - [details](#)

Paper structure



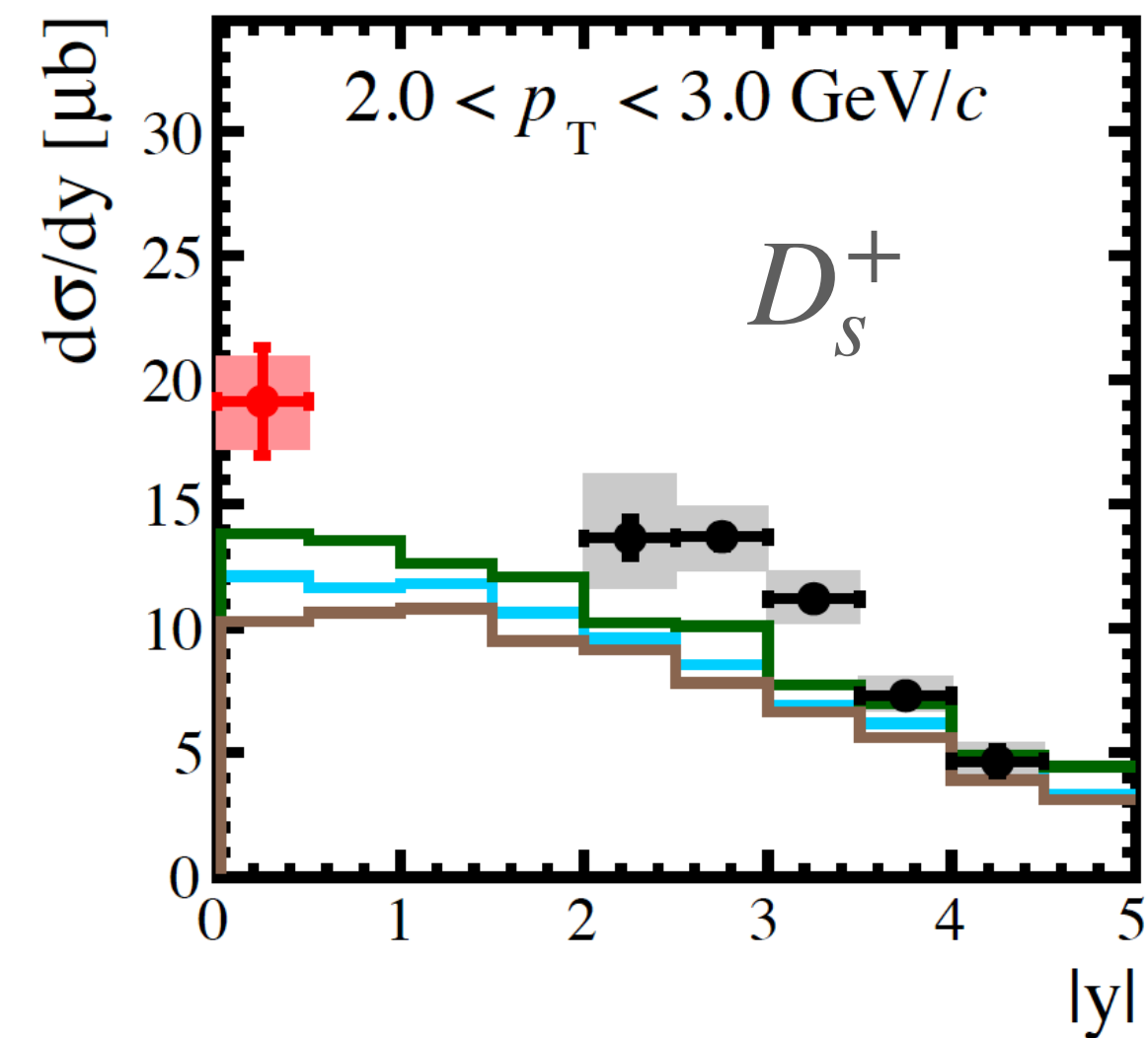
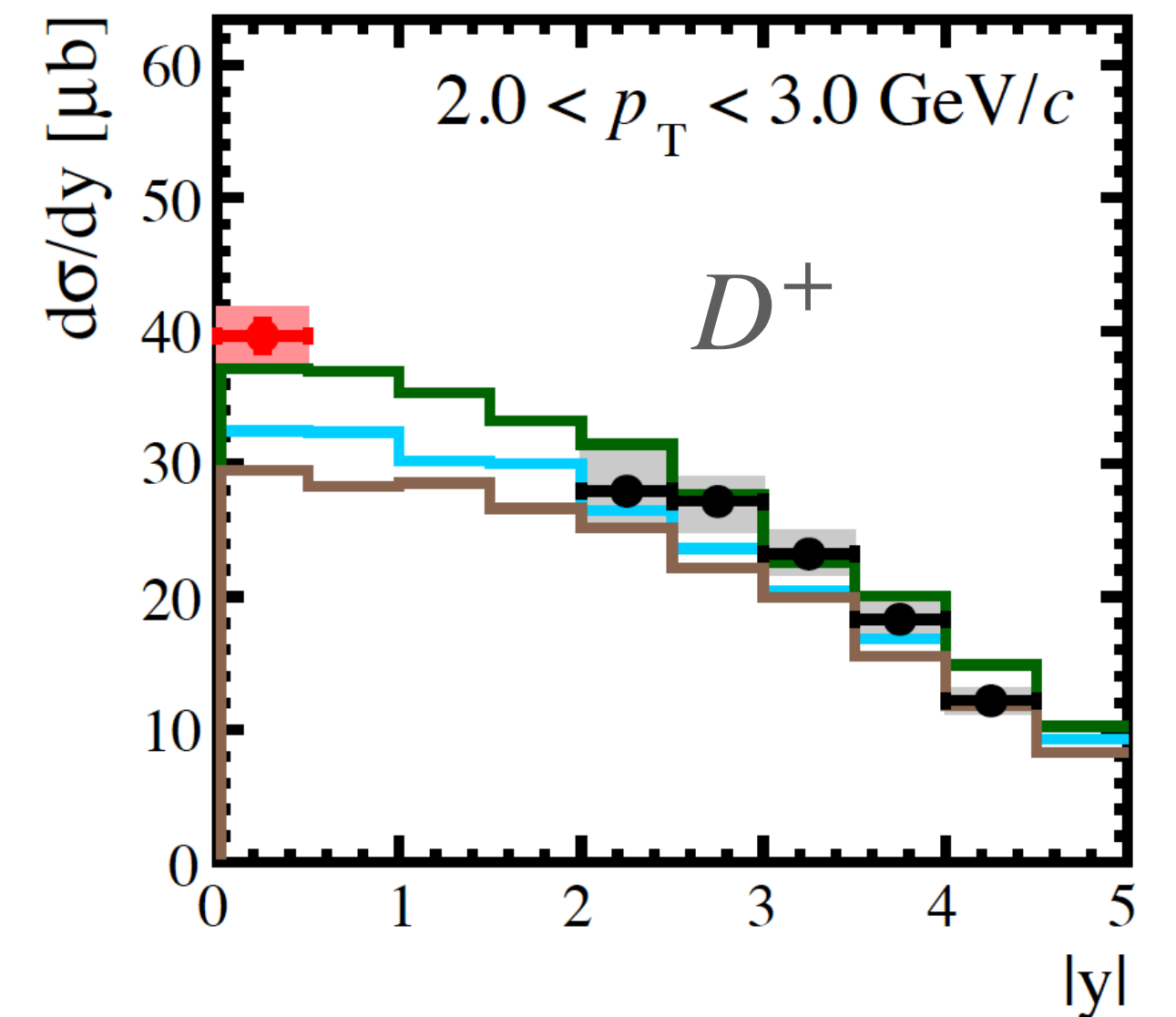
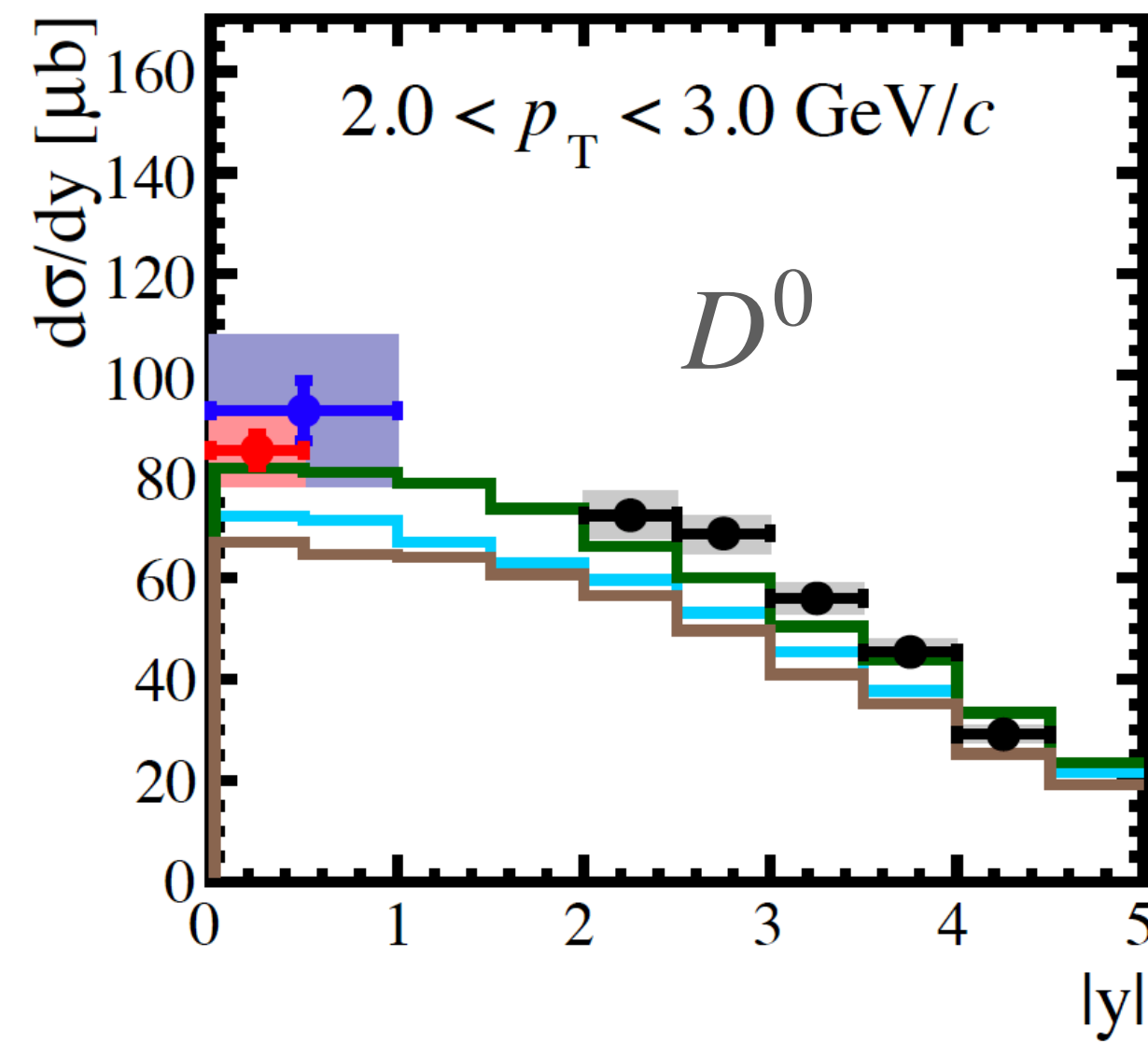
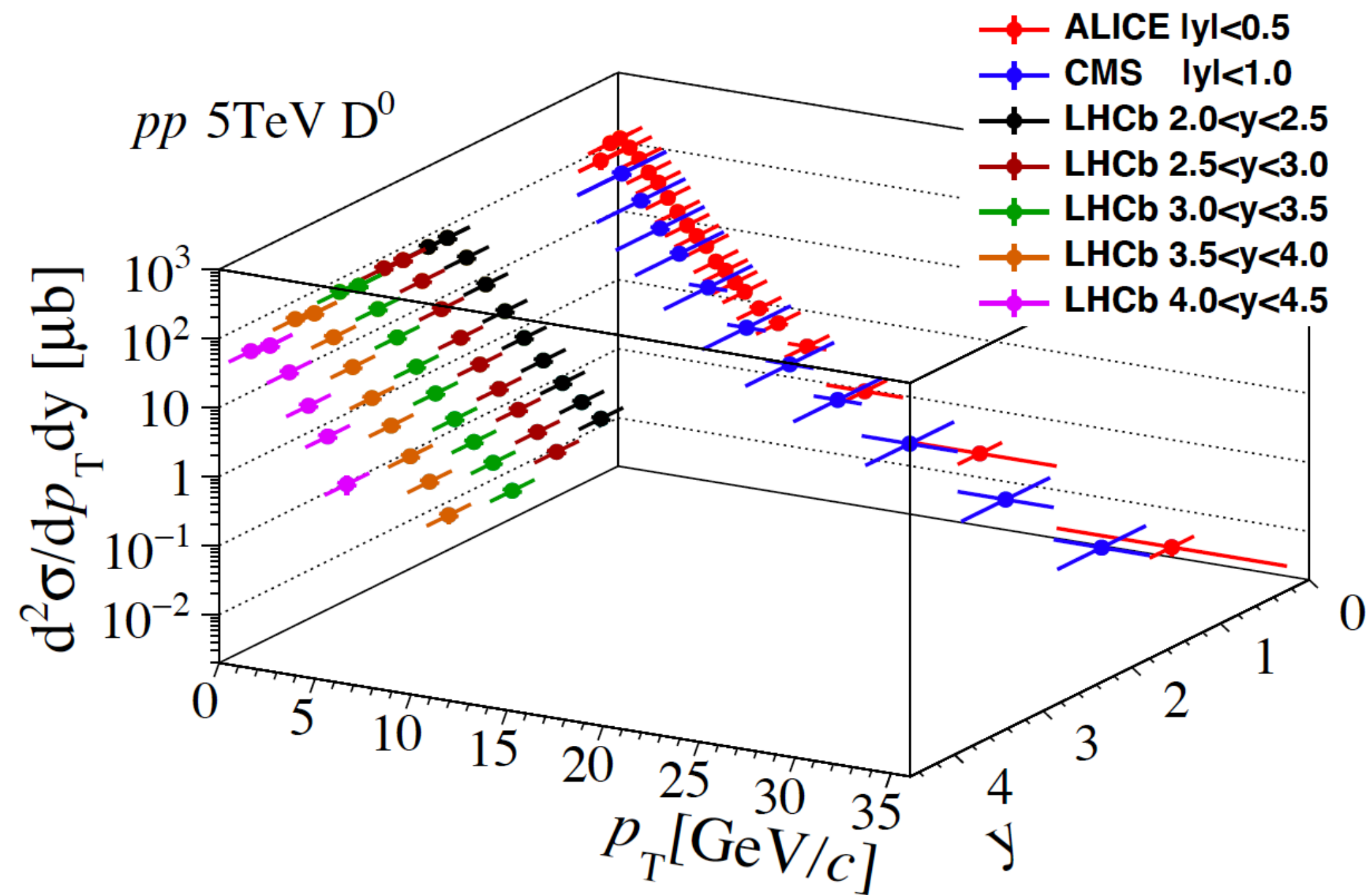
- Introduction
- Experiments and data samples
- Analysis strategy
  - ALICE
  - CMS
  - LHCb
- Overview of theoretical calculations
  - PYTHIA
  - FONLL
- Extrapolation procedure
  - Simulation and parameters
  - Estimating the kinematic charm mass
  - Extrapolation to total  $c\bar{c}$  cross section
- Results and comparison to models
- Conclusions

# Plots of data and PYTHIA

## D (D0, D+ and Ds) meson combination plots

+ CMS   
 + ALICE   
 + LHCb

—  $m_c = 1.45$    
 —  $m_c = 1.28$    
 —  $m_c = 1.57$

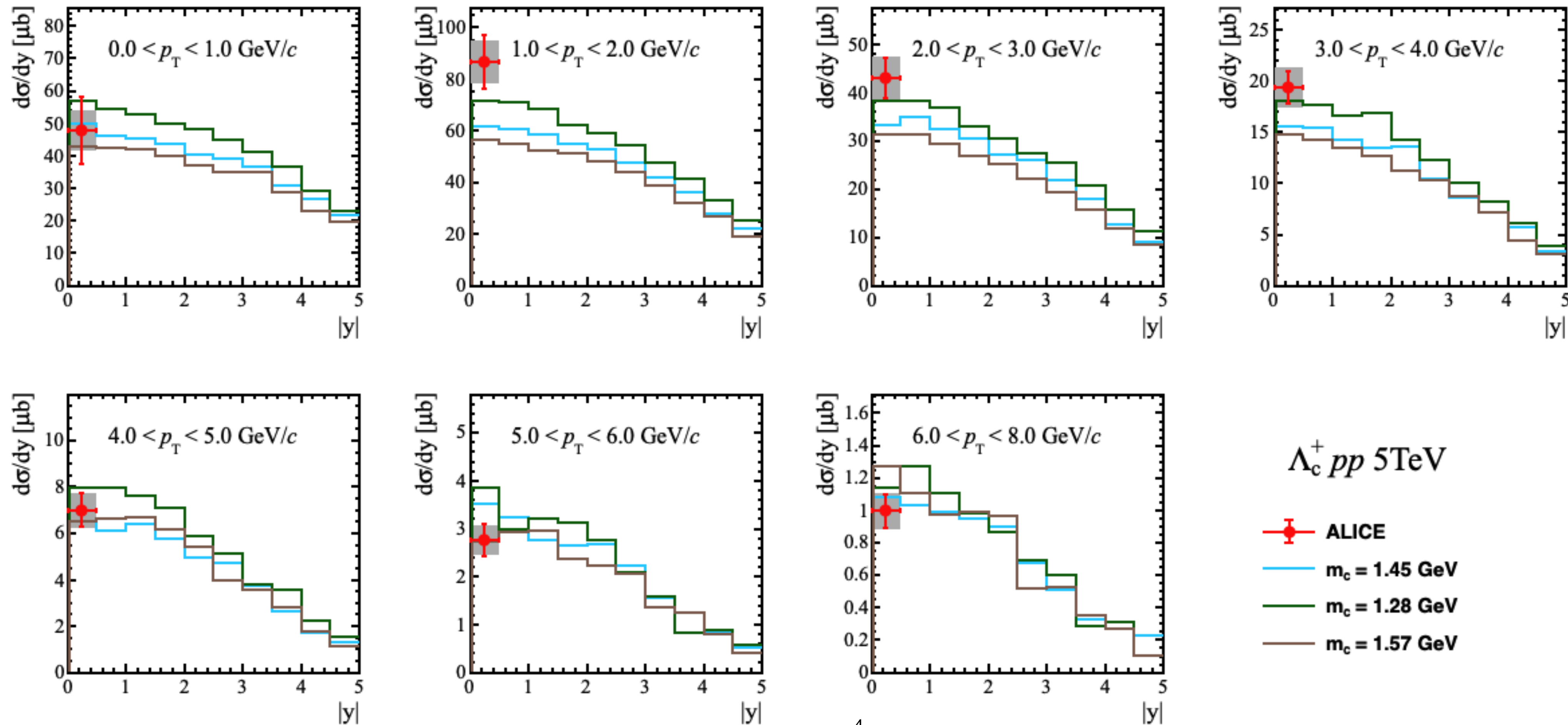


# Plots of data and PYTHIA

## New: charm baryon plots $\Lambda_c^+$

New ALICE paper with  $\Lambda_c^+$   $p_T$  down to 0 <https://arxiv.org/abs/2211.14032>

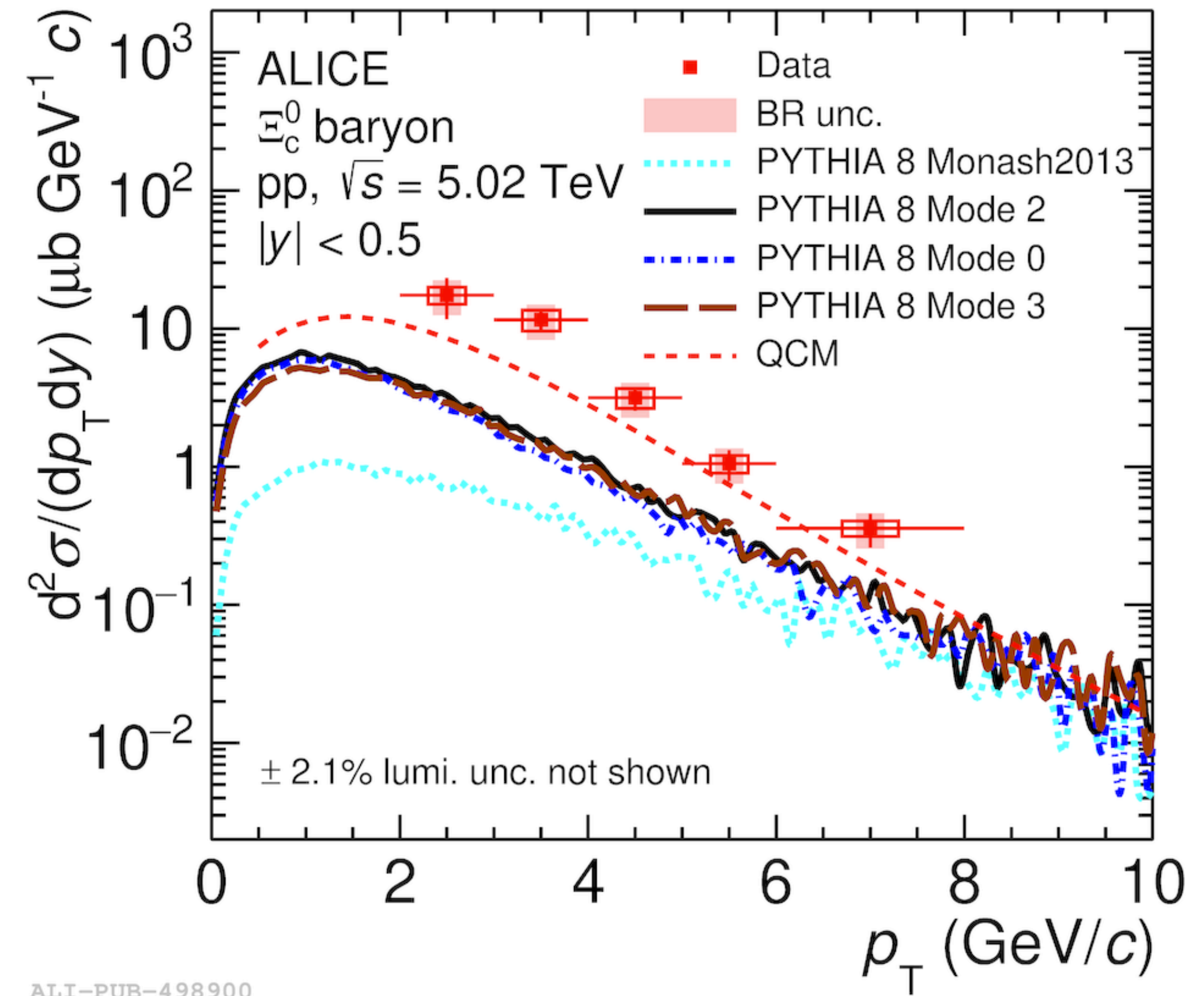
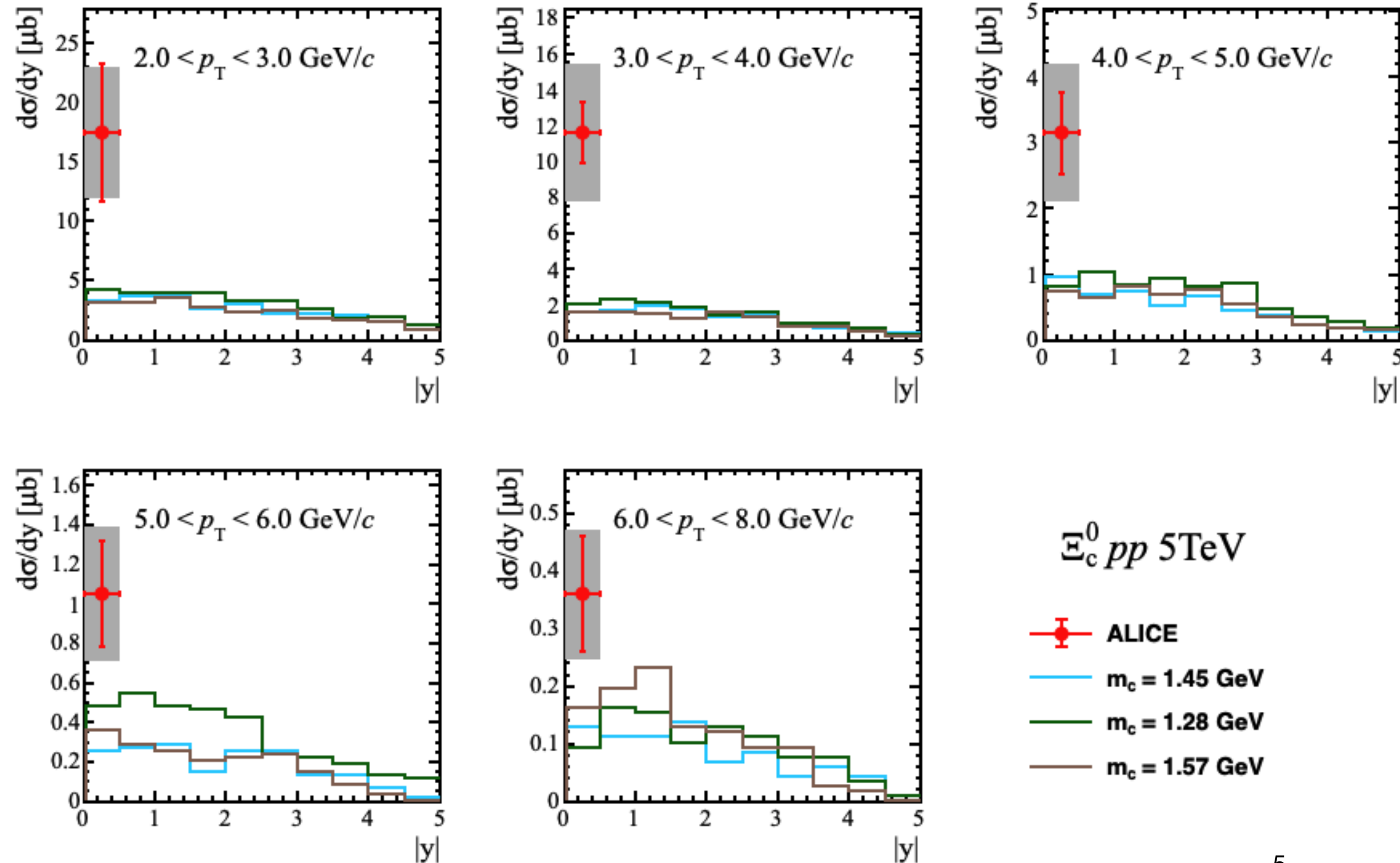
No longer need to extrapolate to low  $p_T$ , total cross section goes down by about 1%



# Plots of data and PYTHIA

## New: charm baryon plots $\Xi_c^0$

ALICE paper: [JHEP 10 \(2021\) 159](https://arxiv.org/abs/2103.12522)



ALI-PUB-498900

- $\Xi_c^0$  cross-section is higher than PYTHIA
- In the extrapolation, the normalised shape of the  $p_T$  distribution in PYTHIA is used

# Summary

- Fine tuning the final result section
- General editing pass ongoing
- Plan to submit early next year