J/ψ production in pPb collisions from CMS

Songkyo Lee (Korea Univ.)
on behalf of the CMS Collaboration

ISMD 2016
Jeju Island, Republic of Korea
29th August 2016

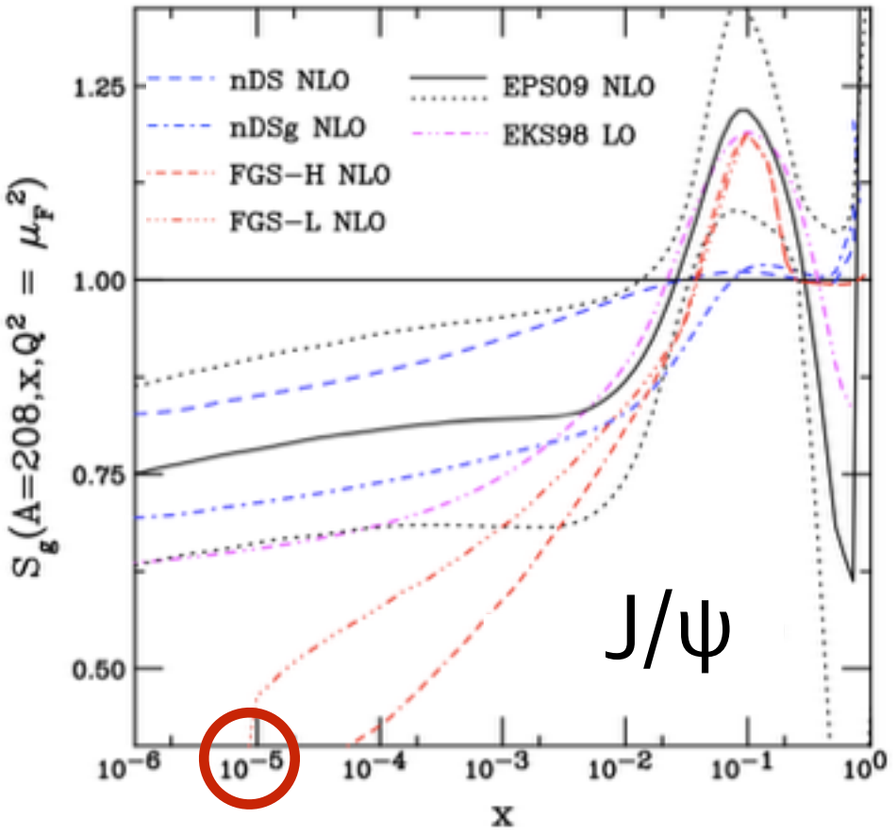
Motivation

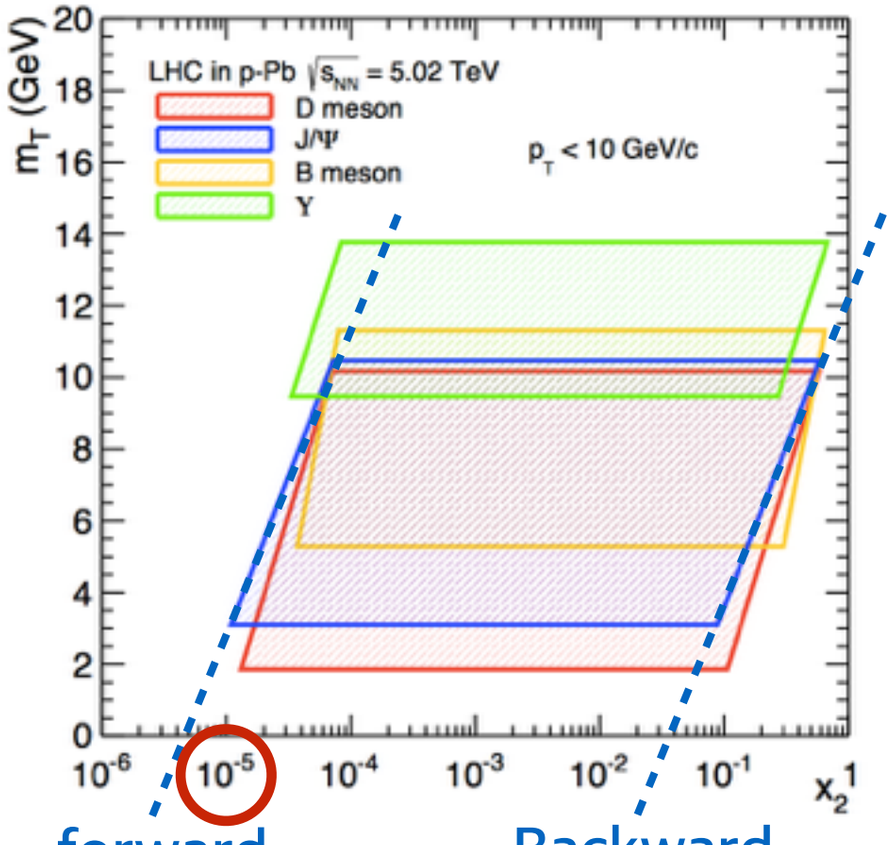
- Quarkonia in pPb collisions
  - probes the Cold Nuclear Matter effect
  - nPDF, energy loss, etc.

Phys.Rev.C 92, 034909 (2015)

Eur.Phys.J C76 (2016) no3. 107

- Prompt J/ψ : sensitive to gluon PDFs
- Non-prompt J/ψ : information on b-quark production

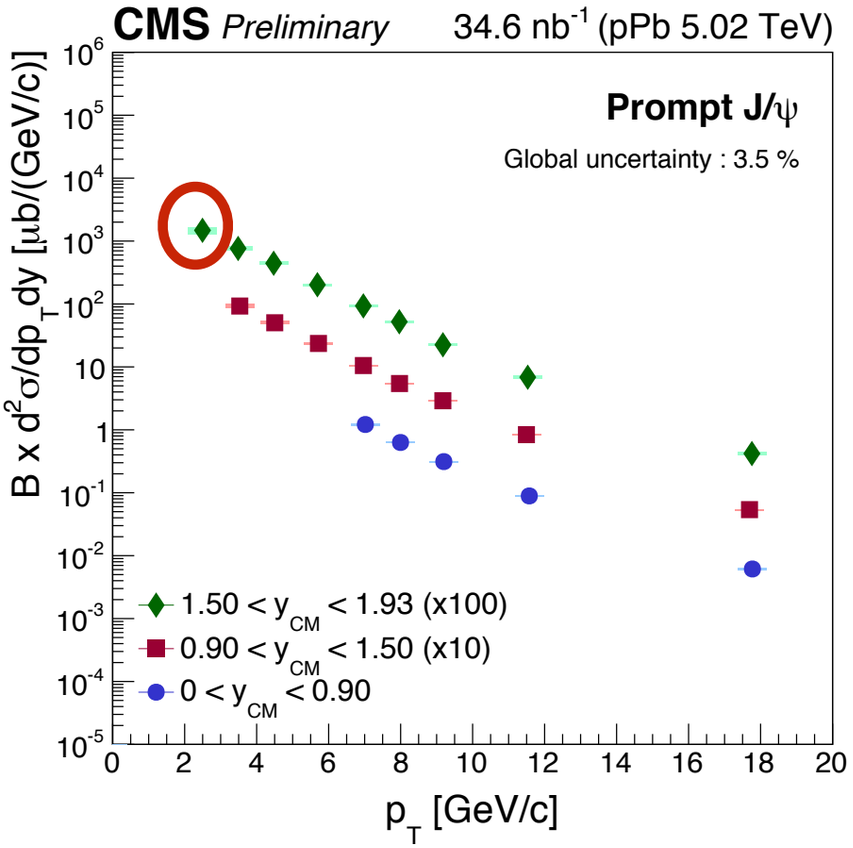




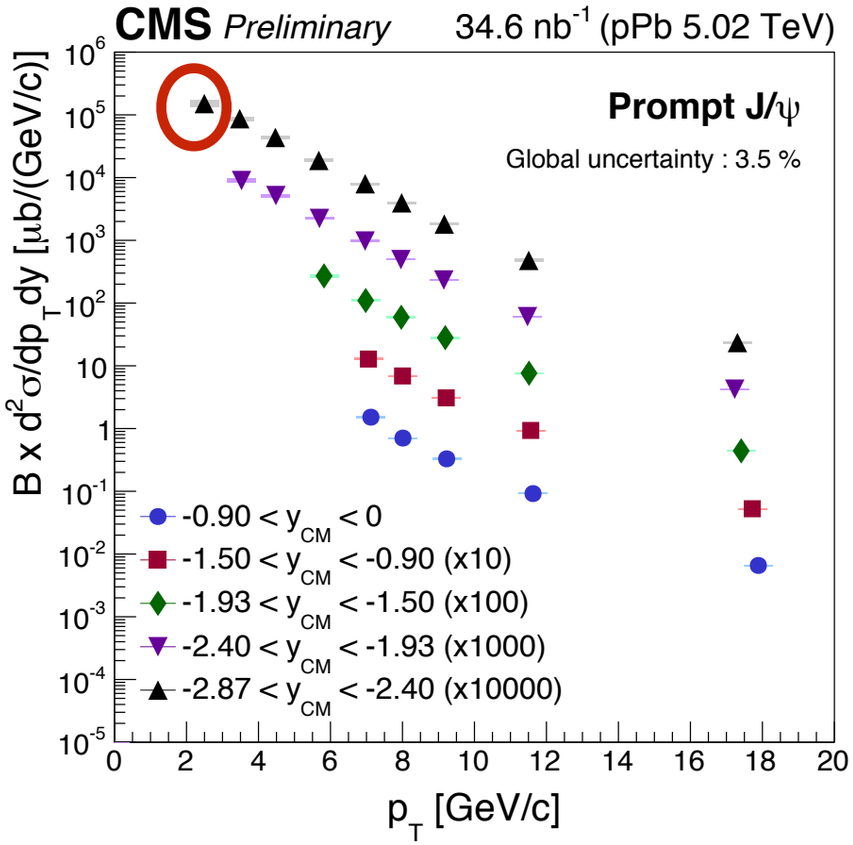
Prompt J/ψ) Differential cross sections

CMS-PAS HIN-14-009

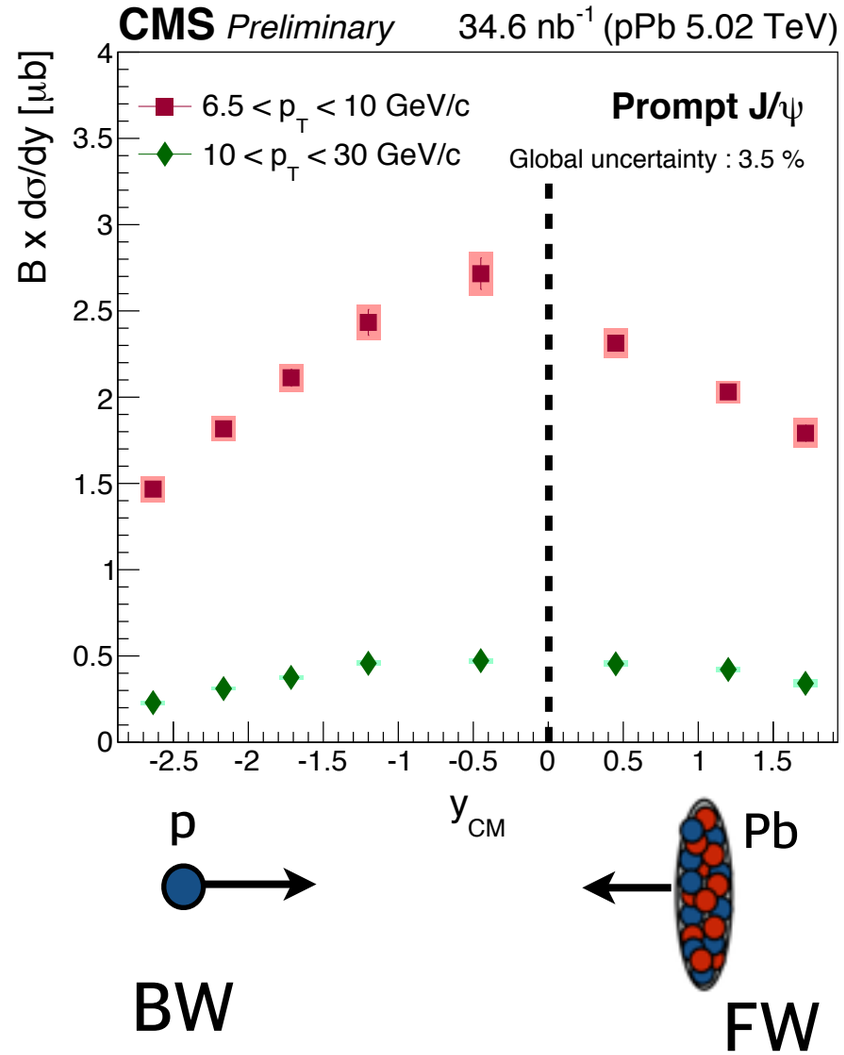
- Wide range in rapidity and p_T bins
  - $-2.87 < y_{CM} < 1.93$
  - $2 < p_T < 30$ GeV/c (down to lower p_T at most forward)



Forward
(p-going)



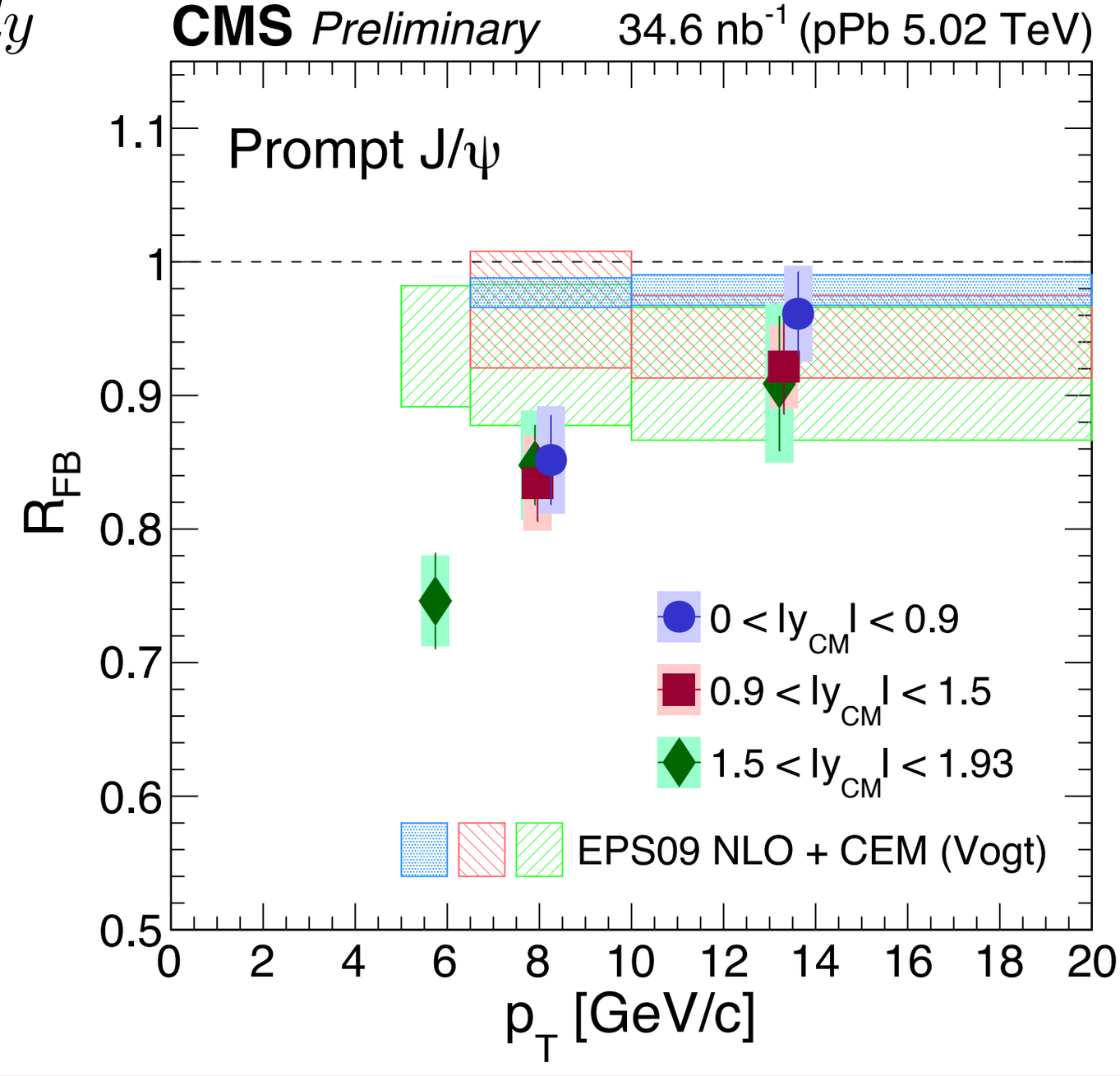
Backward
(Pb-going)



Prompt J/ψ) Forward-to-backward ratio

- Forward (y>0) is the proton-going direction

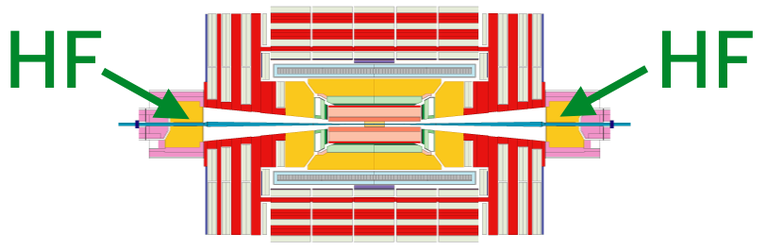
$$R_{\mathrm{FB}}(p_{\mathrm{T}}, y) = \frac{d^2\sigma(p_{\mathrm{T}}, +y)/dp_{\mathrm{T}}dy}{d^2\sigma(p_{\mathrm{T}}, -y)/dp_{\mathrm{T}}dy}$$

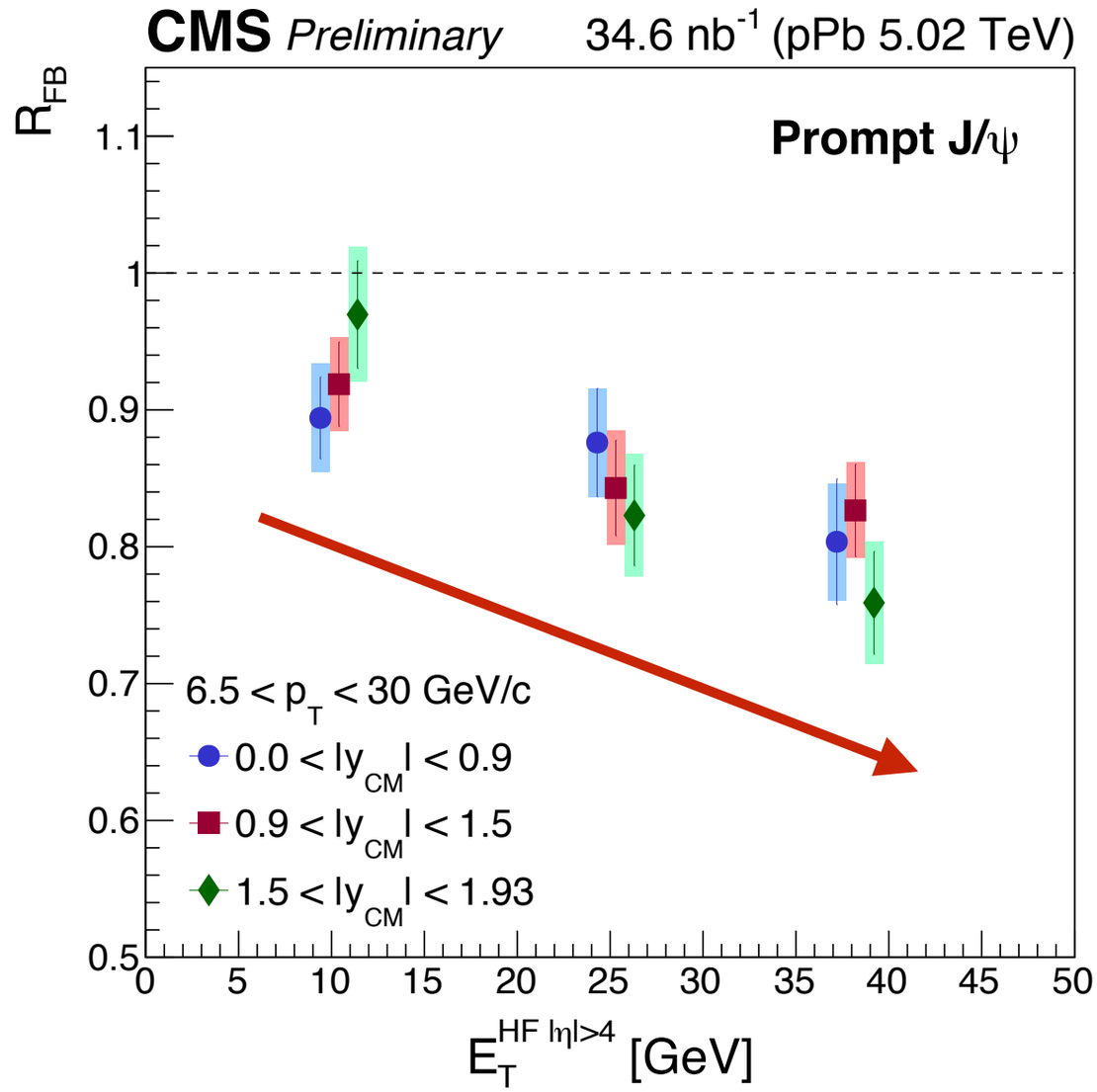


- $R_{FB} < 1$ at low p_T
- Clue for other effects beyond presented nPDF predictions?

Prompt J/ψ) Event activity dependence

- $E_T^{HF|\eta|>4}$: transverse energy deposited in Hadron Forward Calorimeter at $4 < |\eta| < 5.2$
- Centrality-like characterization in pPb collisions



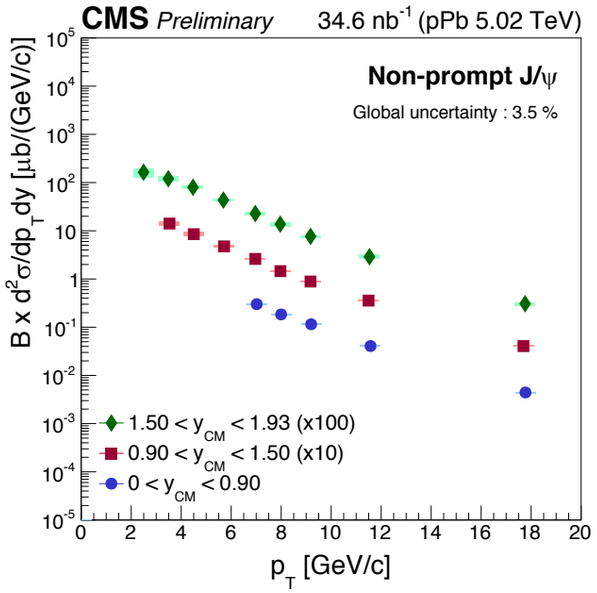


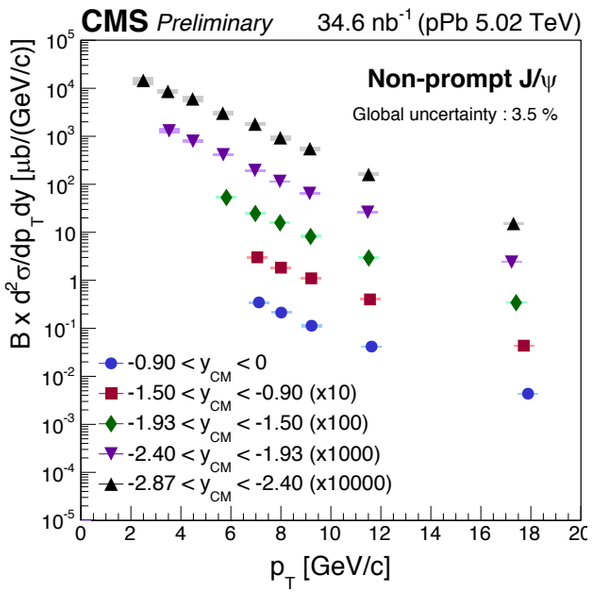
- R_{FB} decrease with increasing event activity

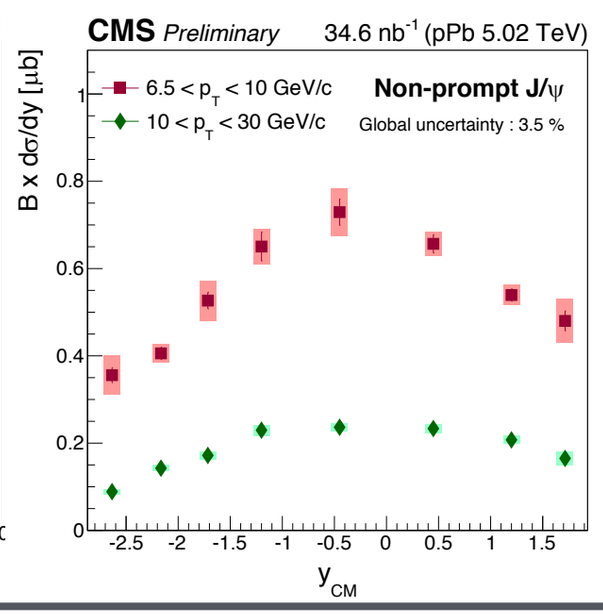
Non-prompt J/ψ ⬅ B-meson

- Similar behavior with prompt J/ψ with larger uncertainties

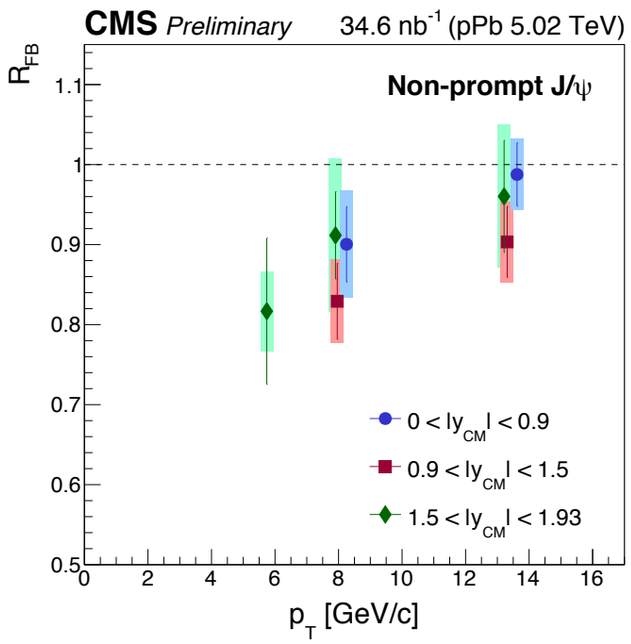
- Differential cross sections :



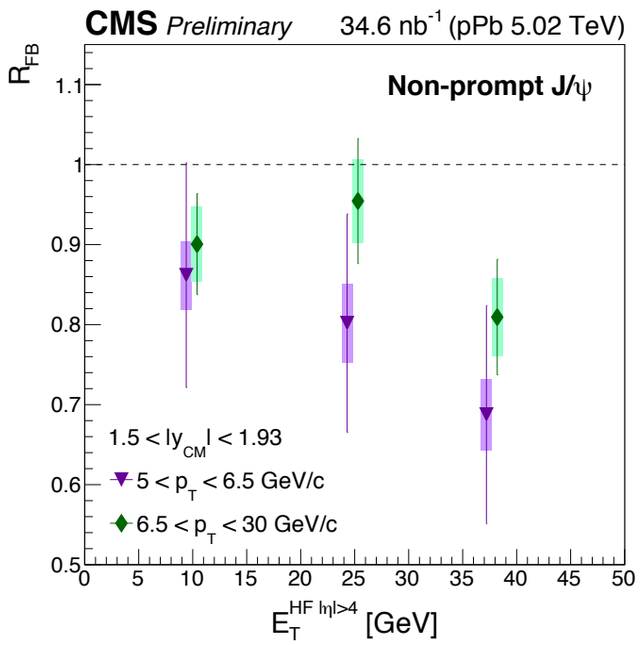


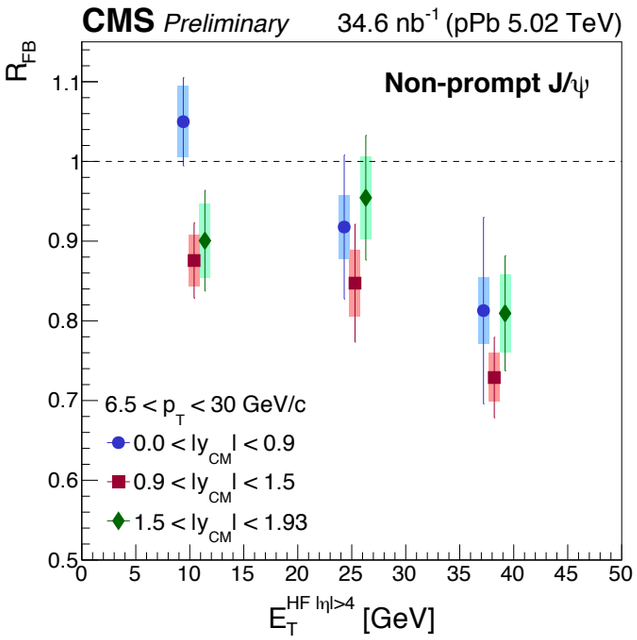


- R_{FB} :



- Event activity dependence :





Summary

- CNM effects are probed by J/ψ production in pPb
- $R_{FB} < 1$ at low p_T
- R_{FB} decreases with event activity
- STAY TUNED! R_{pPb} based on 2015 pp data is coming soon