[HIN-14-009]
status

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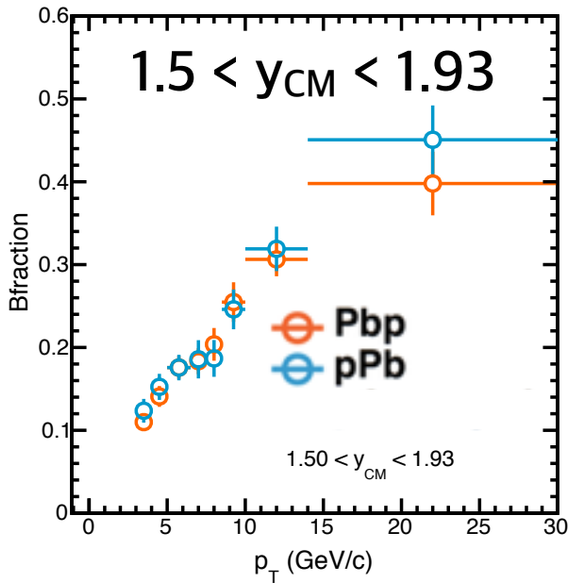
dilepton meeting
30th March 2016

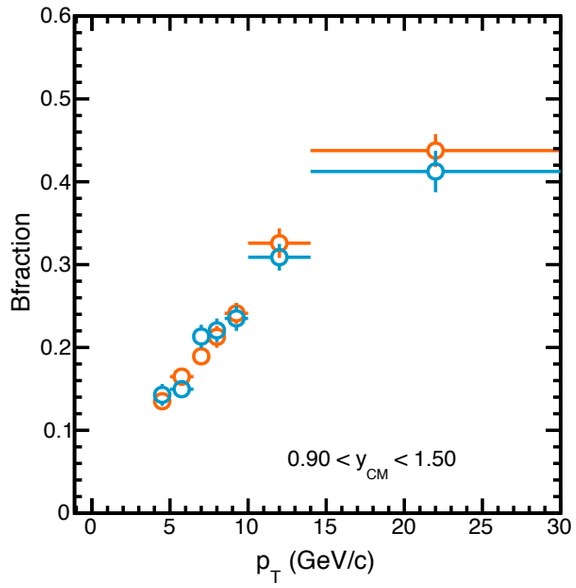
Status

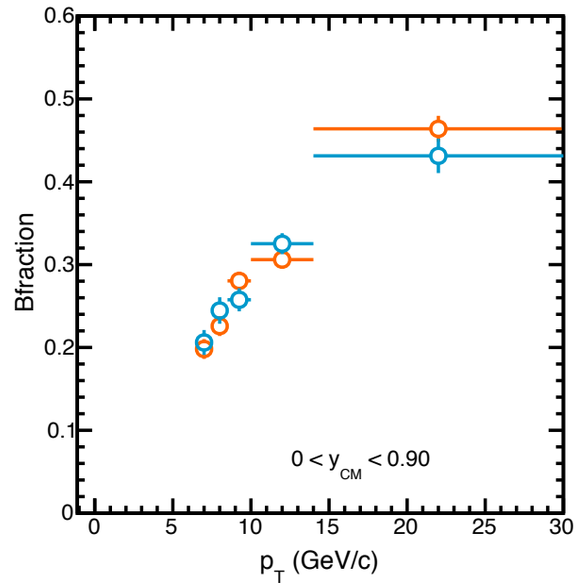
- official MC needed to move on
  - pPb 2013
    - w/o pre-filter : none
    - with pre-filter : 1 out of 6 complete (tree on-going)
      - /JPsiWithFSR_tuneD6T_5TeV02/pAWinter13DR53X-pa_1st_run_STARTHI53_V27_ext1-v1/GEN-SIM-RECO
  - pp 2015
    - w/o pre-filter : onia tree ready
    - with pre-filter : new tree on-going (ResolvePileupAmbiguity=False)

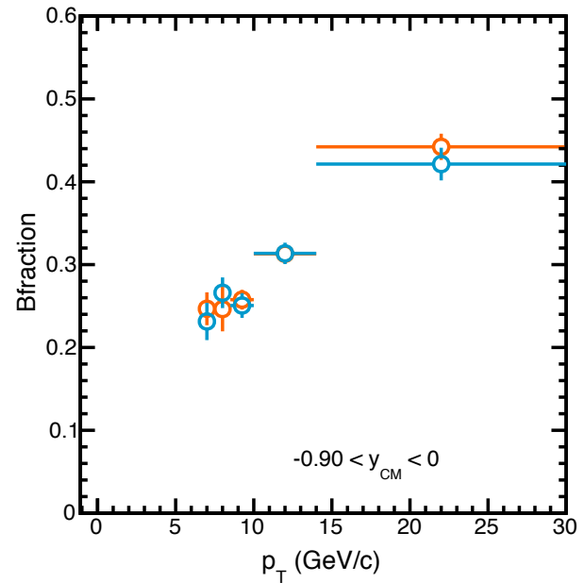
- Today - how to merge Pbp and pPb datasets
  - so far : fitting and acc*eff correction performed on Pbp and pPb separately, and corrected yields are merged at the final step
  - new : fit the merged dataset (Pbp + pPb) and then correct acc*eff

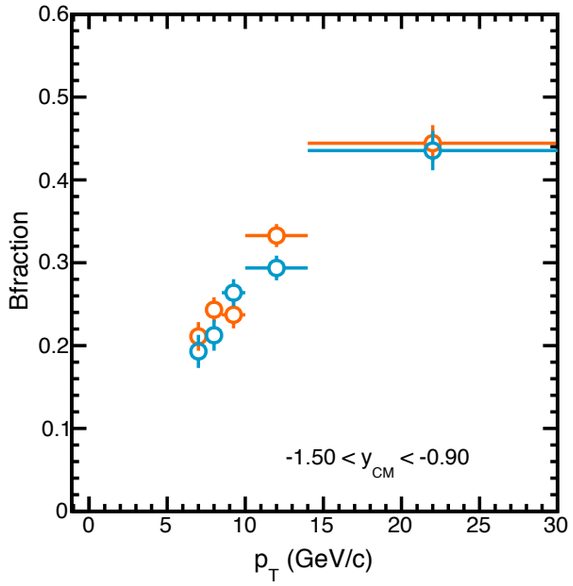
B-fraction : Pbp and pPb

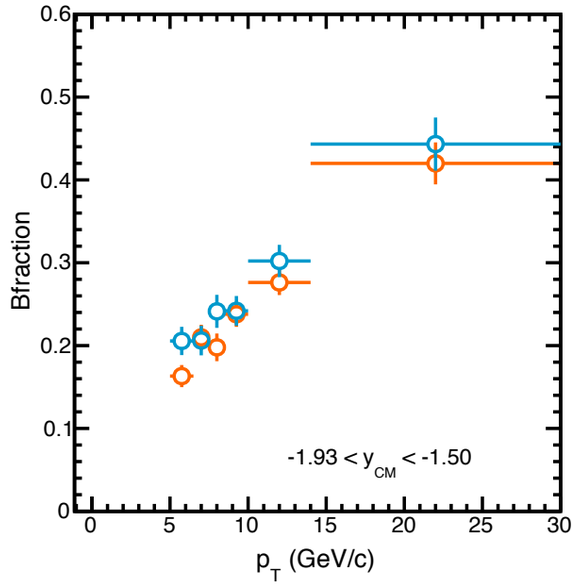


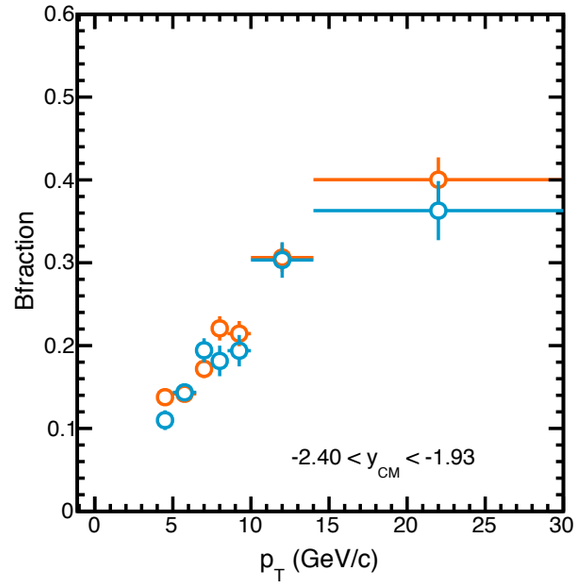


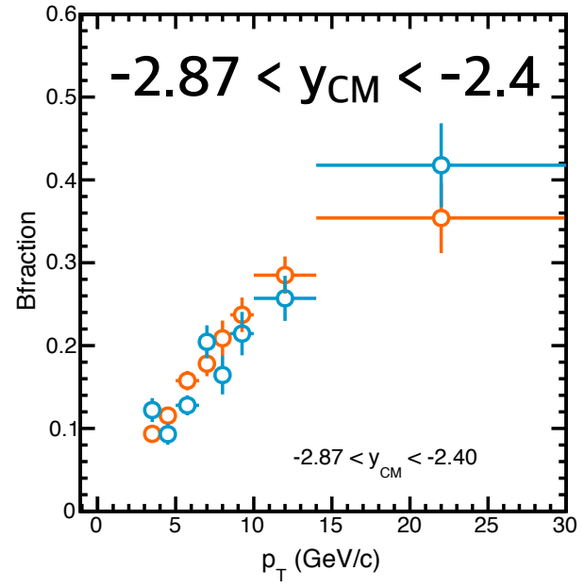






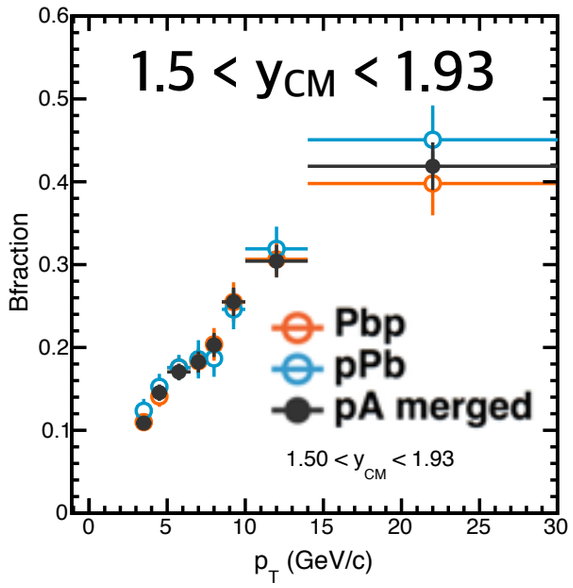


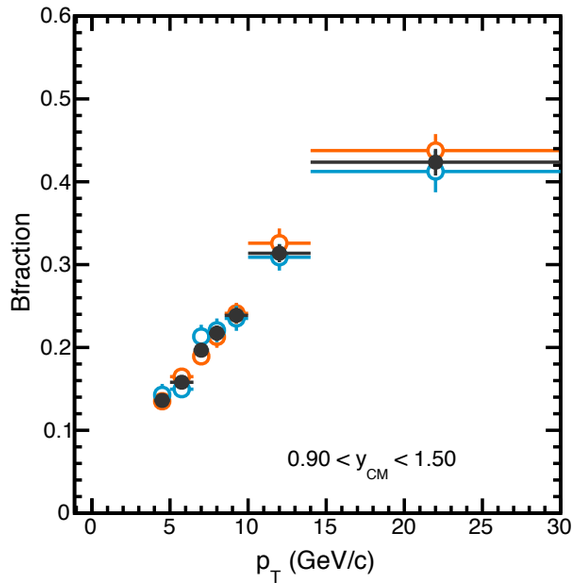


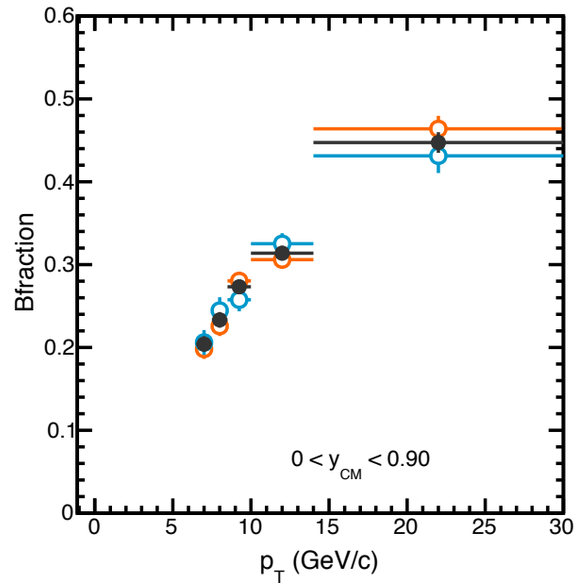


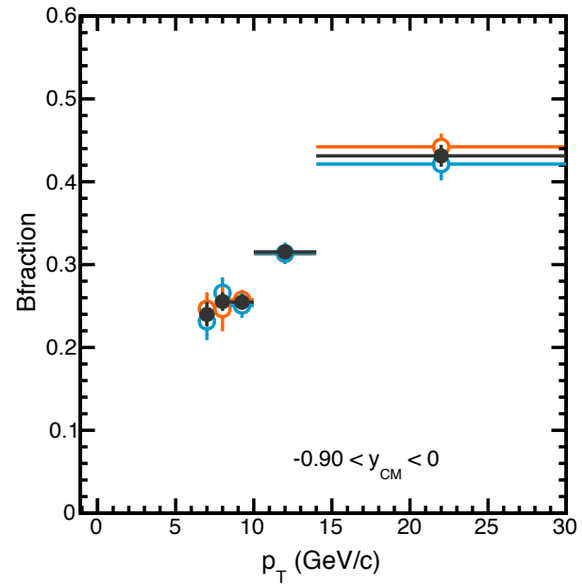
- Discrepancy between Pbp and pPb
  - p_T dependence fluctuates (more in pPb with less statistics)

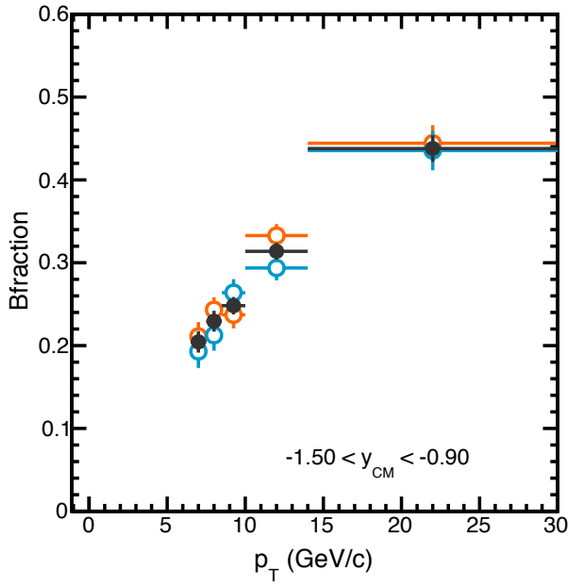
B-fraction : pA merged

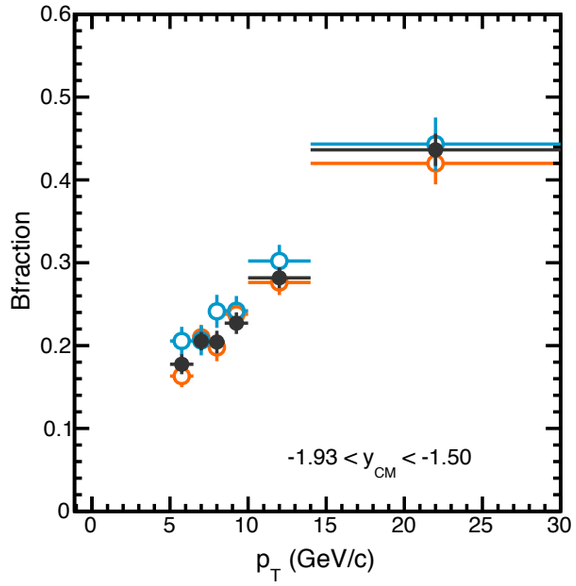


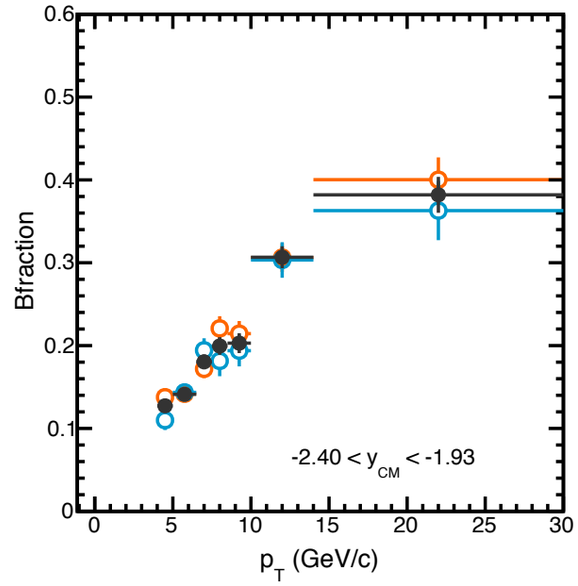


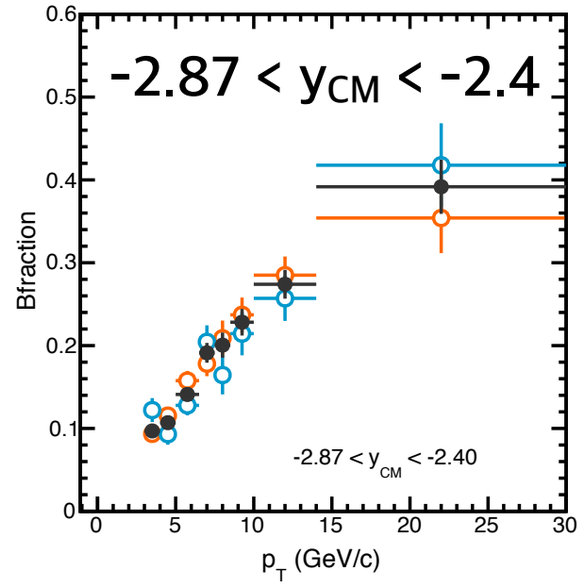








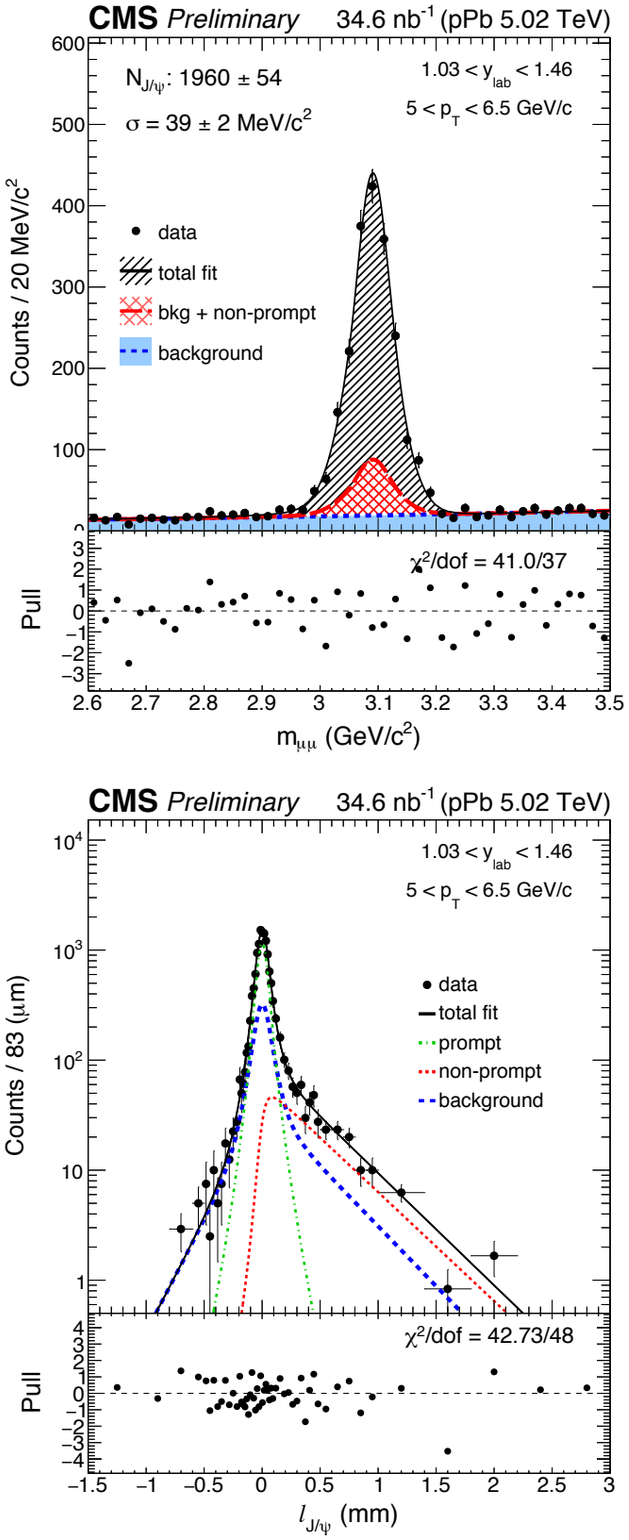




- more stable when merged (Pbp + pPb) datasets are fitted at once

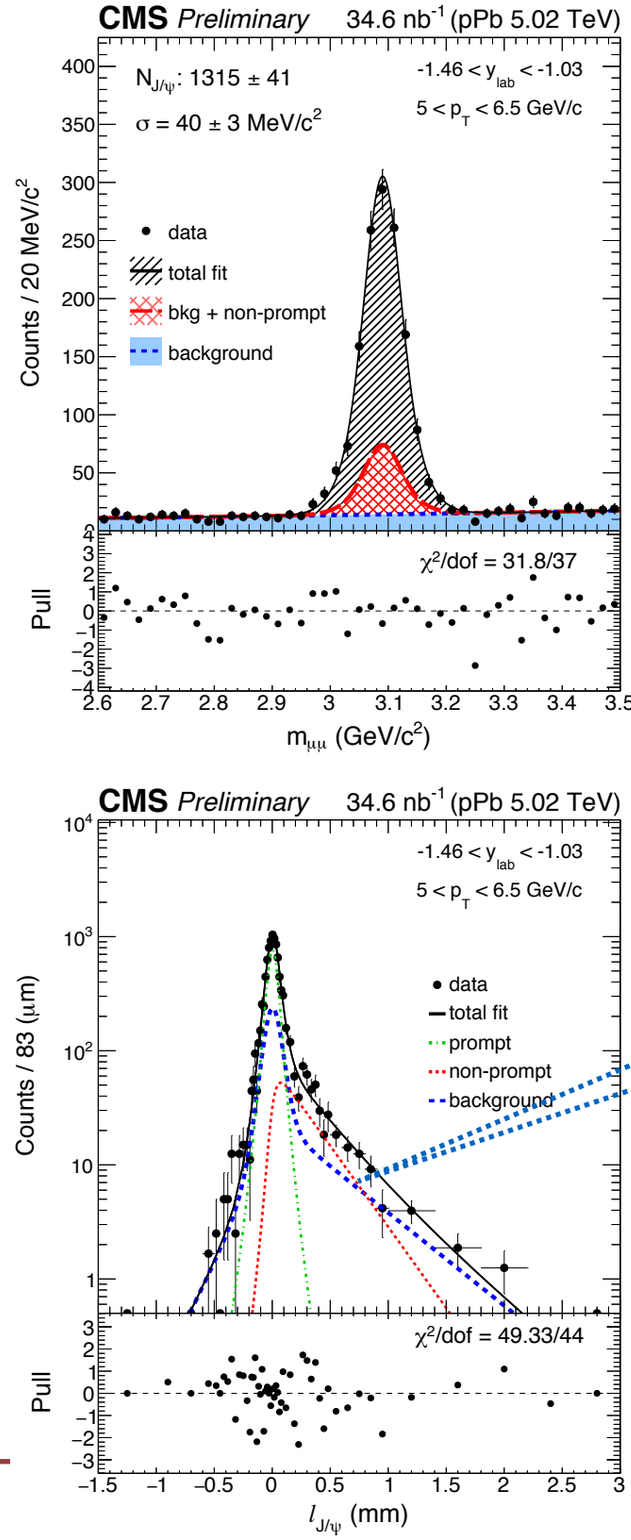
fit example

Pbp



+

pPb



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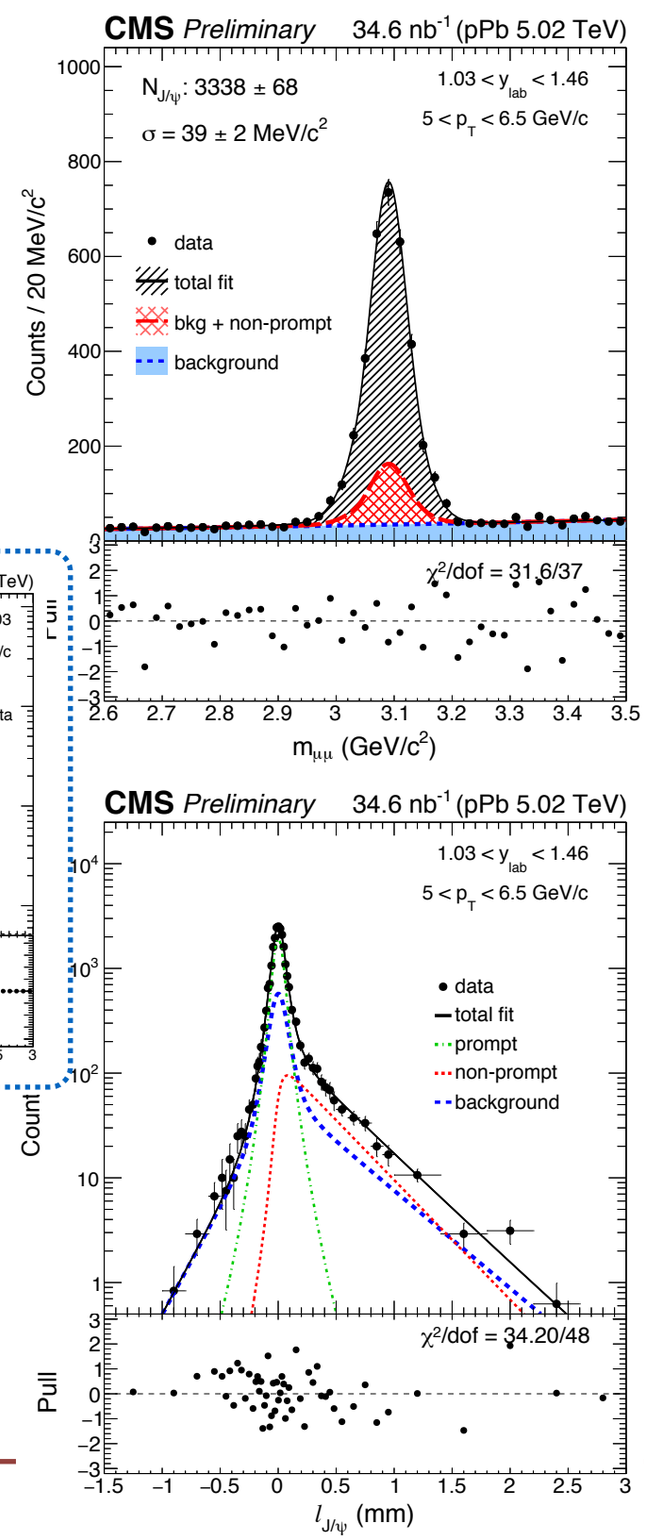
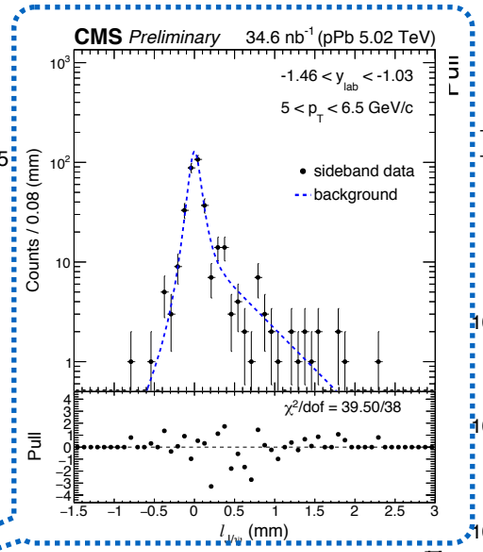
merged





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ee

Efficiency in one shot

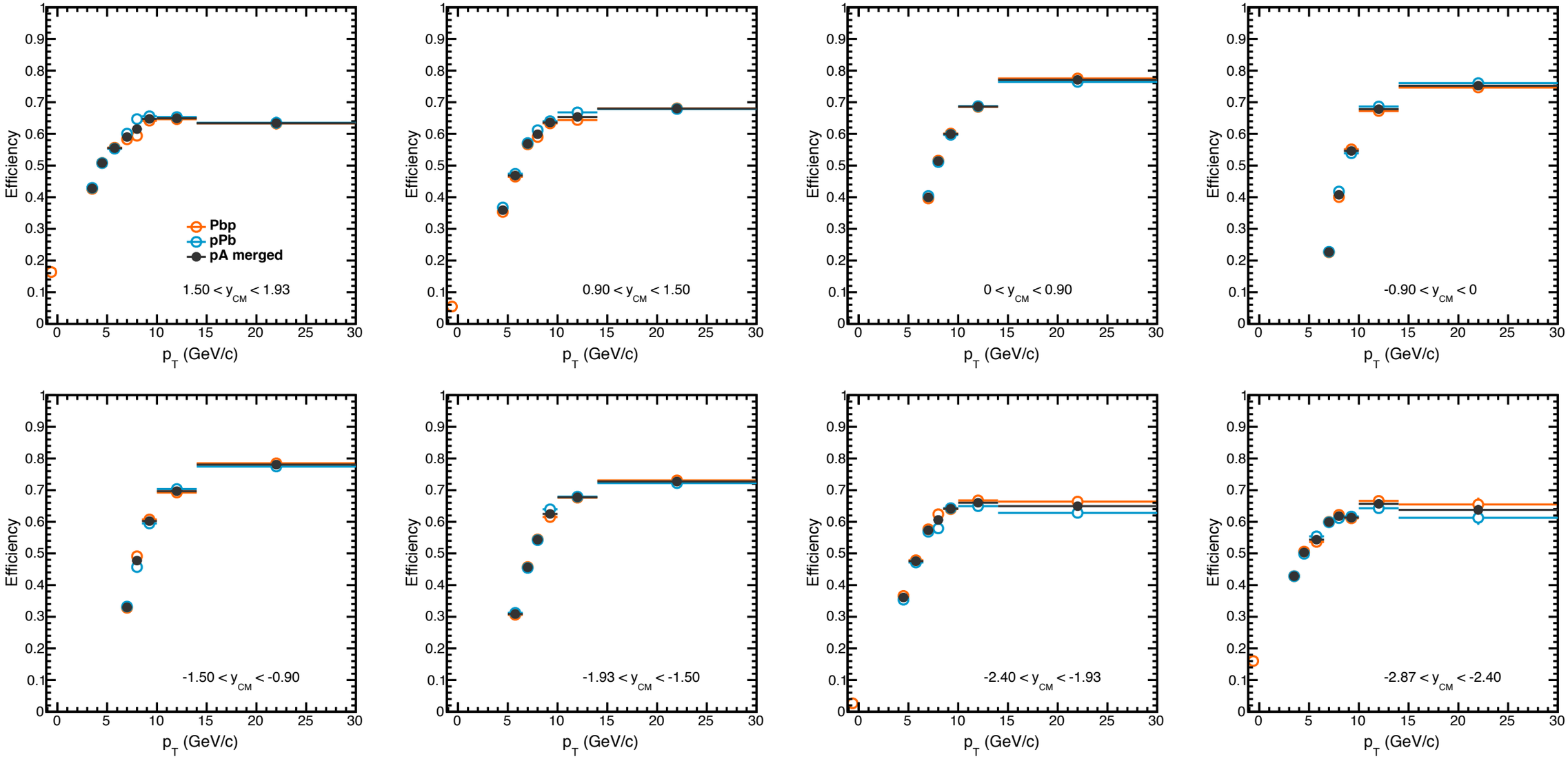
- luminosity-weighted sum

$$\varepsilon(p_{\mathrm{T}}, y_{\mathrm{CM}}) = \frac{\mathcal{L}_{int}^{\mathrm{Pbp}} \times \varepsilon^{\mathrm{Pbp}}(p_{\mathrm{T}}, y_{\mathrm{CM}}) + \mathcal{L}_{int}^{\mathrm{pPb}} \times \varepsilon^{\mathrm{pPb}}(p_{\mathrm{T}}, y_{\mathrm{CM}})}{\mathcal{L}_{int}^{\mathrm{Pbp}} + \mathcal{L}_{int}^{\mathrm{pPb}}}$$

L^{Pbp} = 20.664 /nb (59.7%)

L^{pPb} = 13.958 /nb (40.3%)

L^{tot} = 34.622 /nb

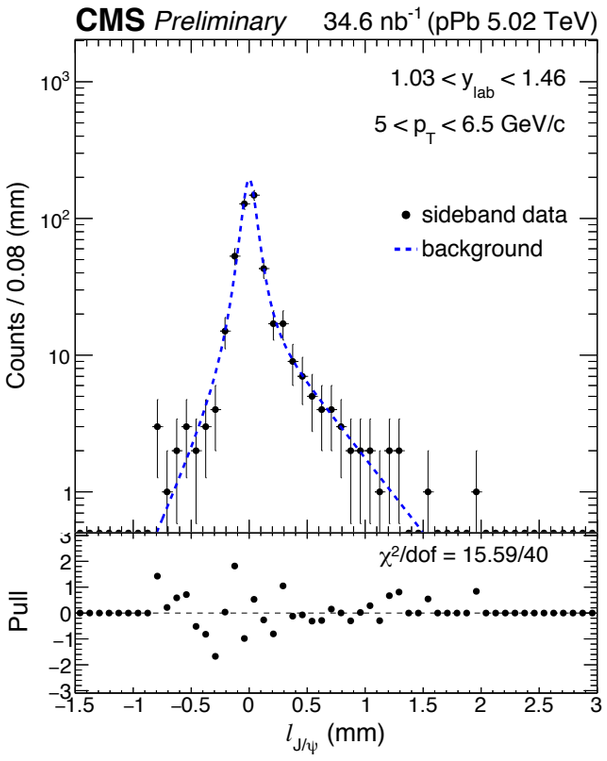


- Pbp, pPb and Pbp+pPb match each other

back up

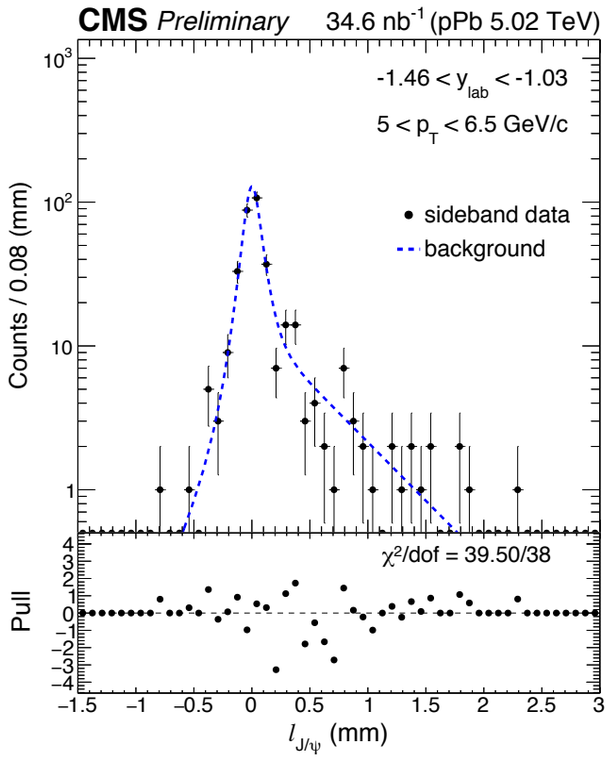
B-fraction : pA merged

Pbp



+

pPb



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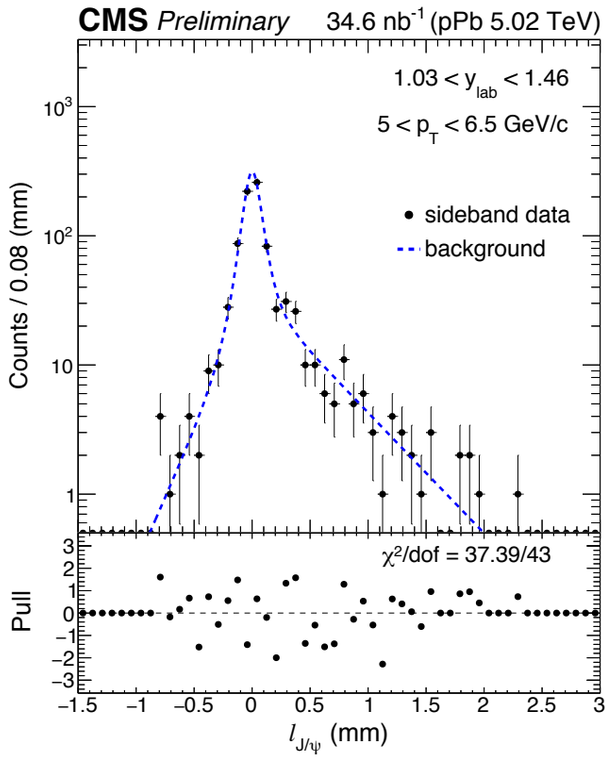
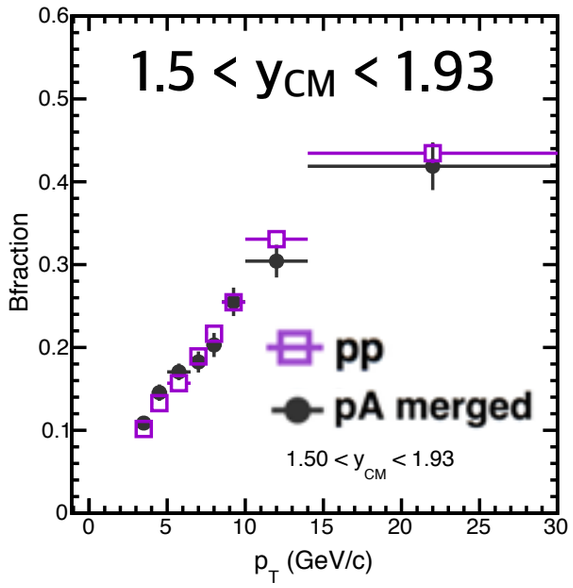
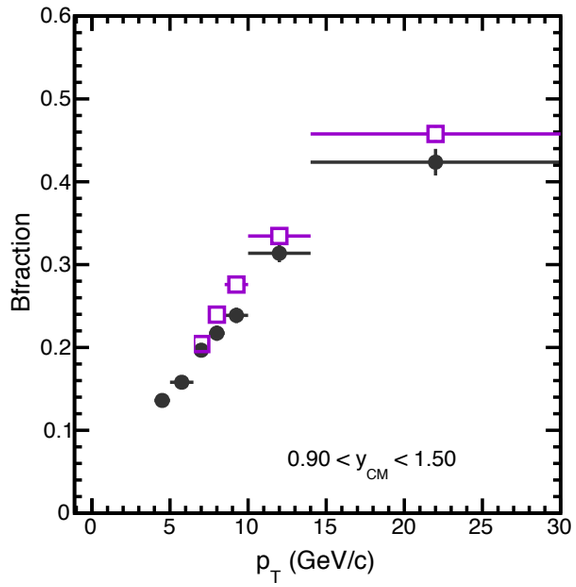
merged

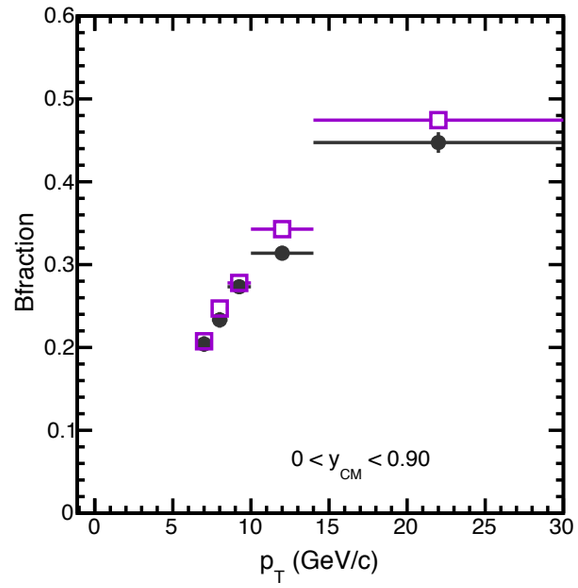


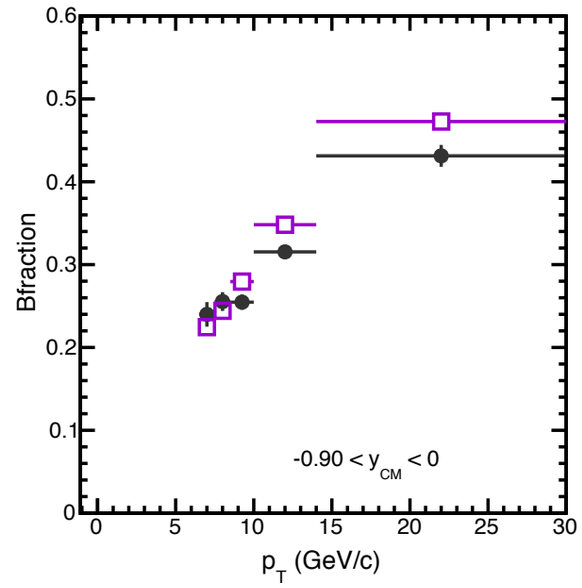
- poor description of bkg PDF due to low statistics in SB

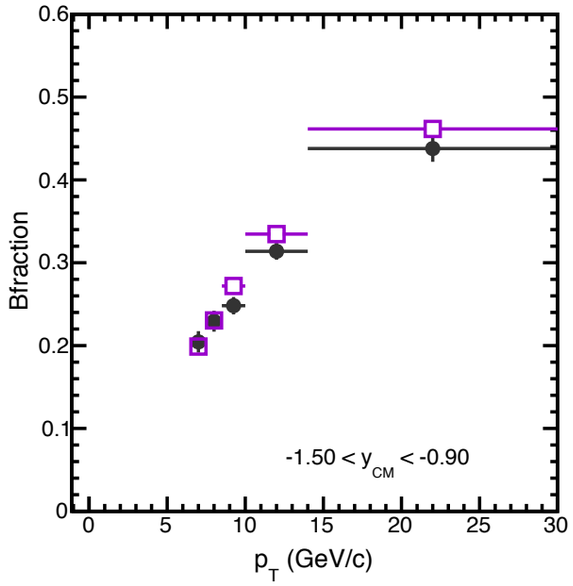
B-fraction : pp

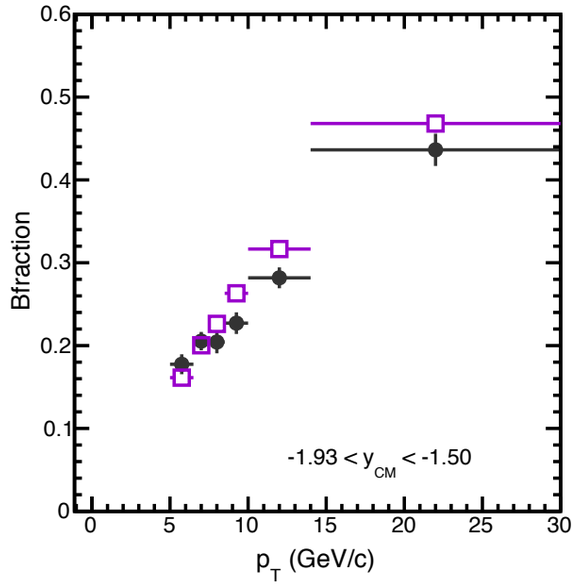


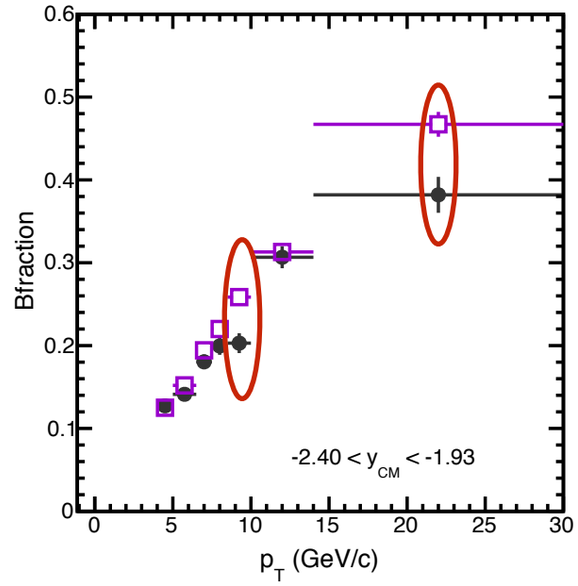


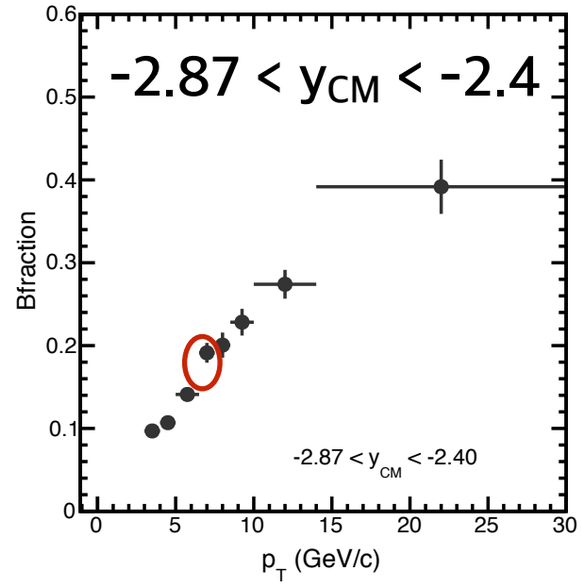












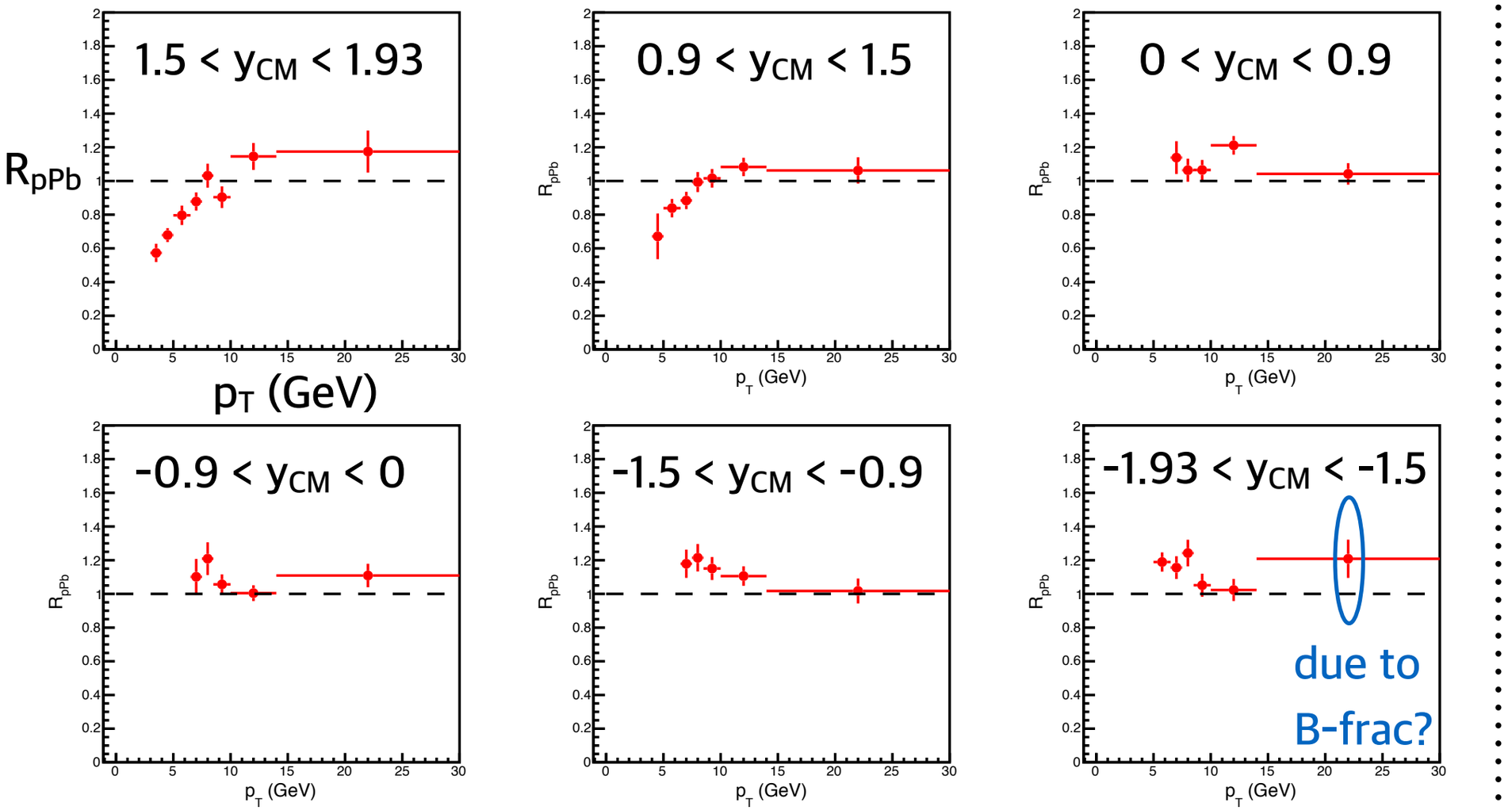
- Generally agree
- slightly higher B-fraction for pp at high pT? (SB?)
- to be checked bin by bin when official MC is ready

Quick check on R_{pPb}

$$R_{\mathrm{pPb}}(y, p_{\mathrm{T}}) = \frac{\mathrm{d}^2\sigma^{\mathrm{J}/\psi}_{\mathrm{pPb}}/\mathrm{d}y\mathrm{d}p_{\mathrm{T}}}{A_{\mathrm{Pb}} \cdot \mathrm{d}^2\sigma^{\mathrm{J}/\psi}_{\mathrm{pp}}/\mathrm{d}y\mathrm{d}p_{\mathrm{T}}}$$

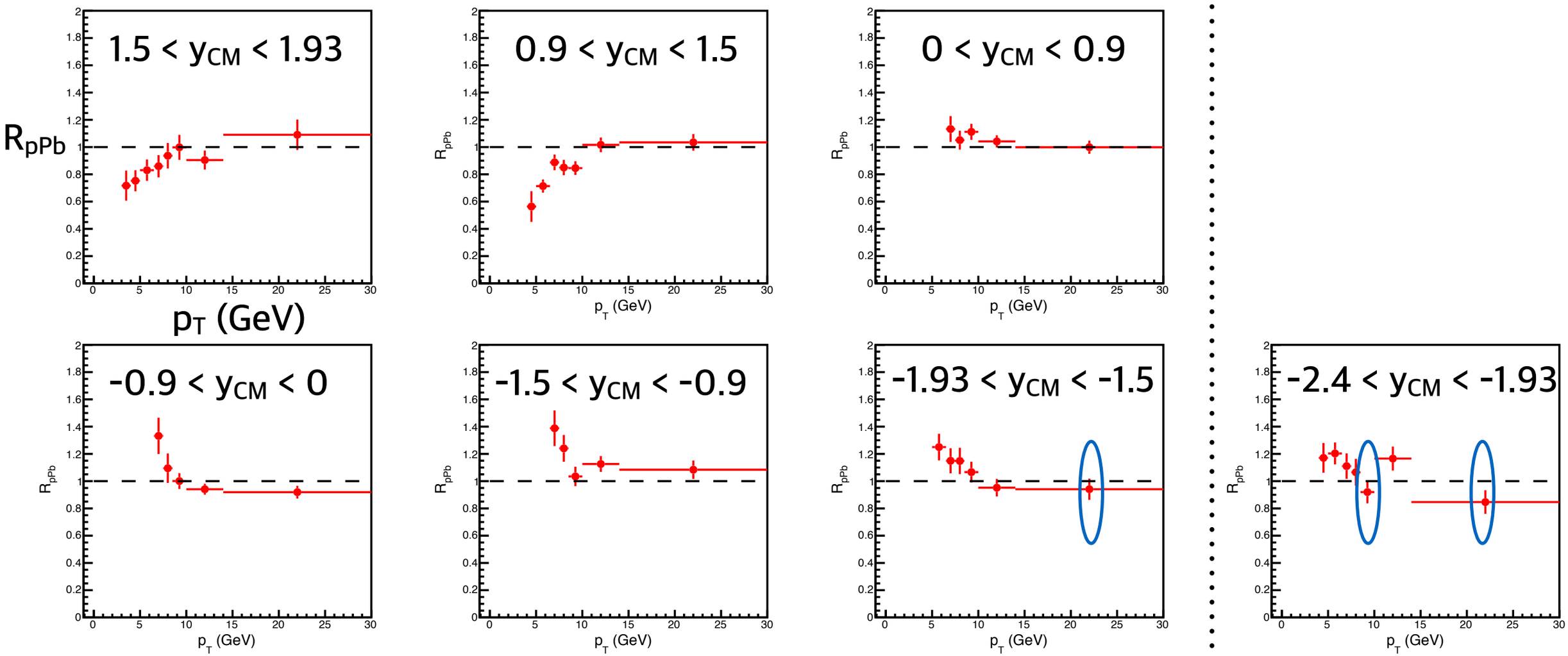
pp L_{int} = 26.3 pb^{-1}
pPb L_{int} = 34.6 nb^{-1}

- prompt J/psi
  - No z vertex weight, No tnp SF, fitting results NOT tuned
  - R_{pPb} < 1 at low pT, forward?



Quick check on R_{pPb}

- Non-prompt J/psi
  - Less suppression at low pT, forward?
  - What is going on at low pT backward (R_{pPb} > 1)?



Luminosity

- 20131230 HIN meeting: https://indico.cern.ch/event/289691/contribution/1/attachments/540932/745689/lumi.pdf
- (my slide : 20140117)

- Recorded luminosity values:

lumiCalc2.py --normtag HFV2e -i Cert_210498-211631_HI_PromptReco_Collisions13_JSON_v2.txt -b stable overview --end 211256

L (pPb) = (20.7 ± 0.7) / nb

lumiCalc2.py --normtag HFV2e -i Cert_210498-211631_HI_PromptReco_Collisions13_JSON_v2.txt -b stable overview --begin 211257

L (Pbp) = (14.0 ± 0.5) / nb

L (pPb and Pbp) = (34.6 ± 1.2) / nb

lumiCalc2.py --normtag HFV2e -i Cert_211739-211831_2760GeV_PromptReco_Collisions13_JSON.txt -b stable overview

L (pp) = (5.43 ± 0.20) / pb

- My Twiki (lumiCalc2.py to Json) : https://nuclear.korea.ac.kr/twiki/bin/view/Main/Programming?crypttoken=6da8ff56885278b199dee156e98b9f6a#lumi%20calculation

59.7 %

Delivered LS	Delivered(/nb)	Selected LS	Recorded(/nb)
16022	20.793	16022	20.664

== = Total : 40.3 %

Delivered LS	Delivered(/nb)	Selected LS	Recorded(/nb)
11139	14.068	11139	13.958

Delivered LS	Delivered(/nb)	Selected LS	Recorded(/nb)
27200	34.900	27200	34.622

```
\varepsilon (p_{\rm T}, y_{\rm CM}) = \frac{\mathcal{L}_{int}^{\rm Pbp} \times \varepsilon^{\rm Pbp} (p_{\rm T}, y_{\rm CM}) +\mathcal{L}_{int}^{\rm pPb}\times \varepsilon^{\rm pPb}(p_{\rm T}, y_{\rm CM})  }{\mathcal{L}_{int}^{\rm Pbp} + \mathcal{L}_{int}^{\rm pPb} }
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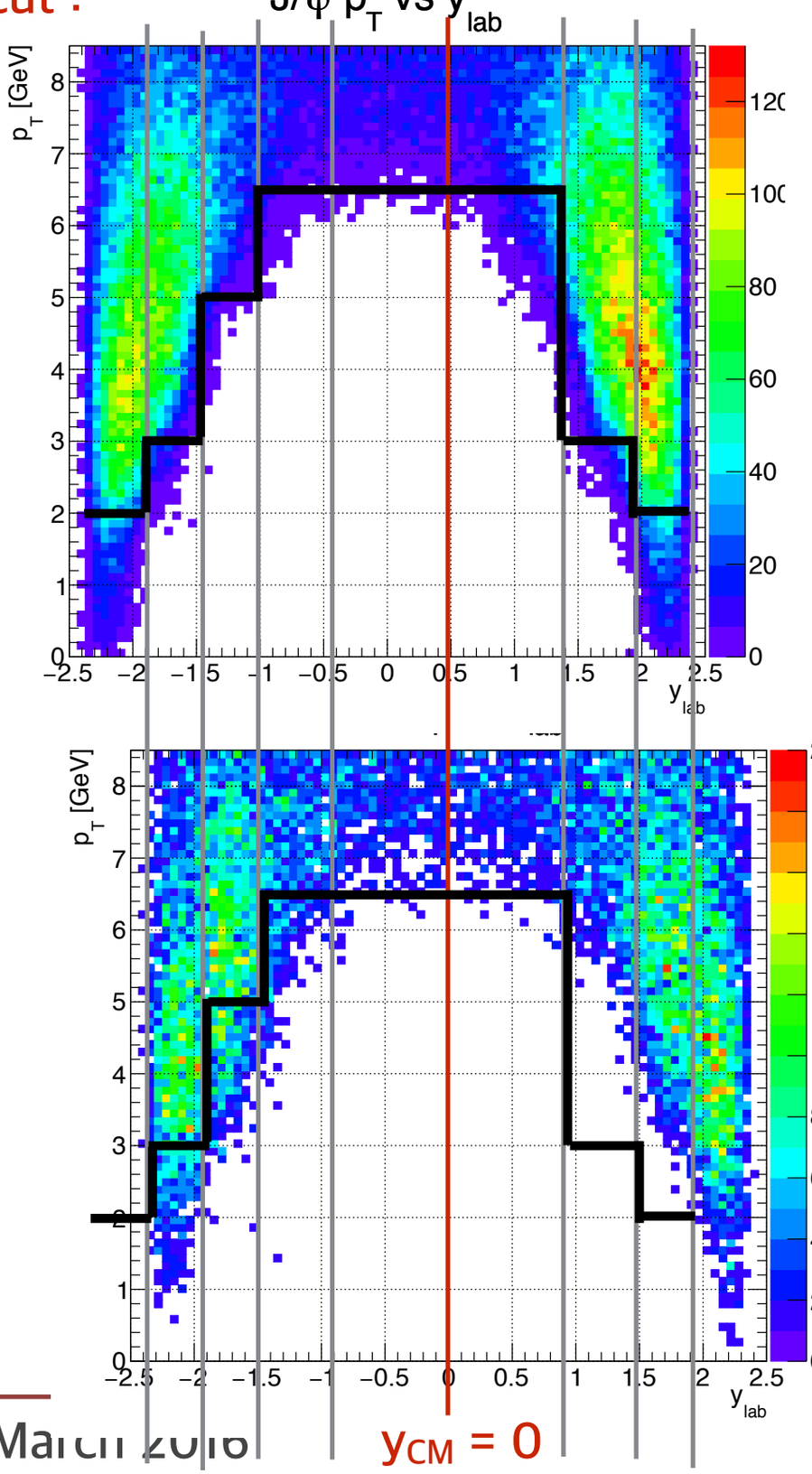
pT binnng – MC

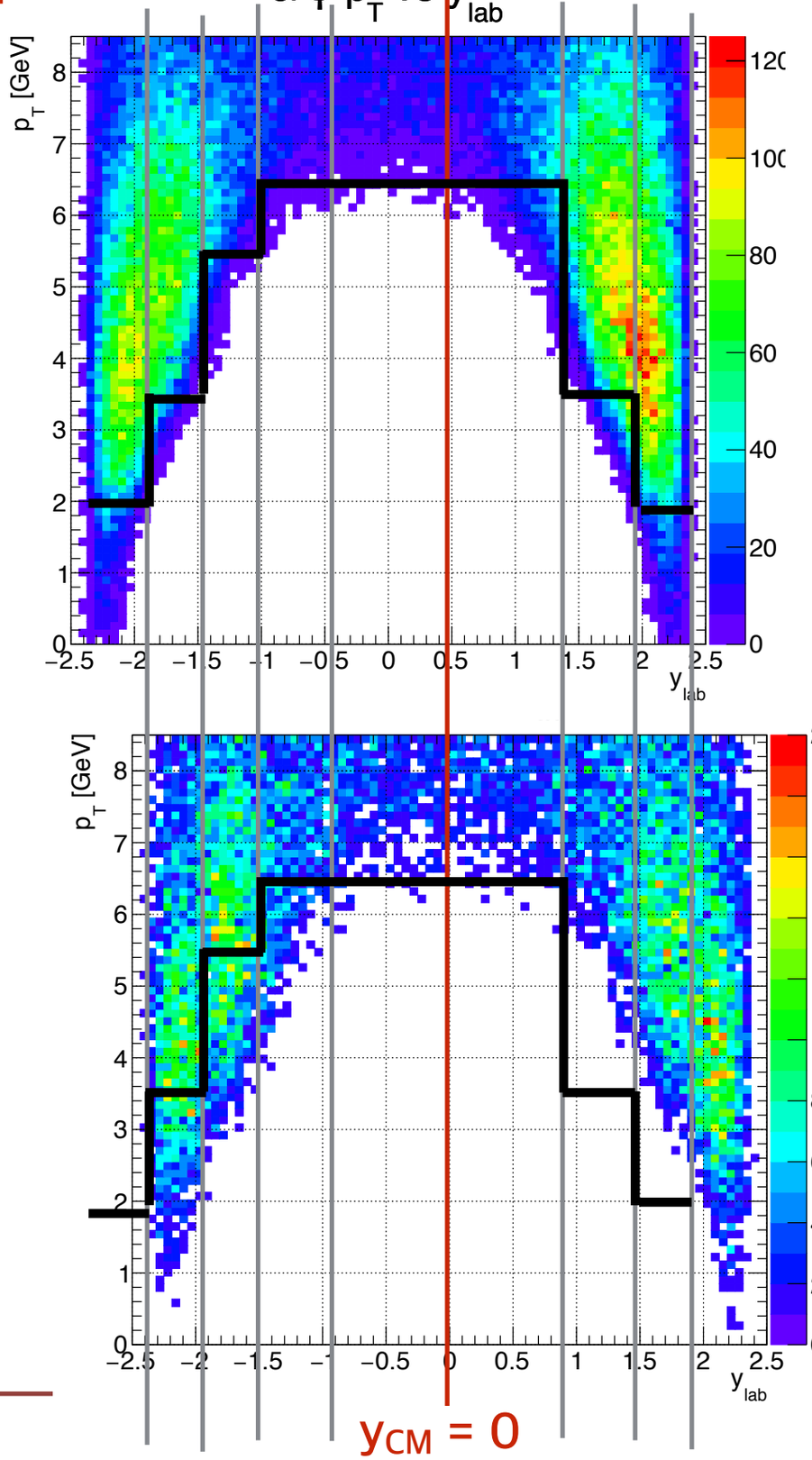
old cut :

new cut :

pPb :

pp :





$y_{CM} = 0$

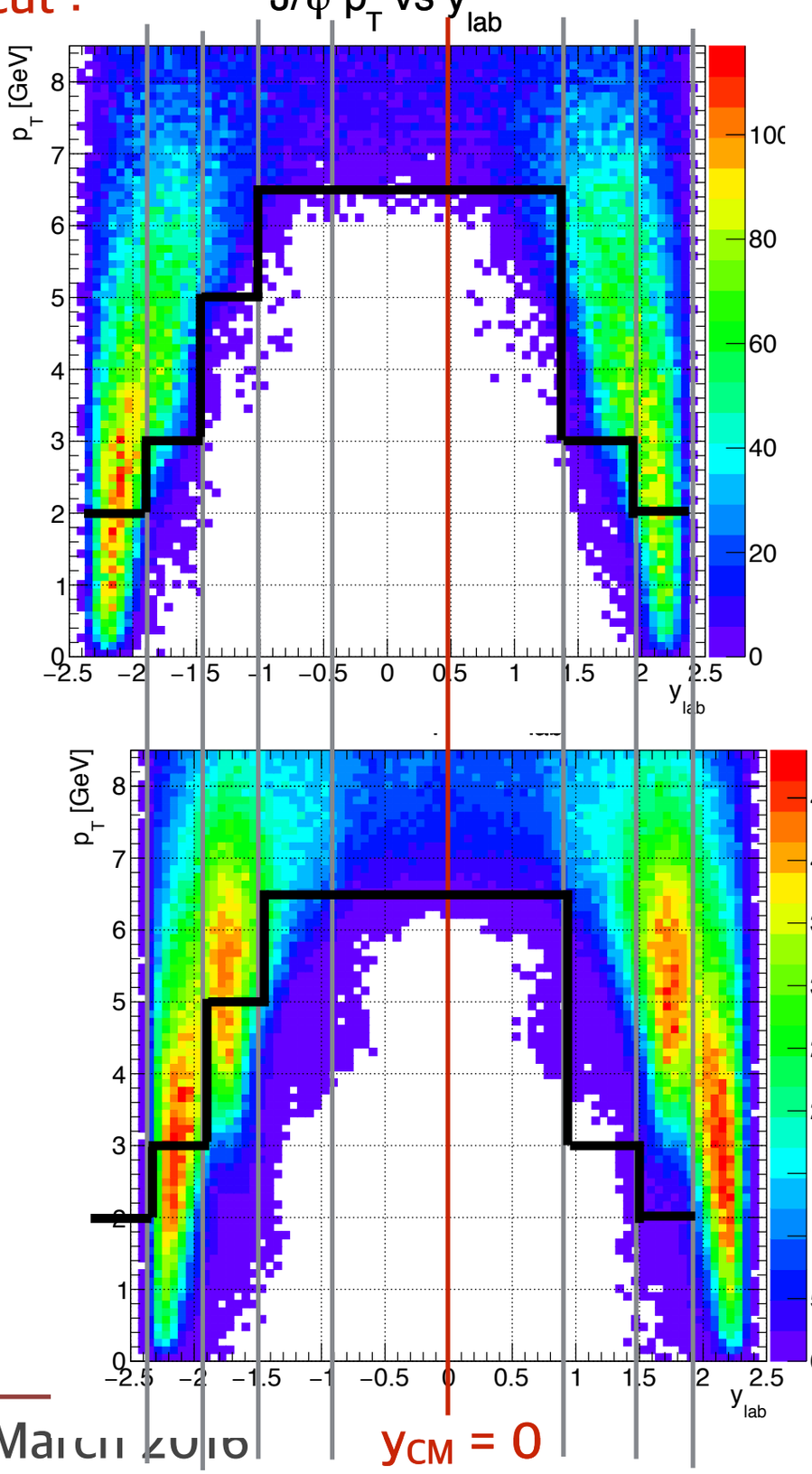
$y_{CM} = 0$

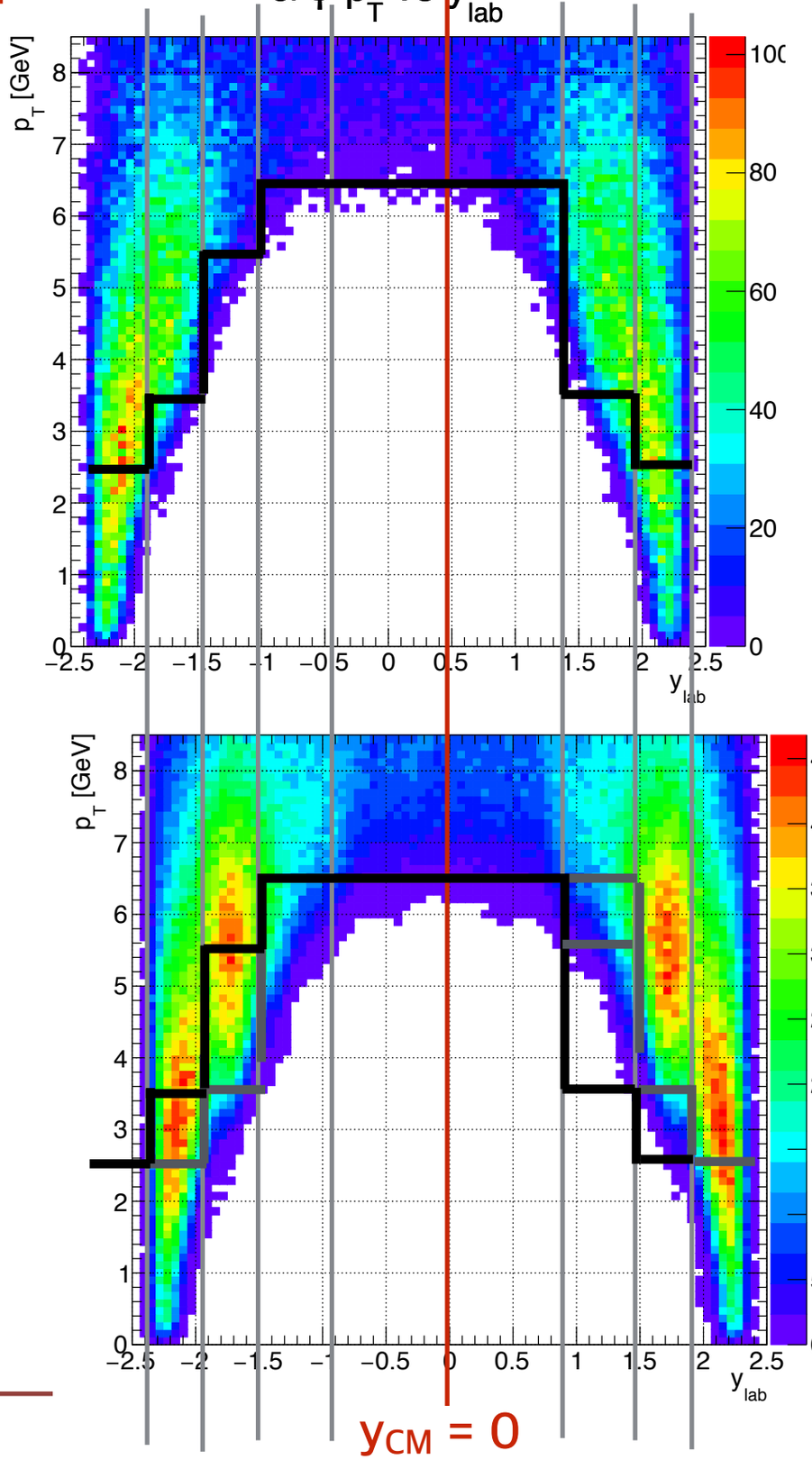
pT binnng - Data

old cut :

new cut :

pPb :





pp :

$y_{CM} = 0$

$y_{CM} = 0$