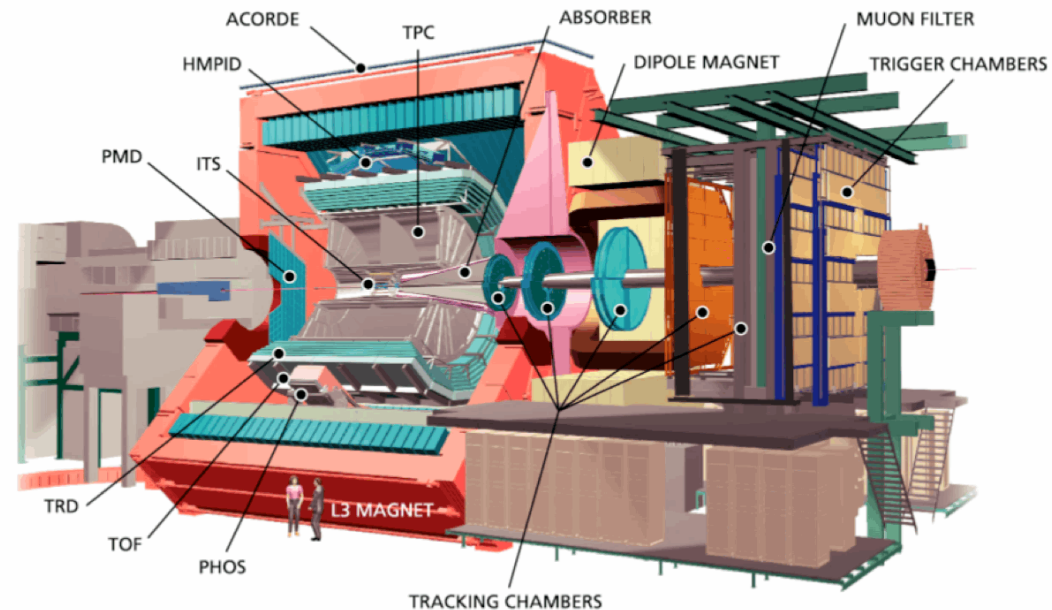# Production of (anti)nuclei in pp and PbPb collisions with ALICE at the LHC

Natasha SHARMA
(for the ALICE Collaboration)
Panjab University
Chandigarh, India.

Outline

- ✓ Particle identification technique in ALICE

- ✓ Raw yields and spectra for (anti)nuclei

- ✓ Anti-alpha and anti-hypertriton in ALICE
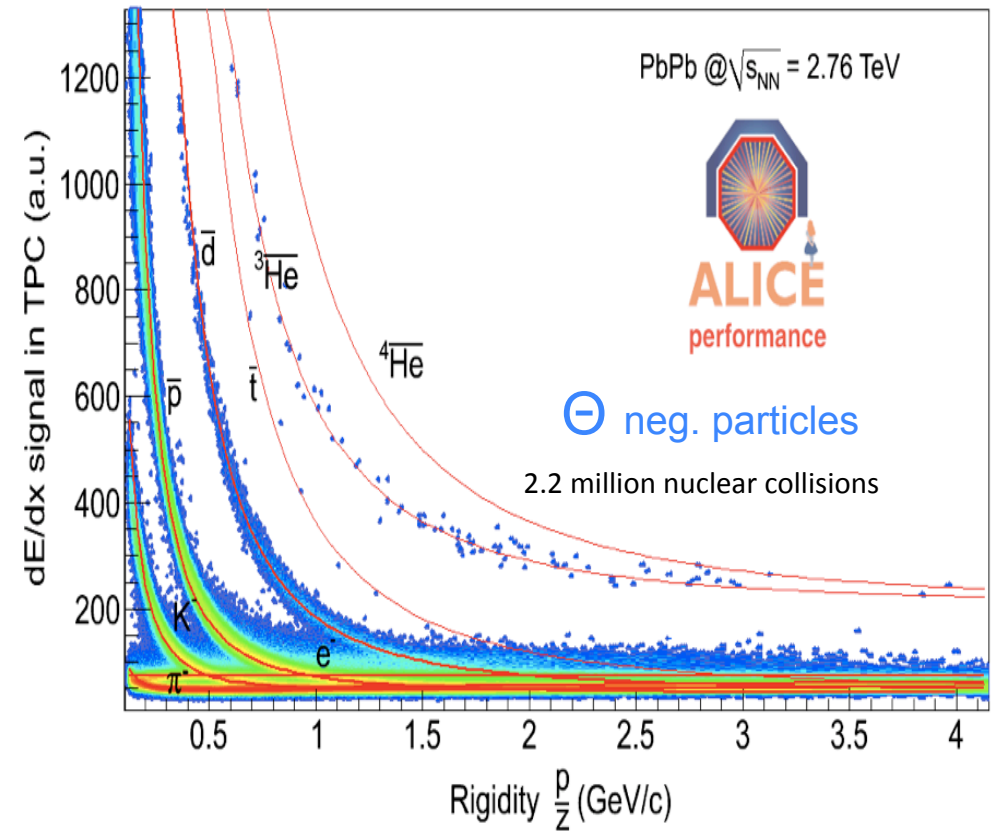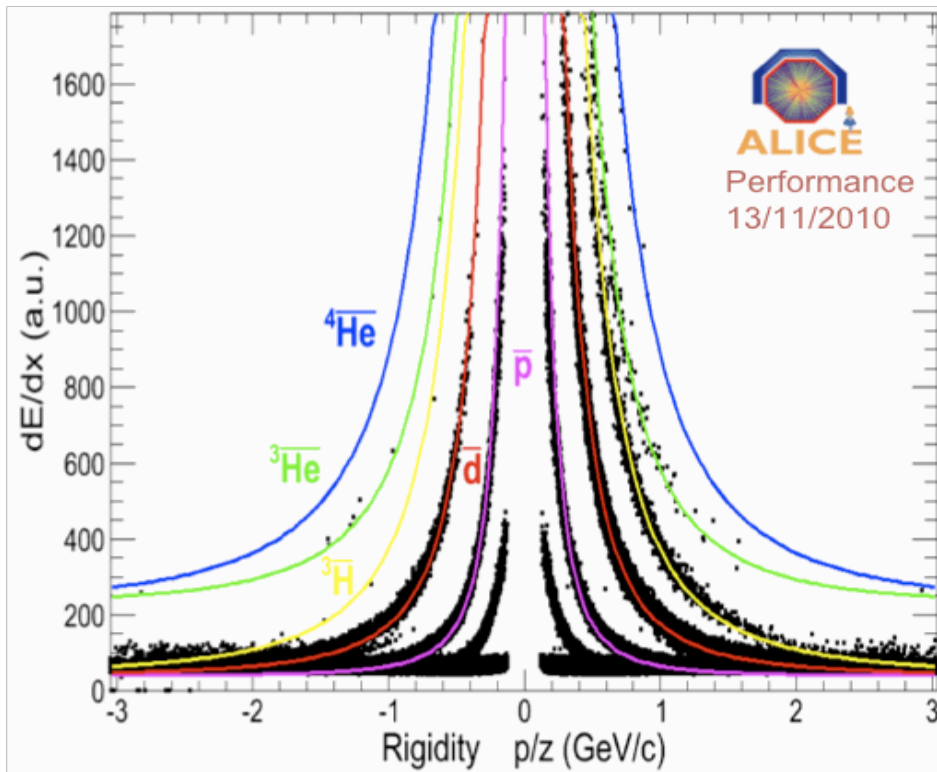
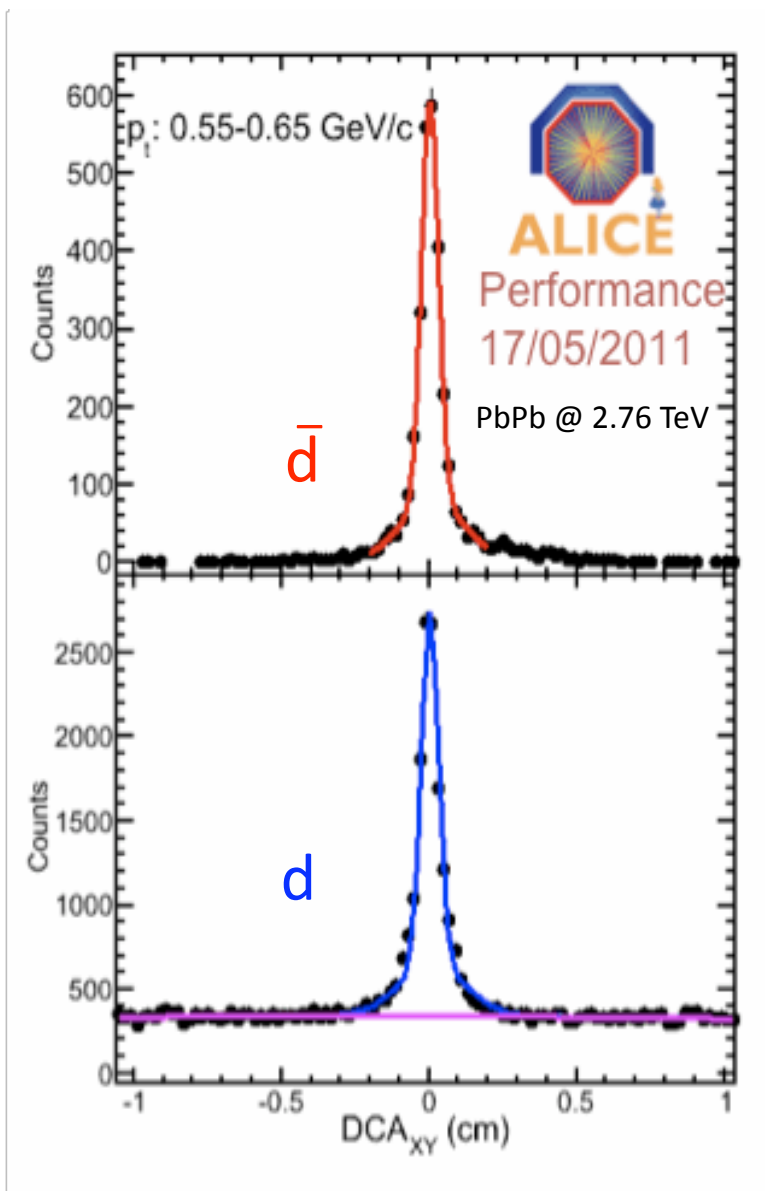- ✓ Summary and outlook

Particle identification

pp (√s = 7 TeV)

PbPb (√s$_{NN}$ = 2.76 TeV)
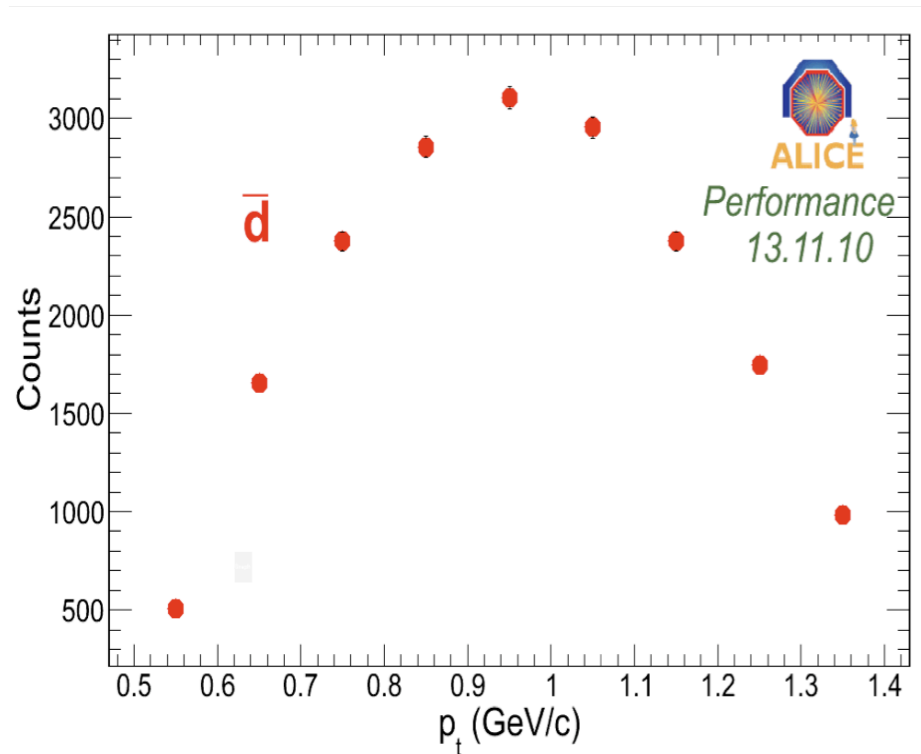
Raw yields and background rejection

- Nuclei can also be produced due to interaction with material

- Compared the DCA of nuclei and anti-nuclei to estimate the background contribution in the nuclei
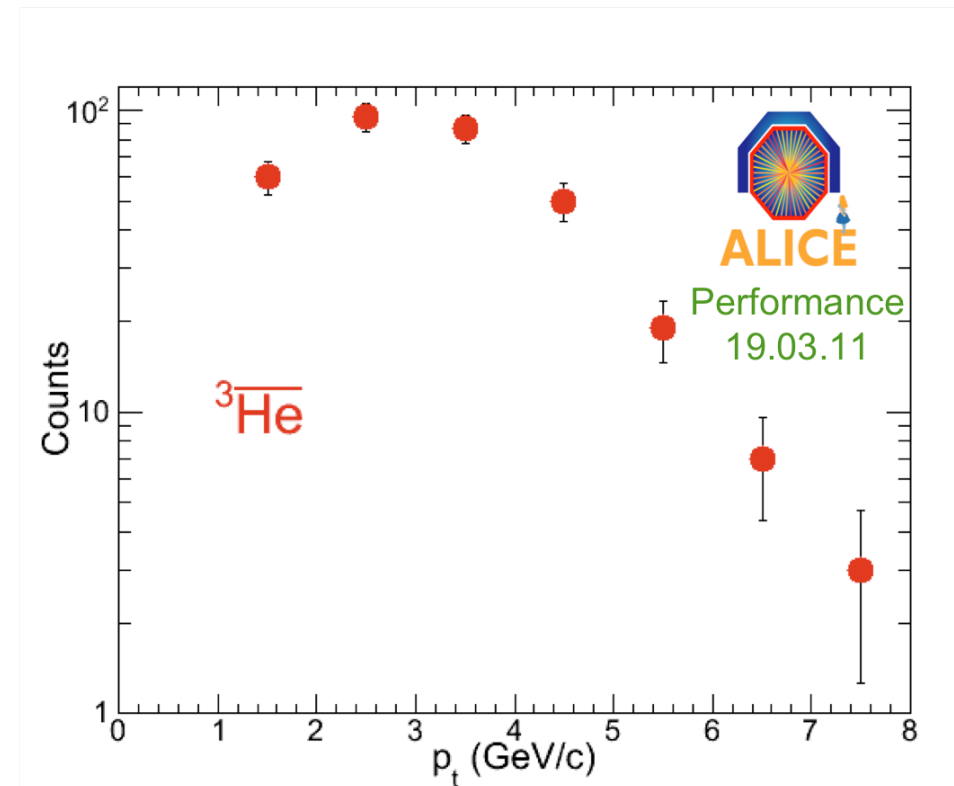- Final counts are taken as raw yields

Raw spectra: anti-d & anti-^{3}He

pp ($\sqrt{s}$ = 7 TeV)
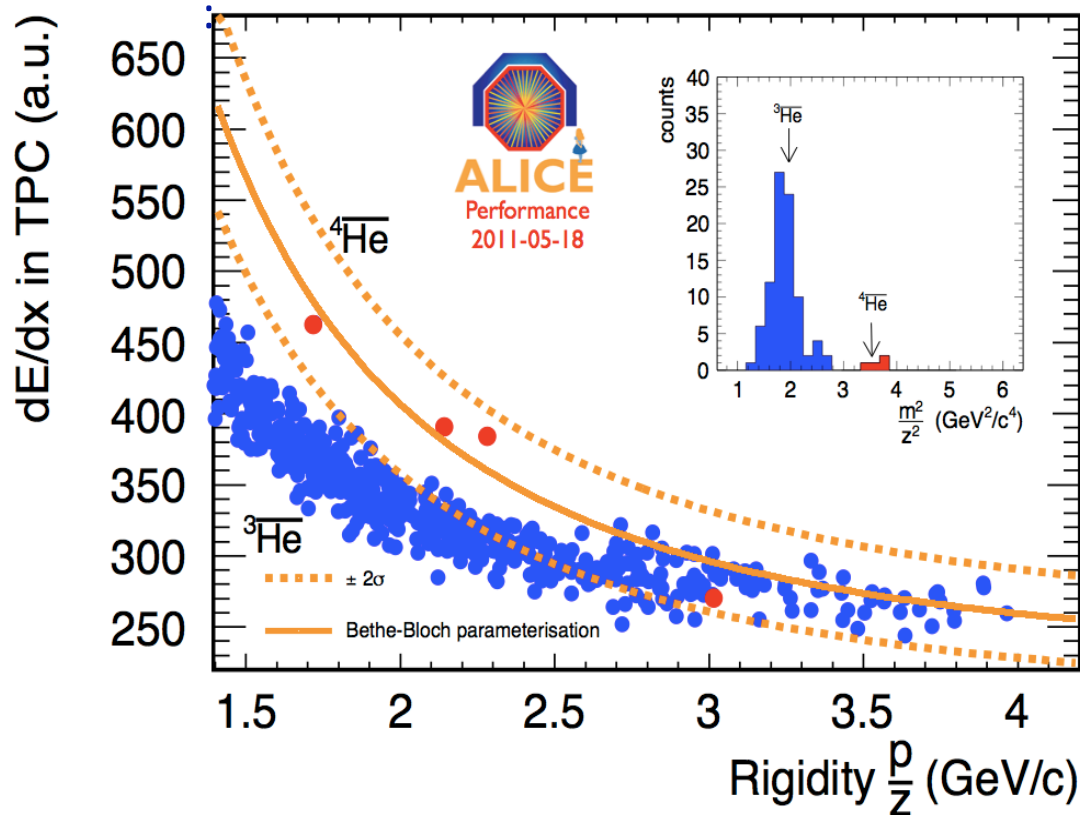

PbPb ($\sqrt{s_{NN}}$ = 2.76 TeV)
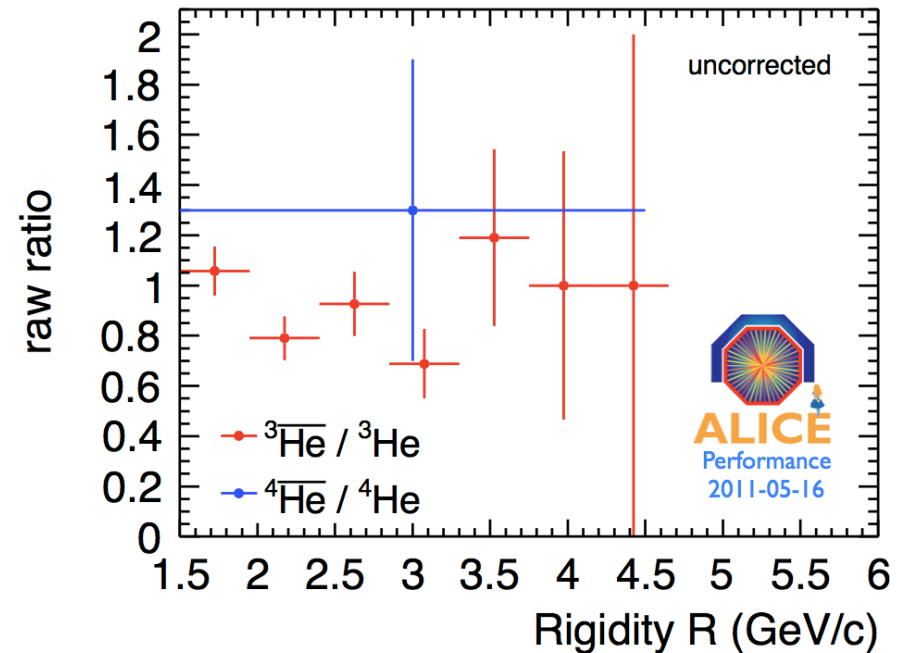

Only statistical errors

Anti-alpha and nuclei-ratio

Anti-alpha identification :
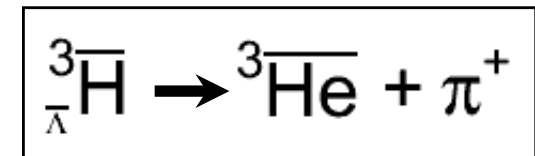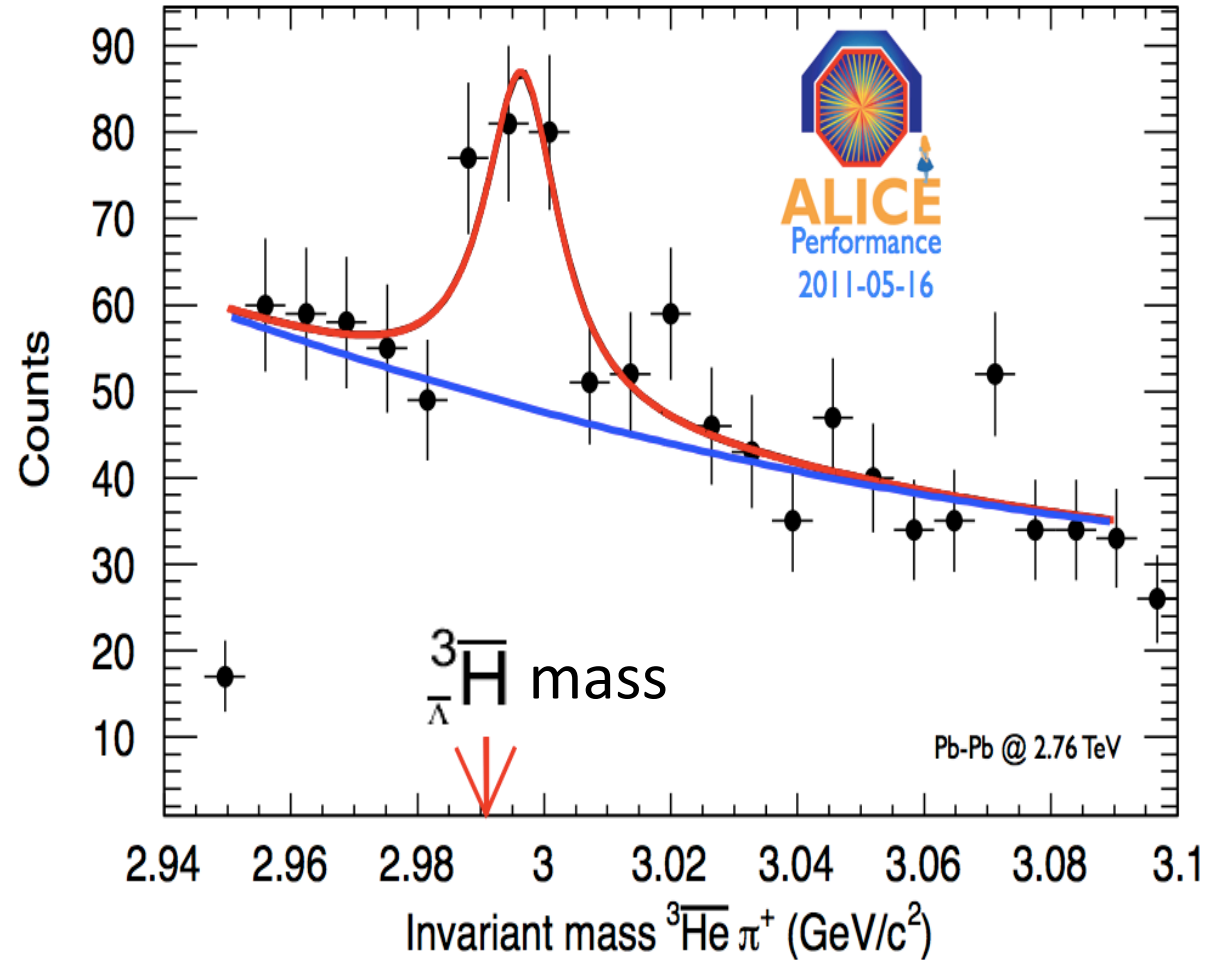
Ratios of anti-nuclei to nuclei :

✓ Four candidates of $^4\overline{\text{He}}$ are found in the PbPb collisions at $\sqrt{s_{NN}}$ = 2.76 TeV (red points).

Anti-hypertriton reconstruction

$$\ _{\overline{\Lambda}}^{3}\overline{H} \rightarrow\ ^{3}\overline{He} + \pi^{+}$$

Summary and Outlook

Summary:

- ✓ ALICE is an excellent detector to study the production of nuclei and anti-nuclei

- ✓ We have extracted d-dbar, t-tbar, ^{3}He-anti^{3}He raw spectra in pp @ 7 TeV and PbPb @ 2.76 TeV

- ✓ Anti-alpha and anti-hypertriton signals are observed with the present statistics in PbPb collisions

Outlook:

• Comparison of spectra in pp and PbPb collisions (yields, slopes, radial flow).
• Comparison of particle ratios with thermal model predictions and coalescence expectations.