



Minimum Bias Common Plots

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Introduction

MB and UE analysis in common phase space regions at $\sqrt{s} = 0.9, 7$ TeV

- $|\eta| < 0.8$
- $p_T > 500$ MeV, 1 GeV
- $n_{\text{ch}} \geq 1$
- agreed also on initial binning (should be extended to maximize comparable ranges)

MB distributions:

first sets of common plots were done by 3 experiments!

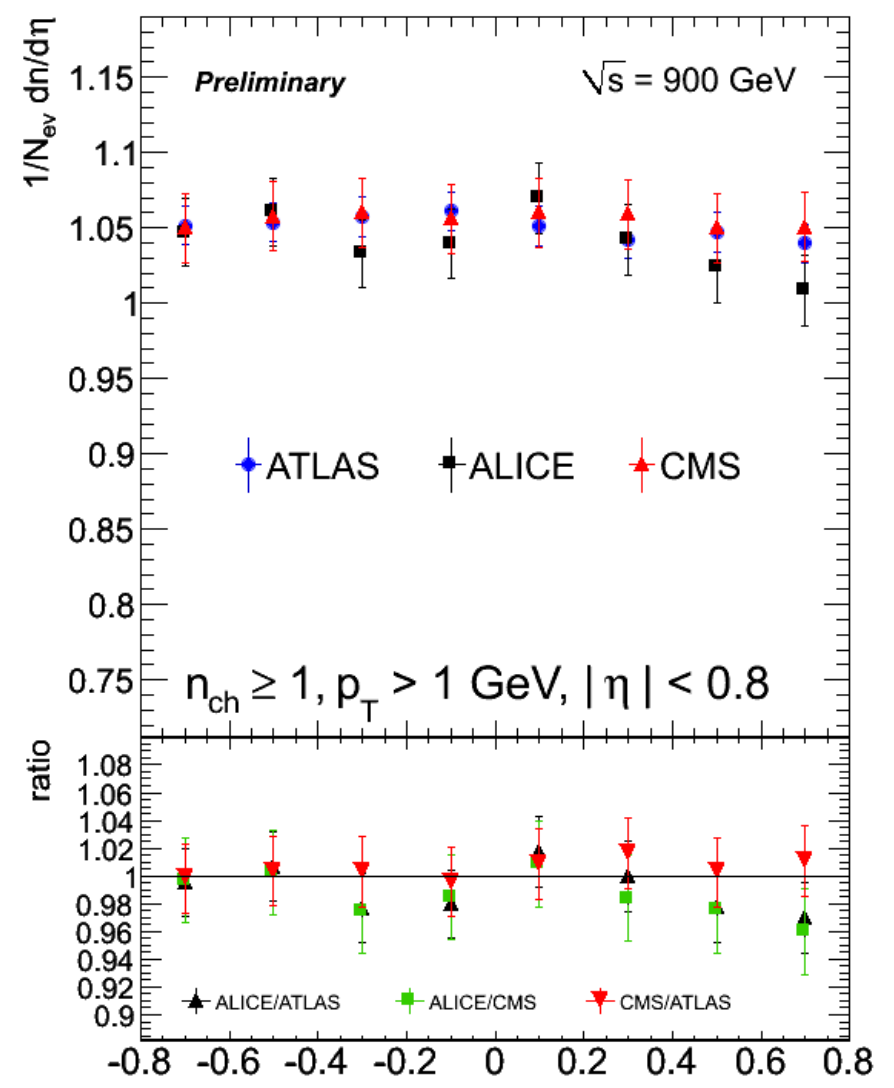
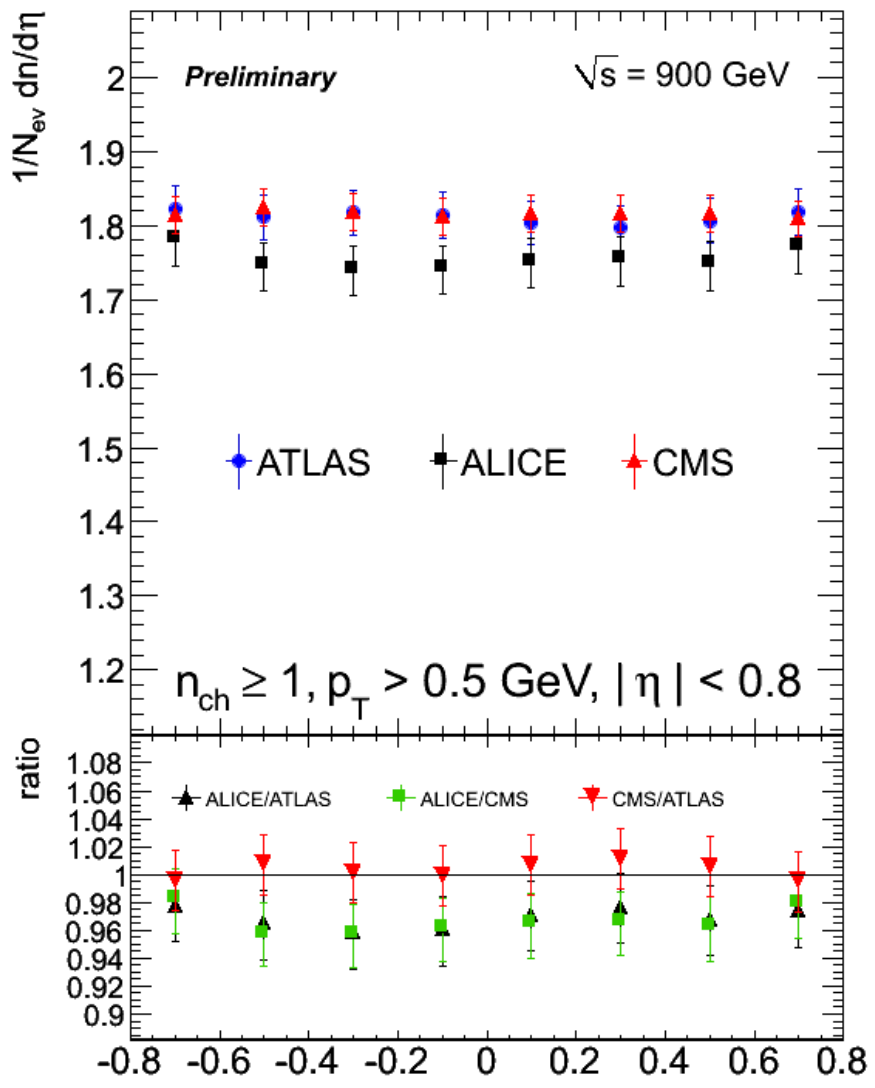
These are shown here.

All error bars indicate the total uncertainty

$$\frac{1}{N_{\text{ev}}} \cdot \frac{dN_{\text{ch}}}{d\eta}, \quad \frac{1}{N_{\text{ev}}} \cdot \frac{1}{2\pi p_T} \cdot \frac{d^2 N_{\text{ch}}}{d\eta dp_T}, \quad \frac{1}{N_{\text{ev}}} \cdot \frac{dN_{\text{ev}}}{dn_{\text{ch}}} \quad \text{and} \quad \langle p_T \rangle \text{ vs. } n_{\text{ch}}$$

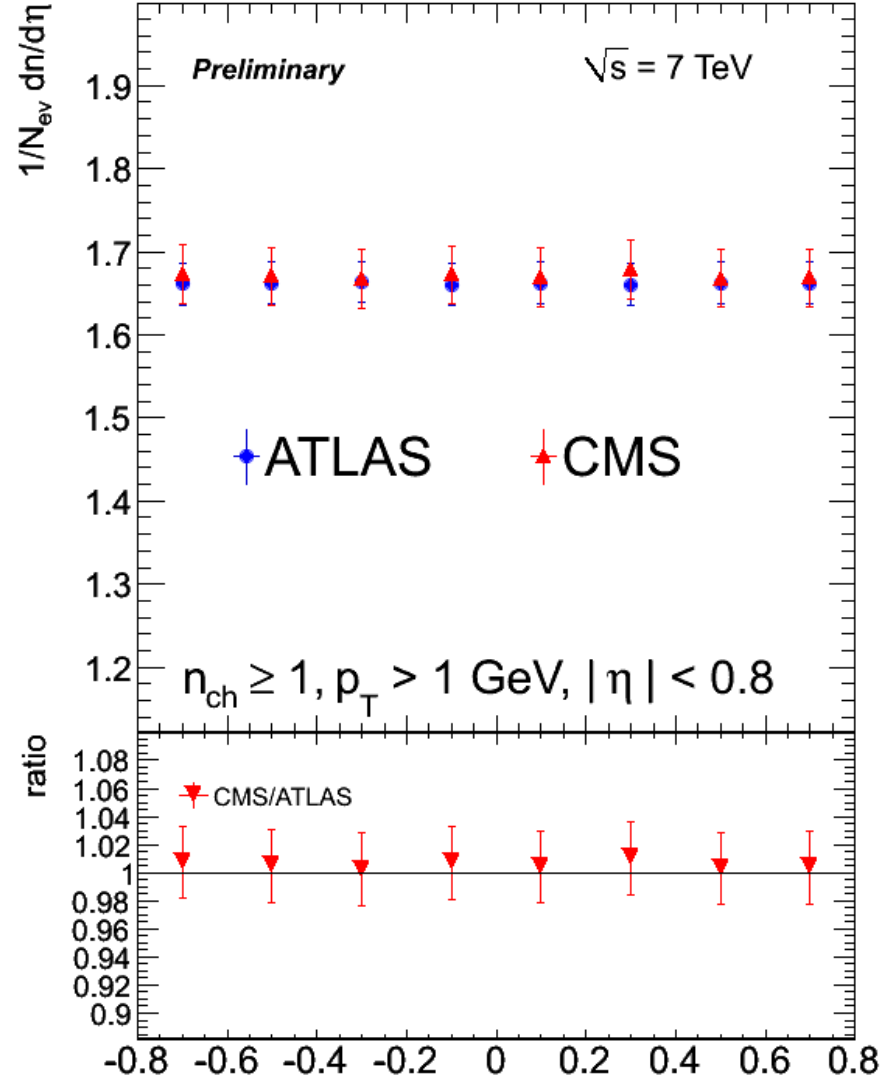
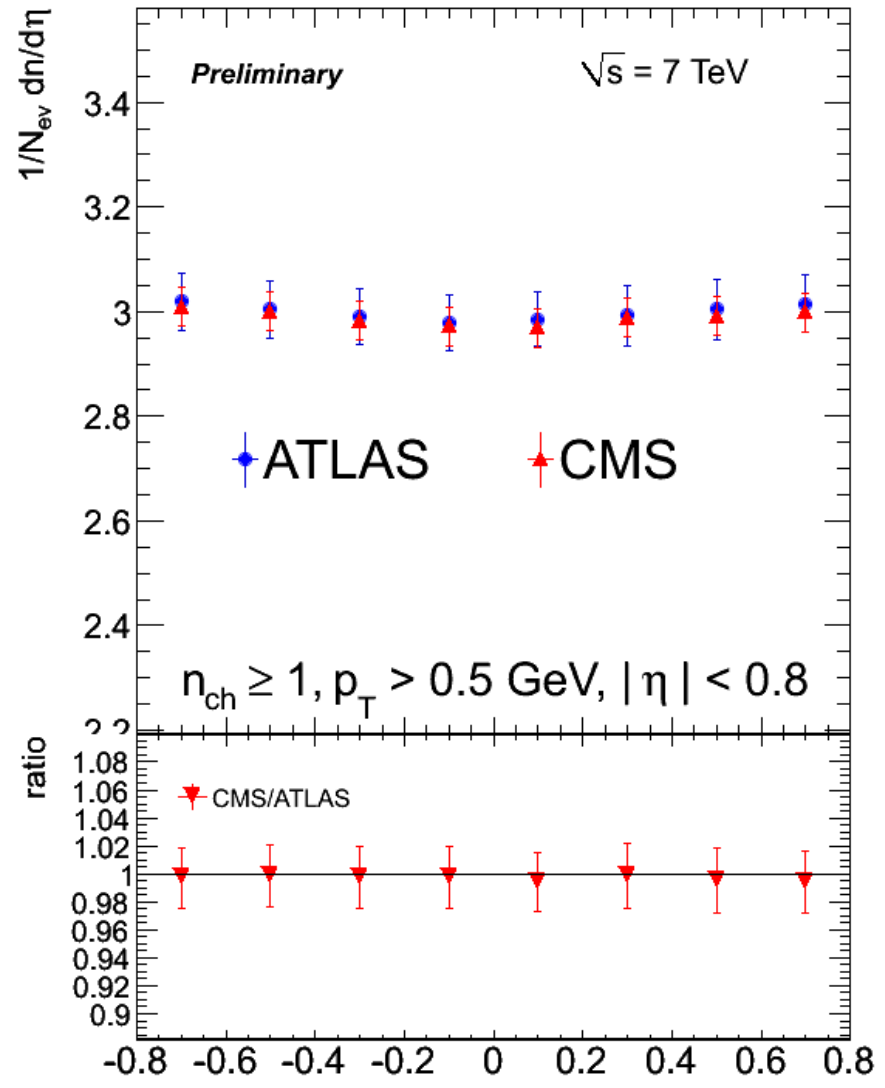
$\sqrt{s} = 900 \text{ GeV}$

$1/N_{\text{ev}} \frac{dn_{\text{ch}}}{d\eta}$

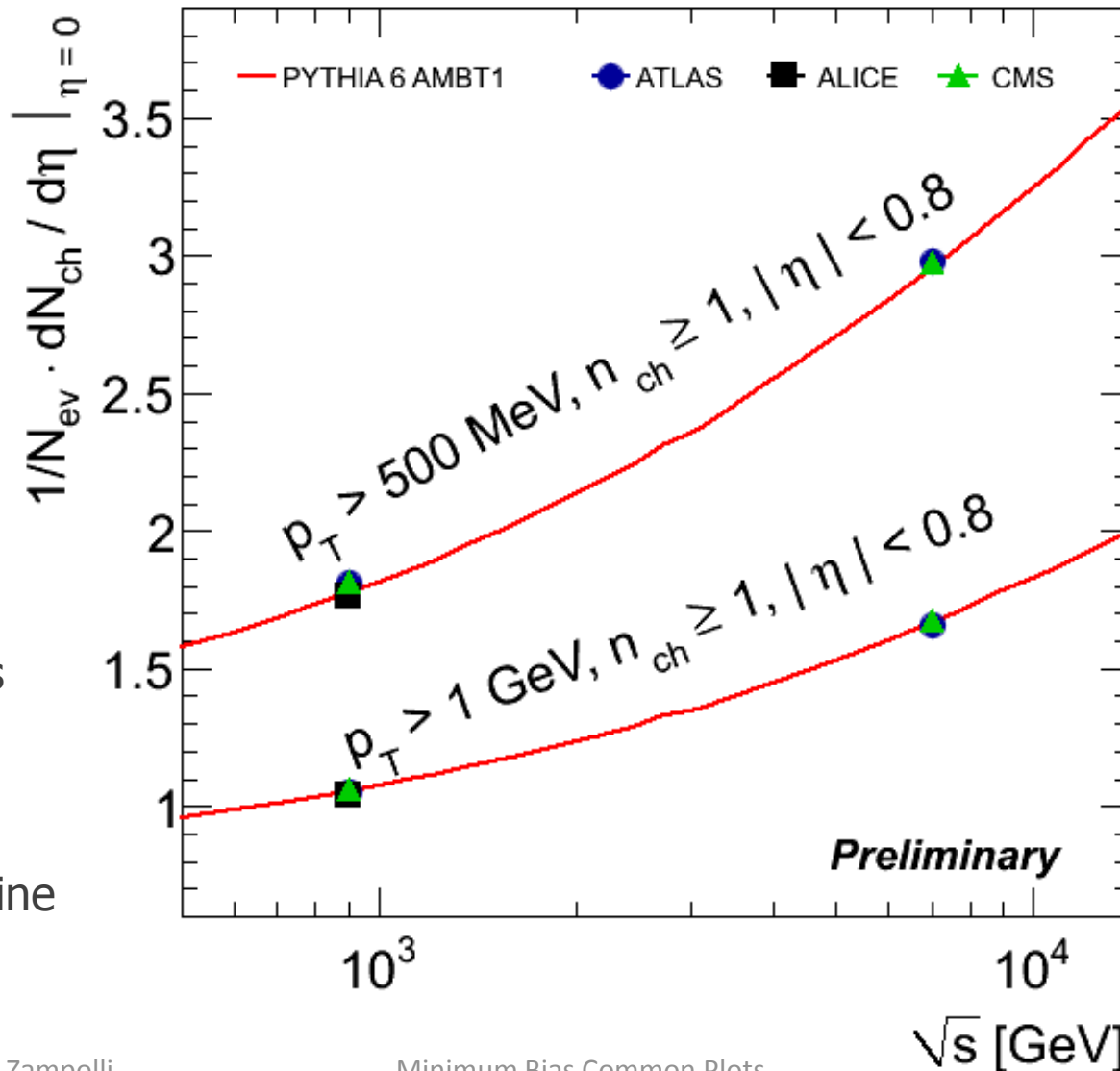


$\sqrt{s} = 7 \text{ TeV}$

$$1/N_{\text{ev}} \frac{dn_{\text{ch}}}{d\eta}$$



$1/N_{ev} dn/d\eta$ at $\eta=0$

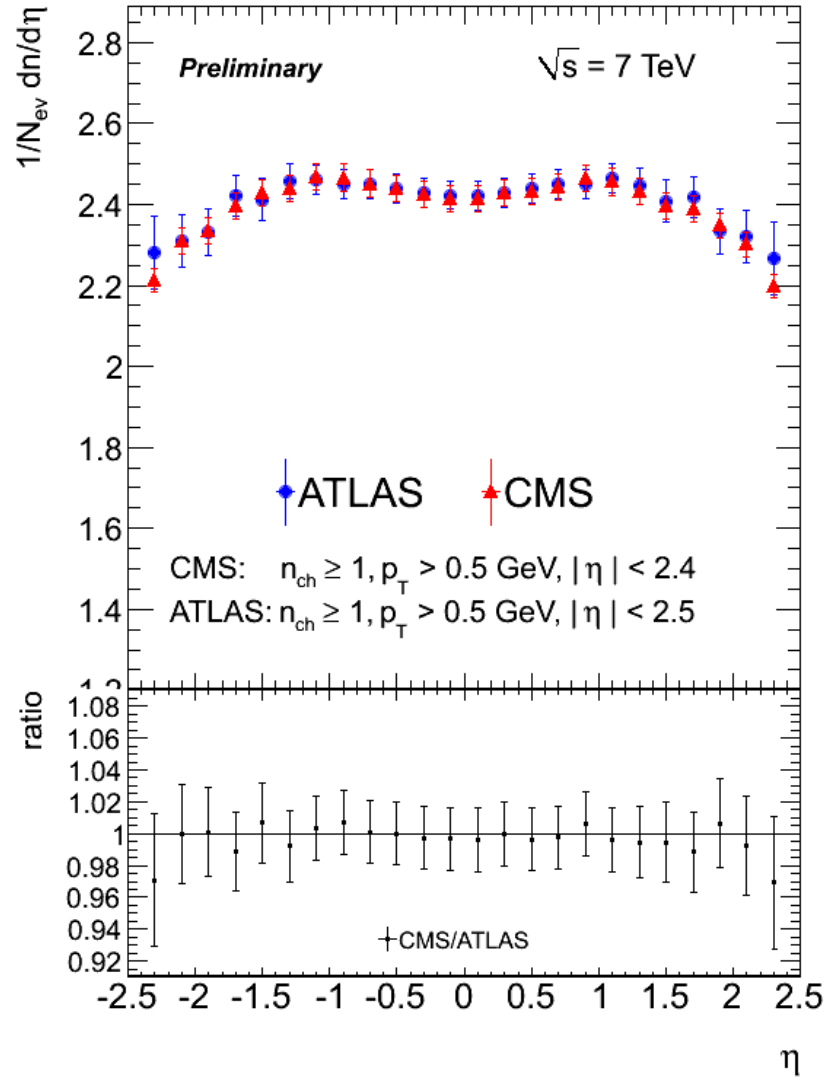
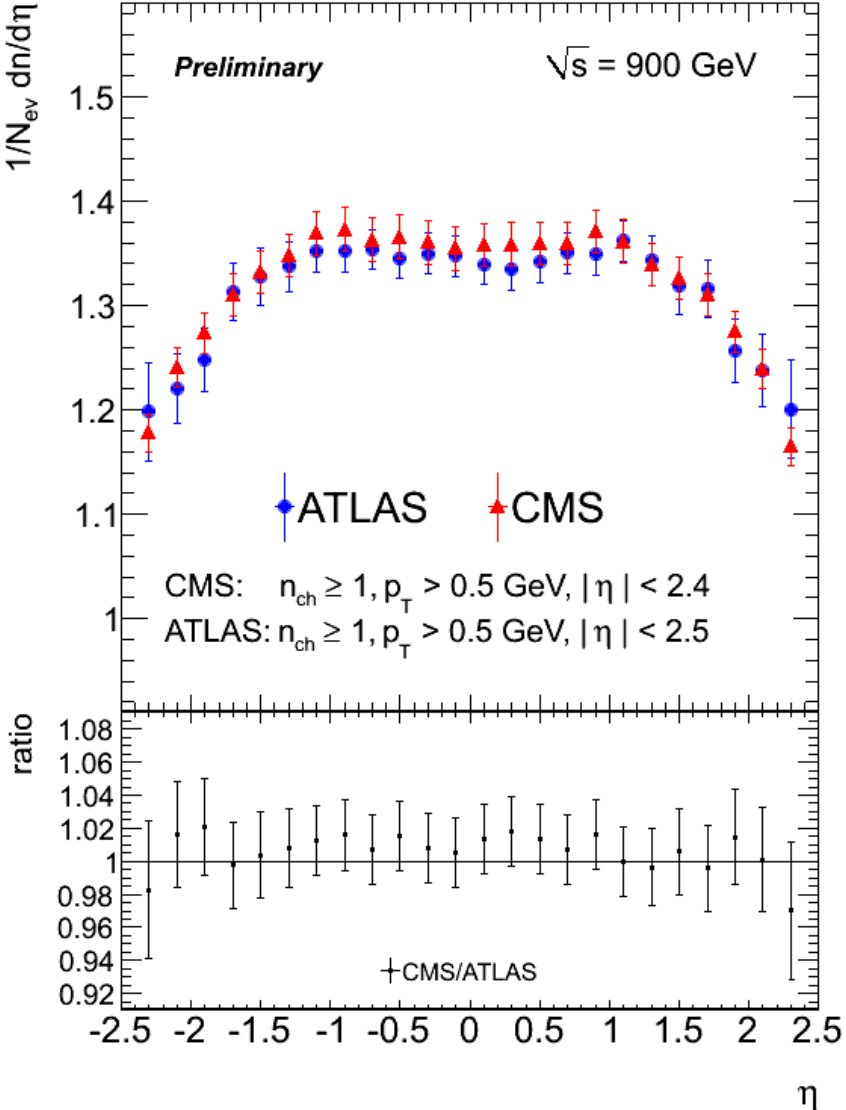


ATLAS, CMS:
average 2 bins
around $\eta = 0$

ALICE:
fit to straight line

for $p_T > 500$ MeV

Full n Comparison



Conclusion

- $1/N \, dn/d\eta$ distributions could be directly compared
 - at $\sqrt{s} = 900 \text{ GeV}$ between ALICE, ATLAS and CMS
 - at $\sqrt{s} = 7 \text{ TeV}$ between ATLAS and CMS

→ all measurements agree within 1σ

→ excellent agreement between ATLAS and CMS at $\sqrt{s} = 7 \text{ TeV}$

hope to extend the measurements with LHCb up to higher η
- ATLAS and CMS also compared INEL $dn/d\eta$ distributions for full η
- Further comparisons of the MB distributions are in progress. They will be especially interesting when analysis method is new or more sophisticated

References

- ALICE

common plots on $dn/d\eta$:

<http://indico.cern.ch/conferenceOtherViews.py?view=standard&confId=87648>

- ATLAS

all MB common plots: ATLAS-CONF-2010-101

<http://cdsweb.cern.ch/record/1317333>

new MB paper: <http://cdsweb.cern.ch/record/1317794>

- CMS

$dn/d\eta$: CMS PAS QCD-10-024