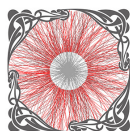# Event activity dependence of the J/ψ production in p-Pb collisions with at the LHC
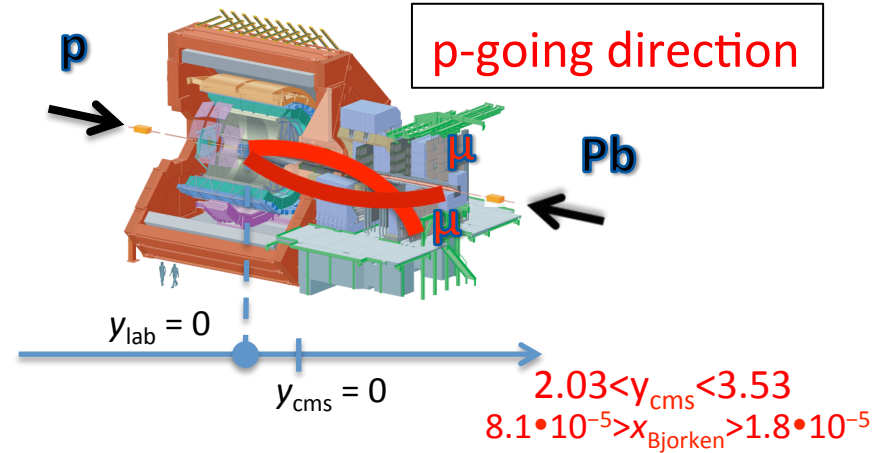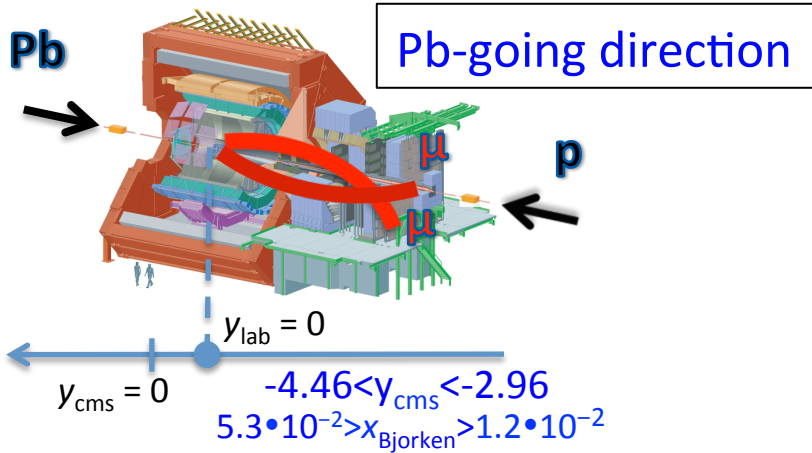
ALICE

Igor Lakomov*, IPN Orsay
*on behalf of the ALICE collaboration

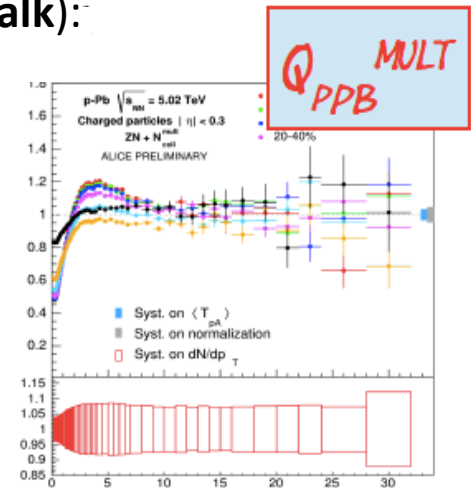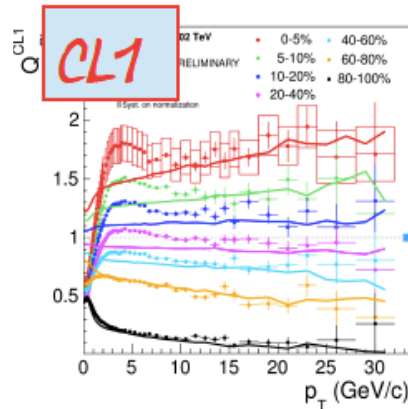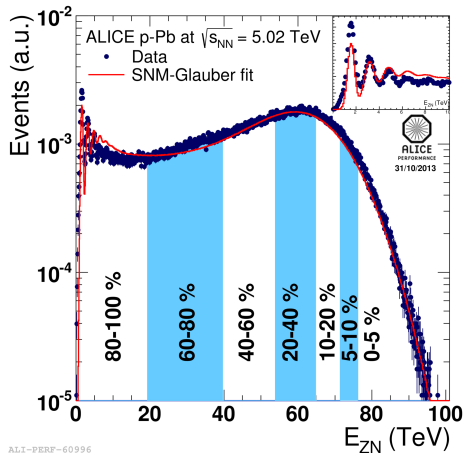XXIV QUARK MATTER
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p-Pb run in ALICE

Pb — Pb-going direction — μ — p

$y_{lab} = 0$

$y_{cms} = 0$

$-4.46 < y_{cms} < -2.96$
$5.3 \cdot 10^{-2} > x_{Bjorken} > 1.2 \cdot 10^{-2}$

p — p-going direction — μ — **Pb**

$y_{lab} = 0$

$y_{cms} = 0$

$2.03 < y_{cms} < 3.53$
$8.1 \cdot 10^{-5} > x_{Bjorken} > 1.8 \cdot 10^{-5}$

❖ J/ψ production was already studied differentially vs y and p_T. Next step – event activity.

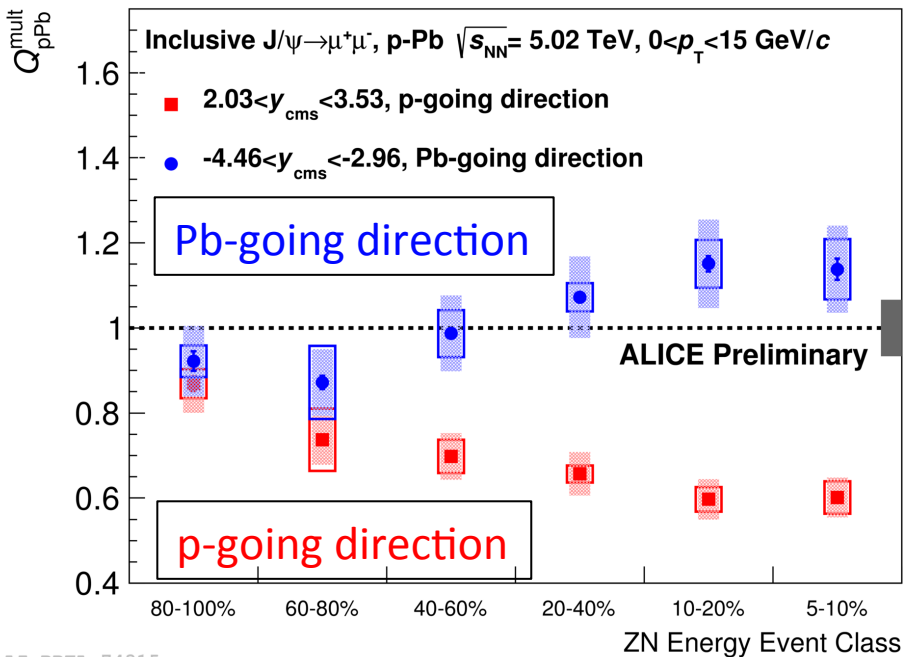❖ ZDC-based event activity estimator is used (see **Alberica Toia's talk**):

➤ Large rapidity gap between the muon spectrometer and the ZDCs

➤ Small bias: slow nucleon production ~ independent of hard processes.

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Q_{pA} vs event activity…

- Due to a potential residual bias in the centrality estimation (T^i_{pPb}) , the ratio is not necessarily equal to 1 in the absence of nuclear effects, therefore, we refrain from employing the notation R_{pPb}, bus use Q_{pPb} instead.

$$Q_{pPb}^{J/\psi,i} = \frac{Y^i_{pPb}}{\langle T^i_{pPb} \rangle \sigma_{pp}^{J/\psi \to \mu^+ \mu^-}}$$

- T^i_{pPb} is the nuclear thickness function in a given ZN energy event class i.
- $\sigma_{pp}^{J/\psi \to \mu\mu}$ – interpolated pp cross-section at √s = 5.02 TeV.

Inclusive J/ψ→μ⁺μ⁻, p-Pb √s_{NN}= 5.02 TeV, 0<p_T<15 GeV/c

- 2.03<y_{cms}<3.53, p-going direction
- -4.46<y_{cms}<-2.96, Pb-going direction

Pb-going direction

p-going direction

ALICE Preliminary

ZN Energy Event Class

LI–PREL–74315

➢ Significant difference between event activity dependence at backward and forward *y*.

➢ At backward *y*, Q_{pPb} is consistent with unity with a hint of increase at large event activity.

➢ At forward *y*, the suppression of the J/ψ production increases with the event activity and reaches up to 45%.
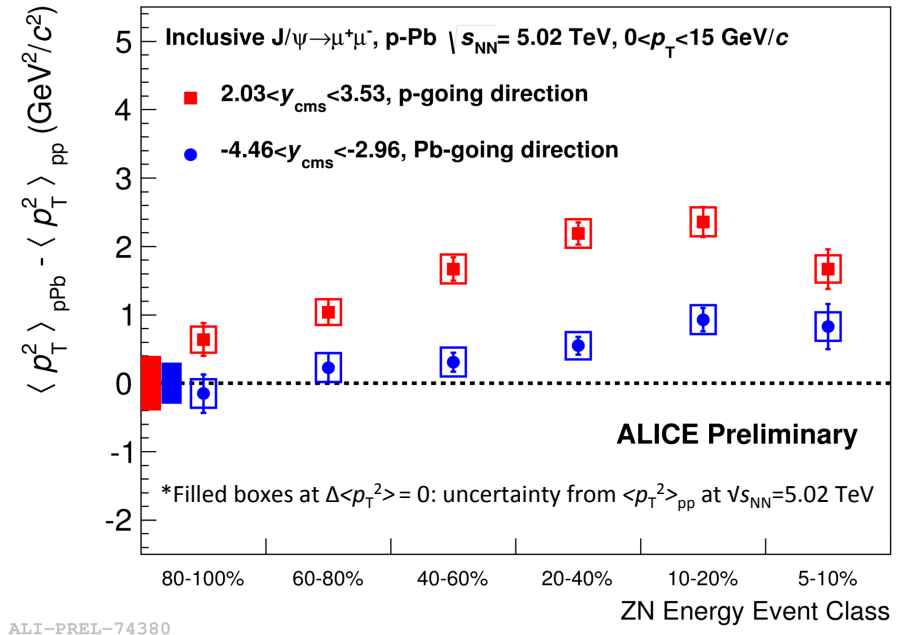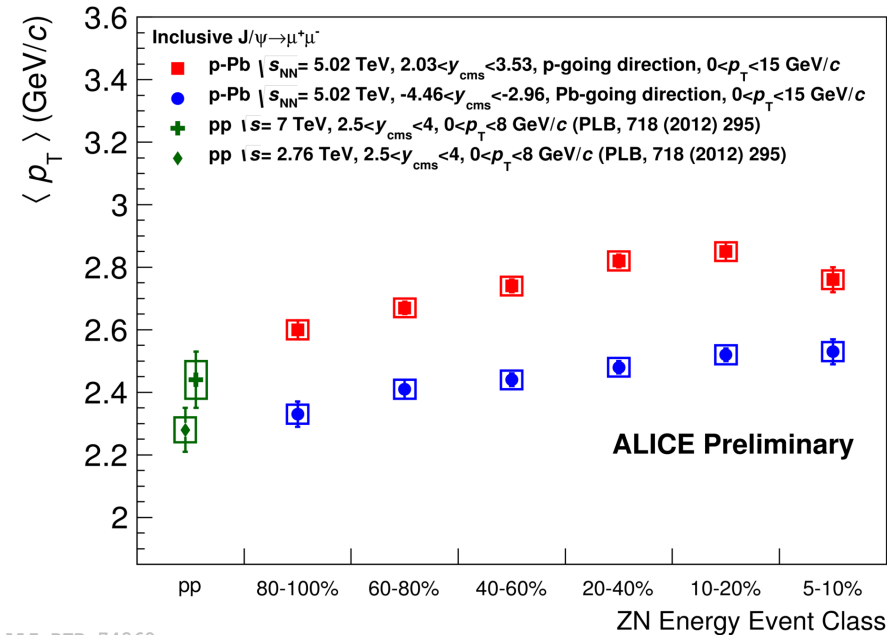
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Q_{pA} vs event activity and vs p_T
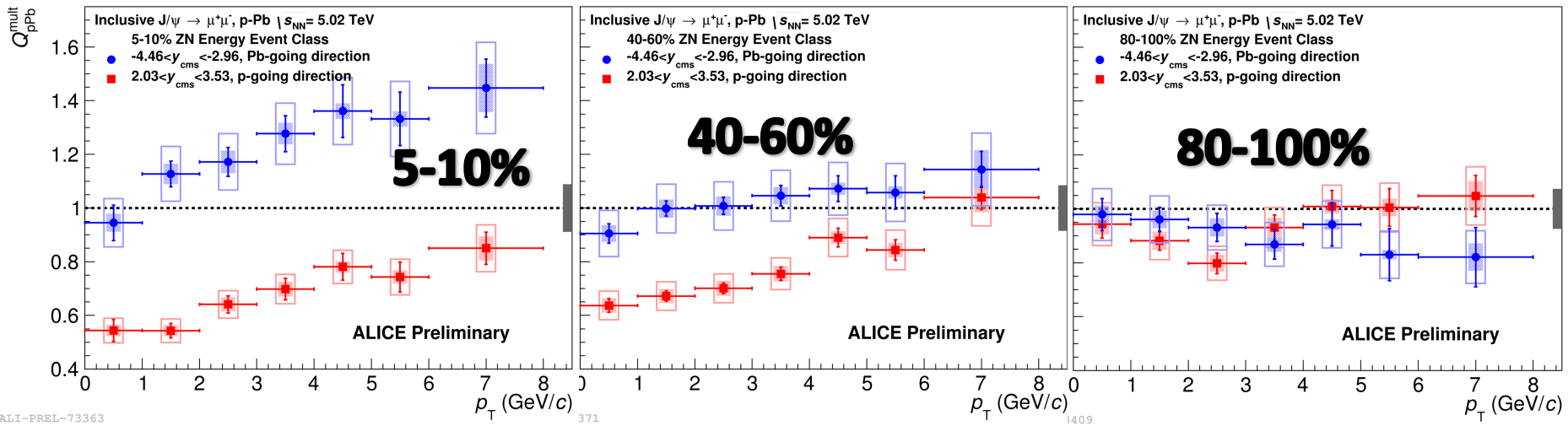
> Significant difference of the p_T dependence of Q_{pPb} between different event activity classes.

> At large event activity Q_{pPb} at backward y is much higher than unity (up to 1.45) at high p_T.

 ◇ Can it be described by antishadowing?

$\langle p_T \rangle$ and $\Delta\langle p_T^2 \rangle_{pPb}$ vs event activity

ALI−DER−74368

ALI−PREL−74380

➢ J/ψ production in p-Pb has a harder p_T distribution at forward y than at backward y for the full event activity range.

➢ $\Delta\langle p_T^2 \rangle_{J/\psi}$ at forward y is consistent with a strong effect from MPI while at backward y it is consistent with 0.

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Thank you for your attention!
Danke schön!