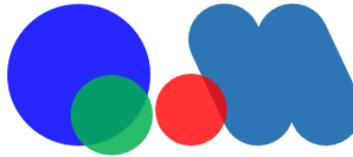


A Large Ion Collider Experiment



ALICE
A JOURNEY OF DISCOVERY



QUARK MATTER 2015

Sep. 27 – Oct. 3, 2015 Kobe, Japan



Federico Antinori

(INFN Padova, Italy)

for the ALICE Collaboration

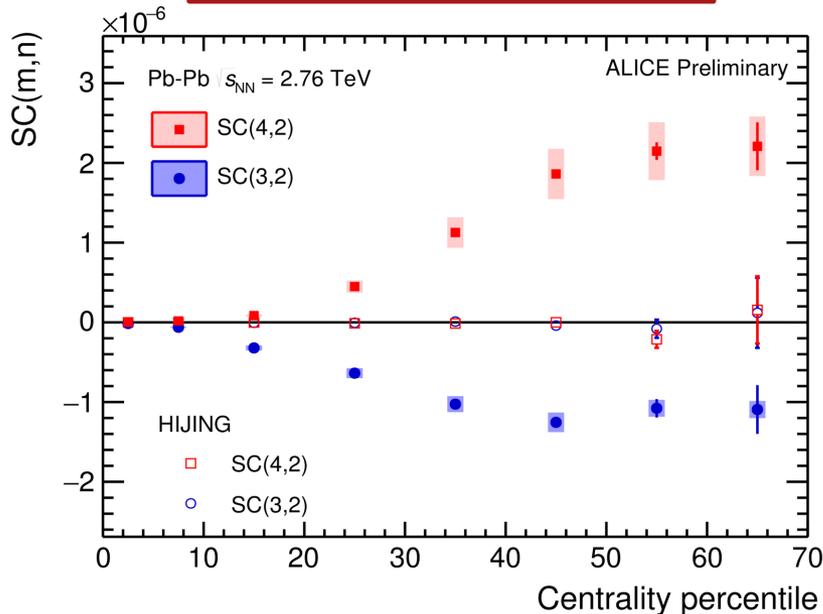
25 new analyses
+ 25 papers this summer
28 talks + 50 posters

here: only a few teasers...
Pb-Pb, p-Pb, pp →

Pb-Pb: Correlation of flow harmonics

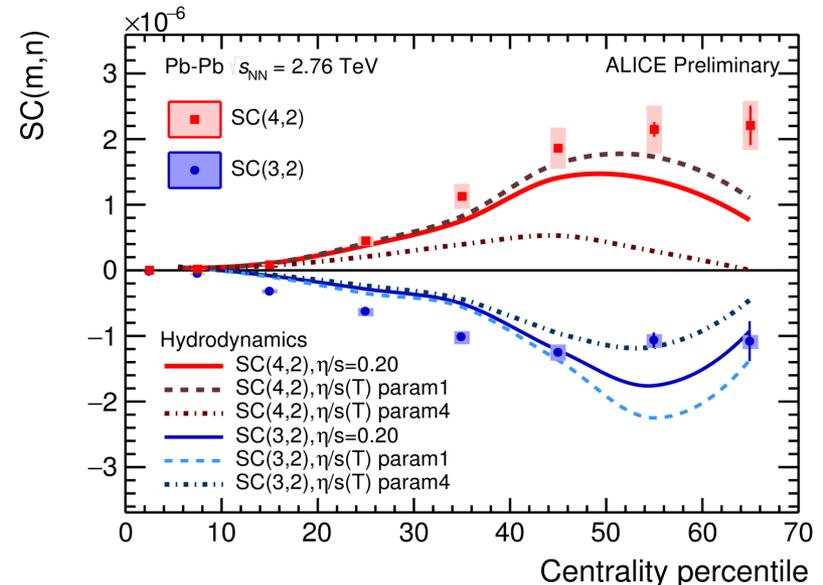
New observable: Symmetric Cumulants

Insensitive to non-flow



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sensitivity to initial conditions and η/s .

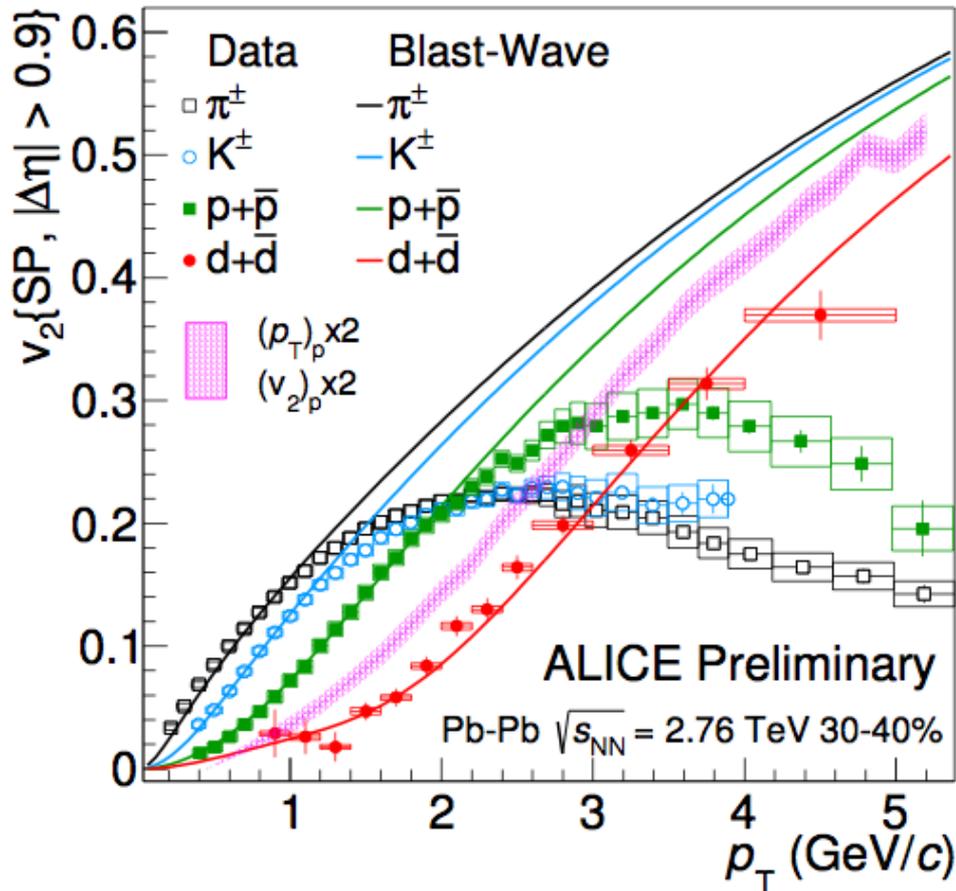


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$$\begin{aligned} & \langle \langle \cos(m\varphi_1 + n\varphi_2 - m\varphi_3 - n\varphi_4) \rangle \rangle_c \\ &= \langle \langle \cos(m\varphi_1 + n\varphi_2 - m\varphi_3 - n\varphi_4) \rangle \rangle - \langle \langle \cos[m(\varphi_1 - \varphi_2)] \rangle \rangle \langle \langle \cos[n(\varphi_1 - \varphi_2)] \rangle \rangle \\ &= \langle v_m^2 v_n^2 \rangle - \langle v_m^2 \rangle \langle v_n^2 \rangle. \end{aligned}$$

Pb-Pb: elliptic flow of deuterons

Production mechanism?



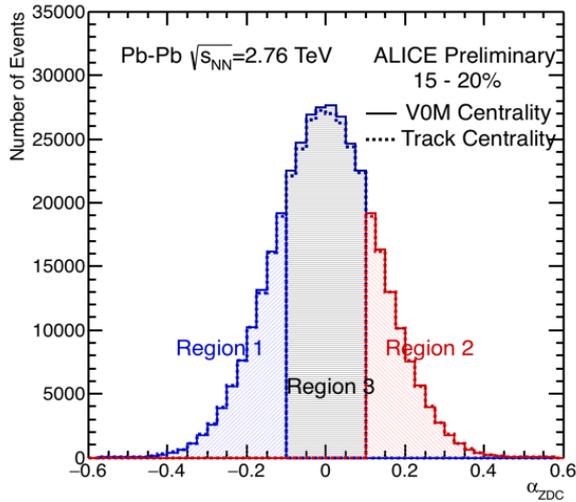
- simple coalescence model does not describe deuteron v_2
- blast-wave prediction from $\pi/K/p$ fit does a decent job

Ramona Lea: Collective Dynamics I (Tue AM)

Pb-Pb: longitudinal asymmetry

Event-by-event fluctuations

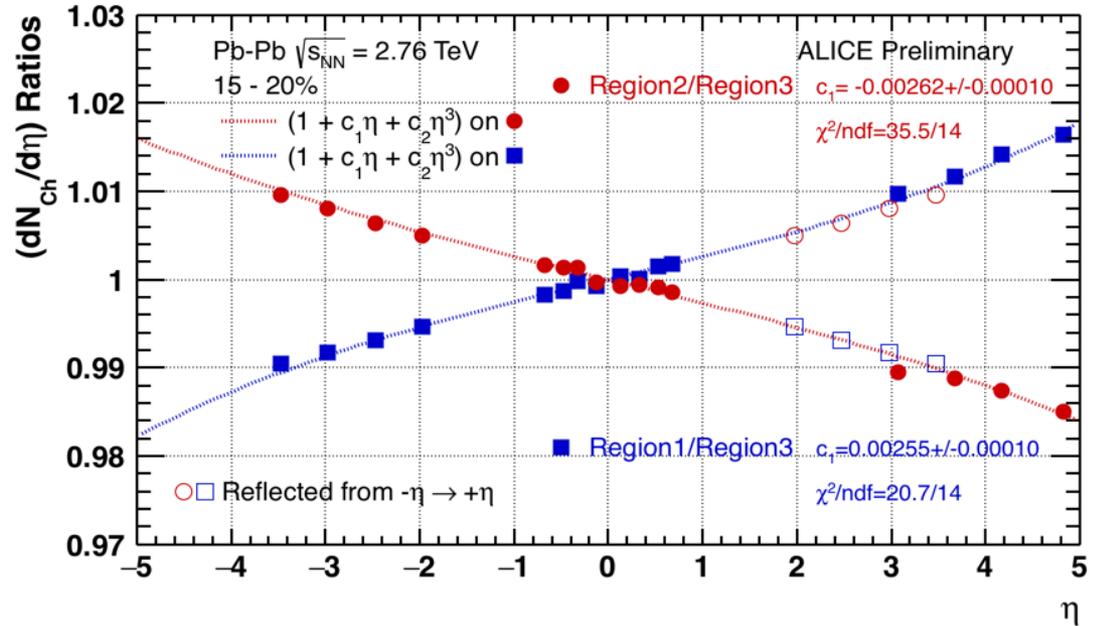
asymmetric events in ZDCs



$$\alpha_{ZDC} = (ZDC_1 - ZDC_2) / (ZDC_1 + ZDC_2)$$

- a new event classifier?

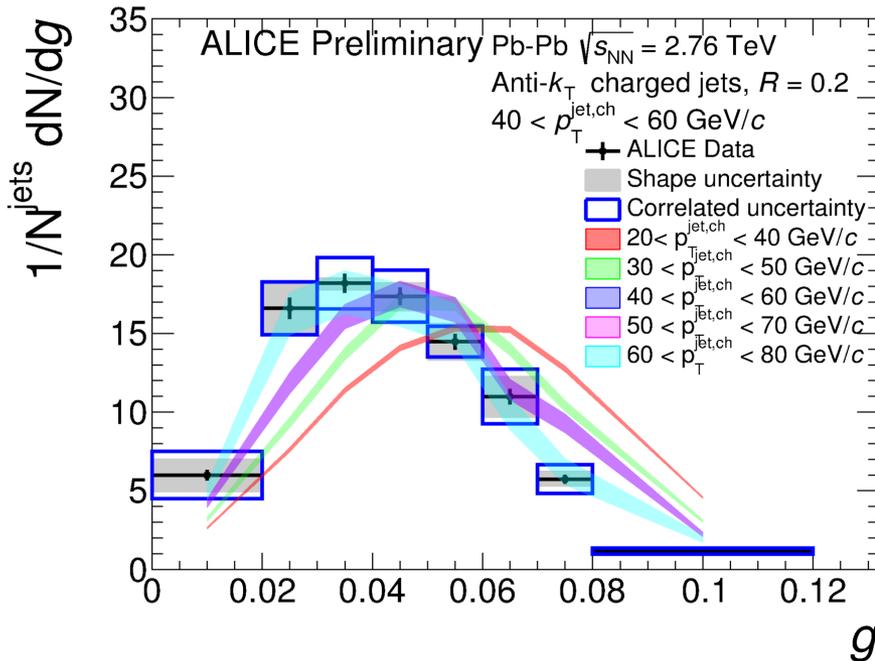
effects on η distribution



Rashmi Raniwala: Correlations and Fluctuations I (Mon PM)

Pb-Pb: jet-shape studies

New observables: radial moments, p_T D, LeSub



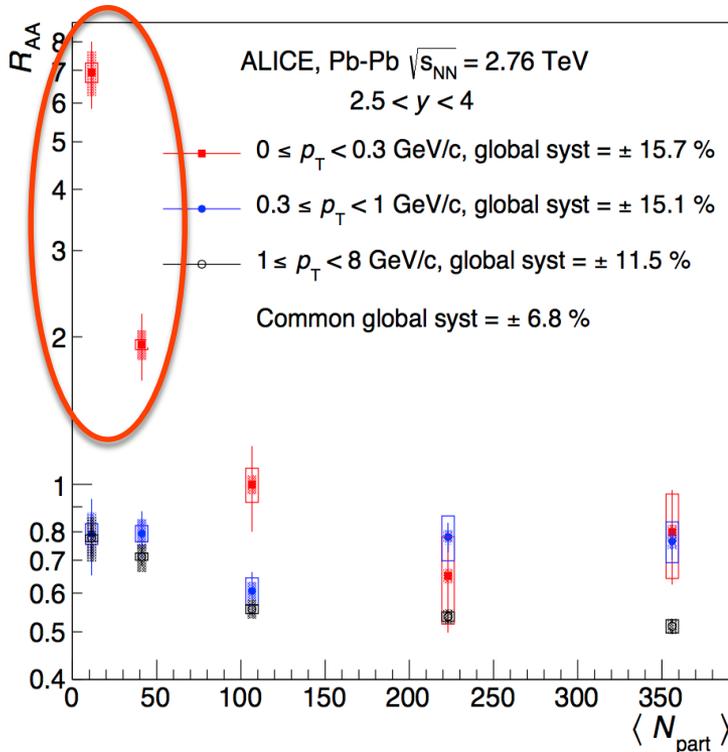
- characterise jet-core shapes
 - $R = 0.2$
- sensitive to jet modifications

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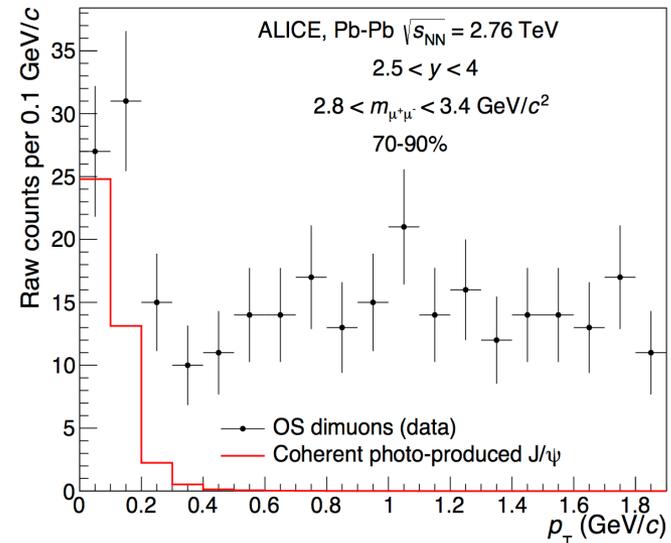
$$a = \sum_{i \in \text{jet}} \frac{p_T^i}{p_{T,\text{jet}}} |\Delta R_{i,\text{jet}}|$$

Leticia Cunqueiro: Jets and High p_T Hadrons II (Mon PM)

Pb-Pb: excess of low p_T J/ ψ in peripheral collisions



- strong enhancement in R_{AA} for $p_T < 0.3$ GeV/c
- p_T -shape consistent with STARLIGHT EM

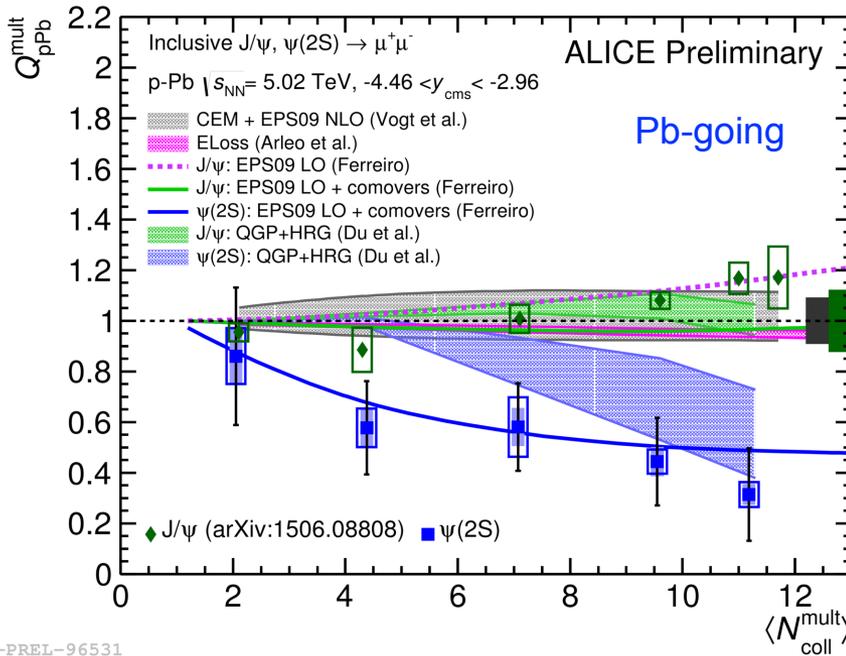


- observation of EM production in hadronic collisions?
- theory predictions, anyone?

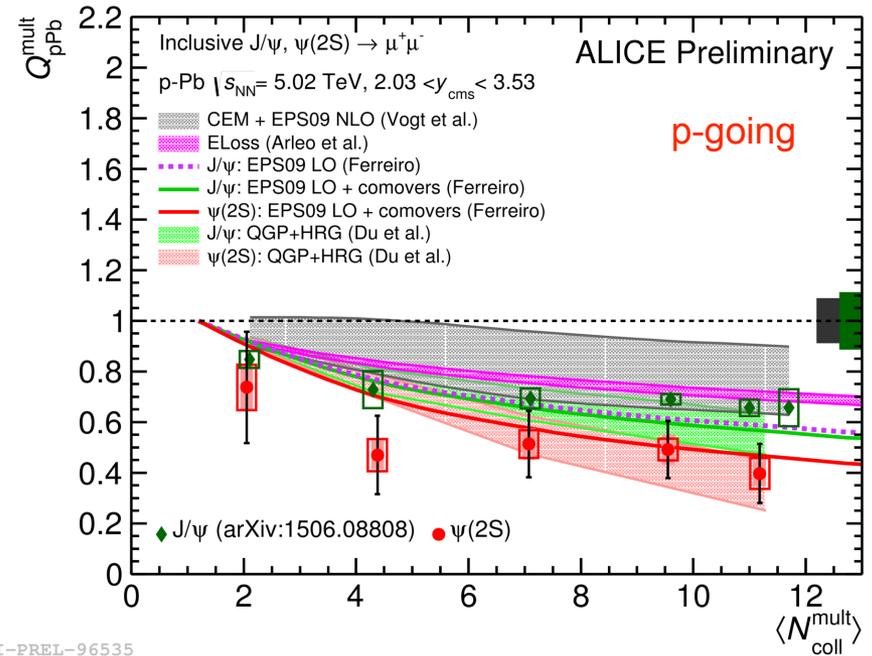
Gines Martínez: Quarkonia IV (Wed AM)

p-Pb: $\psi(2S)$ suppression vs centrality

Study possible final-state effects in p-Pb



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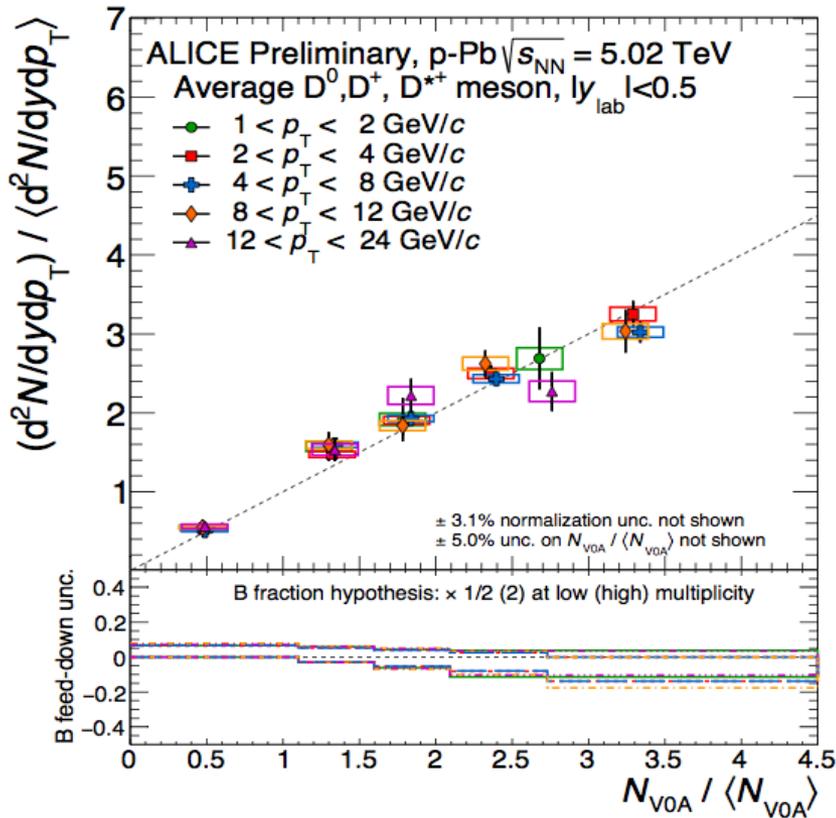
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- $\psi(2S)$ more suppressed than J/ψ in p-Pb
- indication of increase with event activity
- more pronounced in **Pb-going** than in **p-going** direction

Marco Leoncino: Quarkonia I (Mon AM)

p-Pb: D vs backward multiplicity

Study interplay of hard and soft particle production



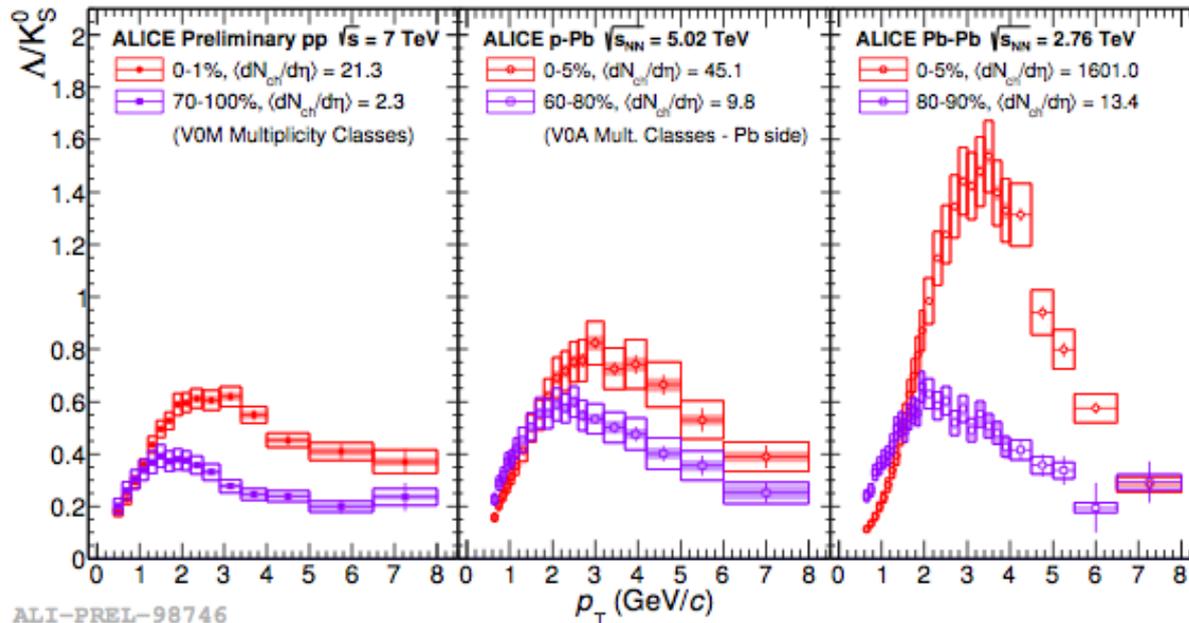
- D mesons in $|y_{LAB}| < 0.5$
- vs multiplicity in $-5.1 < \eta_{LAB} < -2.8$
 - V0A detector, Pb-going direction
- \sim linear increase
 - and \sim independent of p_T

Jeremy Wilkinson: Open HF and Strangeness III (Tue AM)

pp: p_T -dependence of Λ/K_s^0 ratio

In multiplicity classes

- for pp, p-Pb and Pb-Pb: which is which?

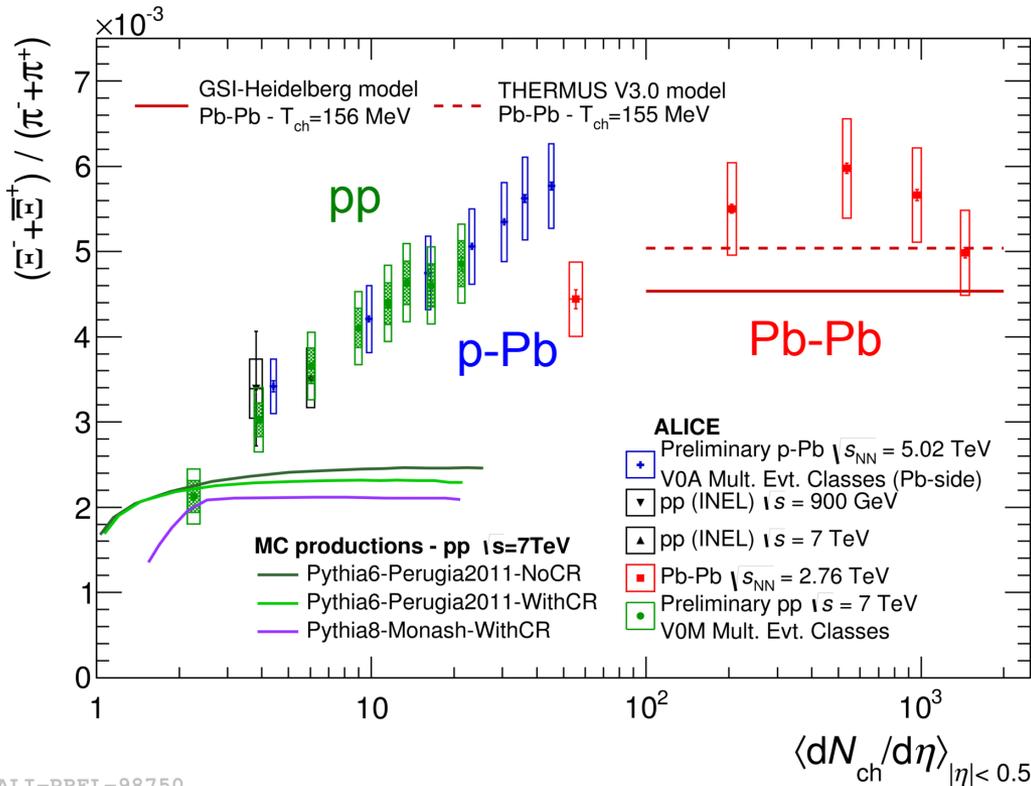


Livio Bianchi: QGP in Small Systems II (Tue PM)

pp: multi-strange particles vs multiplicity

Remember the QGP signature?

- e.g.: Ξ/π



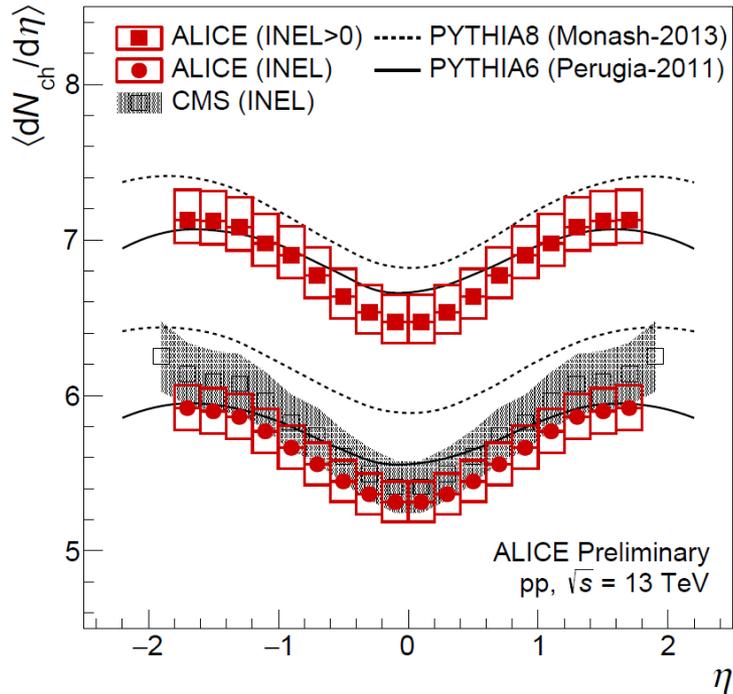
- yes, they are enhanced...
 - up to Pb-Pb levels!
- similar behaviour in pp, p-Pb
- not described in PYTHIA

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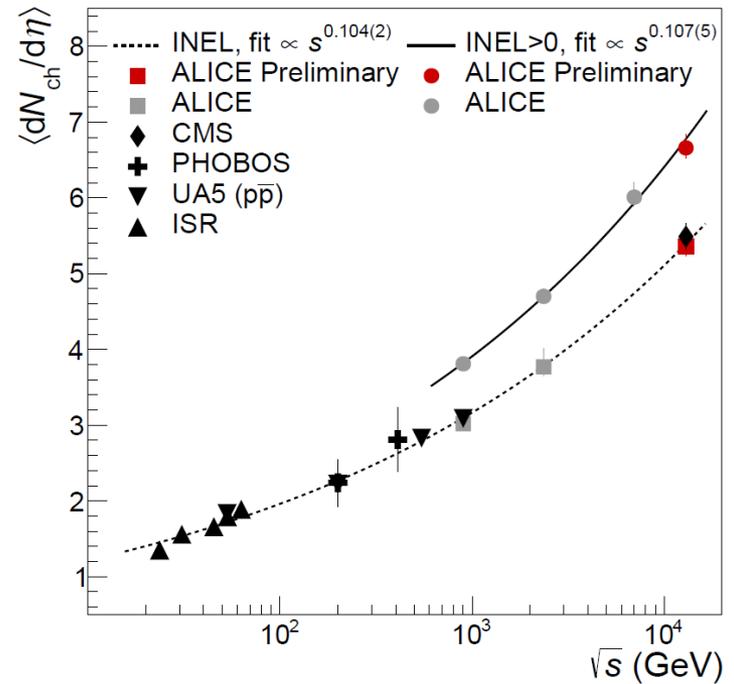
Livio Bianchi: QGP in Small Systems II (Tue PM)

pp: 13 TeV

Pseudorapidity distributions



ALICE-PUBLIC-2015-005



- + p_T spectra (with a twist...) if paper submitted in time...

おーきに!

Plenary Talk

- Taku Gunji: Overview of recent ALICE results

Correlations and Fluctuations

- Rashmi Raniwala: Longitudinal Asymmetry in Pb–Pb
- Ludmila Malinina: Femtoscopy in Pb–Pb
- Evgeny Kryshen: F–C correlations in p–Pb
- Panos Christakoglou: Balance function

Quarkonia

- Marco Leoncino: $\psi(2S)$ in p–Pb
- Hugo Pereira: Charmonium in Pb–Pb
- Gines Martínez: Low p_T J/ψ in Pb–Pb
- Indranil Das: Υ production in ALICE

Open Heavy Flavours and Strangeness

- Alessandro De Falco: ϕ in p–Pb and Pb–Pb
- Natasha Sharma: (anti–)(hyper–)nuclei and exotics
- Andrea Dubla: Heavy flavours in Pb–Pb
- Jeremy Wilkinson: Heavy flavours in p–Pb
- Fabio Colamaria: Heavy flavour correlations

Jets and High p_T Hadrons

- Leticia Cunqueiro: Jet structure in Pb–Pb
- Redmer Bartens: Charged jet anisotropy
- Astrid Morreale: High p_T photons and π^0 in Pb–Pb

QGP in small systems

- Antonio Ortiz: Light flavors in p–Pb
- Livio Bianchi: Strangeness production in p–p

Collective Dynamics

- Ramona Lea: (anti–)deuteron in Pb–Pb
- Anthony Timmins: Event shape engineering
- You Zhou: Correlations of flow harmonics
- Naghmeh Mohammadi: Higher harmonics in Pb–Pb

Initial State Physics and Approach to Equilibrium

- Valentina Zaccaro: Multiplicity over wide rapidity in pp

Electromagnetic probes

- Baldo Sahlmüller: Direct photons in Pb–Pb
- Patrick Reichelt: Low mass dielectrons

Future Experimental Facilities, Upgrades, and Instrumentation

- Petra Riedler: ALICE ITS upgrade
- Chilo Garabatos: ALICE TPC upgrade