Investigating strangeness enhancement in jets and medium in p-Pb collisions at $\sqrt{s_{NN}}$ = 5.02 TeV with ALICE

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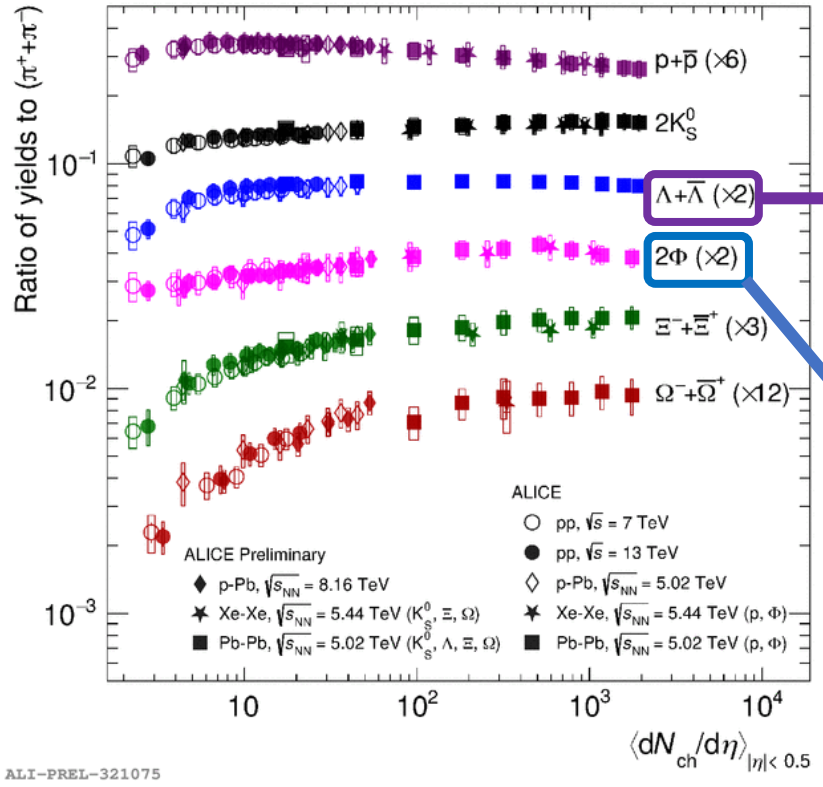
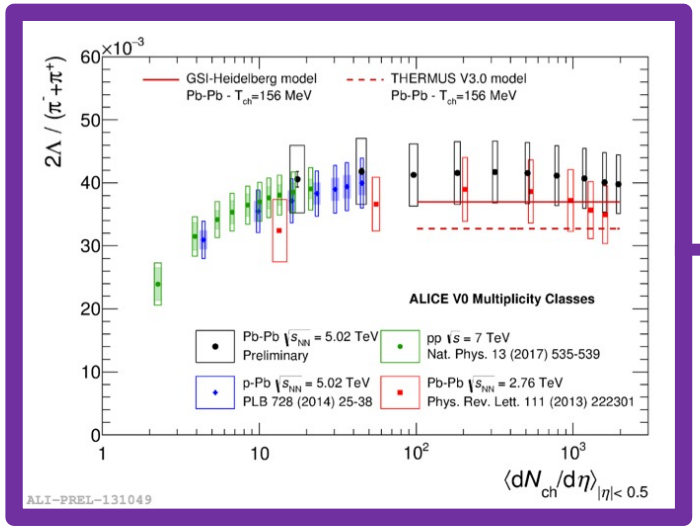
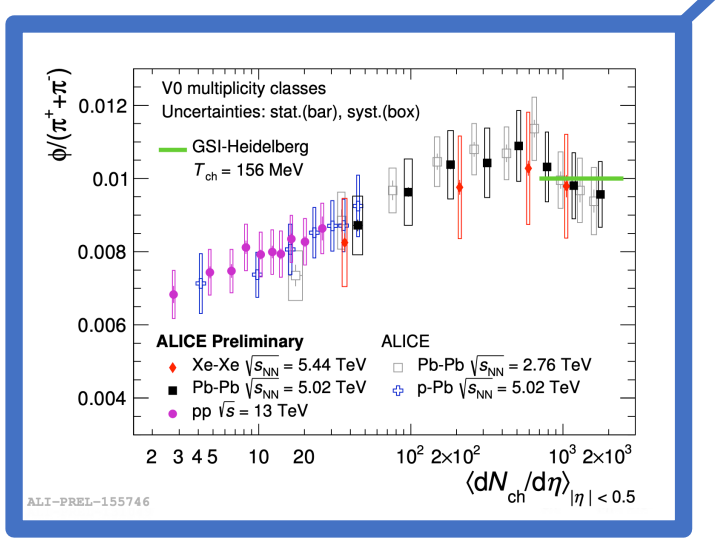
Motivation: *Strangeness enhancement*







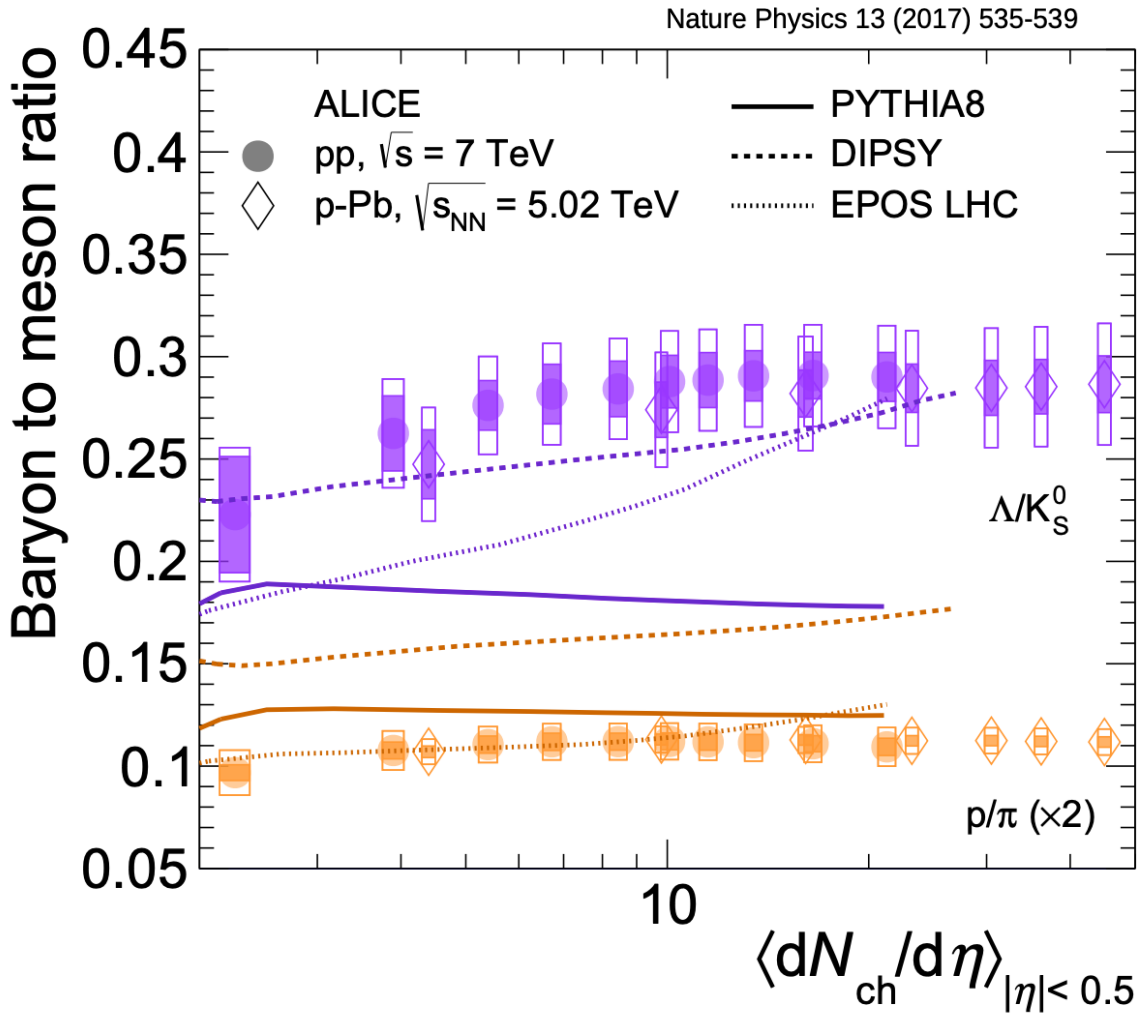
- We see an increase in *s*-quark production as function of particle multiplicity across all collision systems

- Measuring this enhancement in/out of jets can help determine its origins (thermal production in QGP medium/something else?)
- Λ and ϕ(1020) are excellent candidates to probe this enhancement:

Λ^0 : u d s

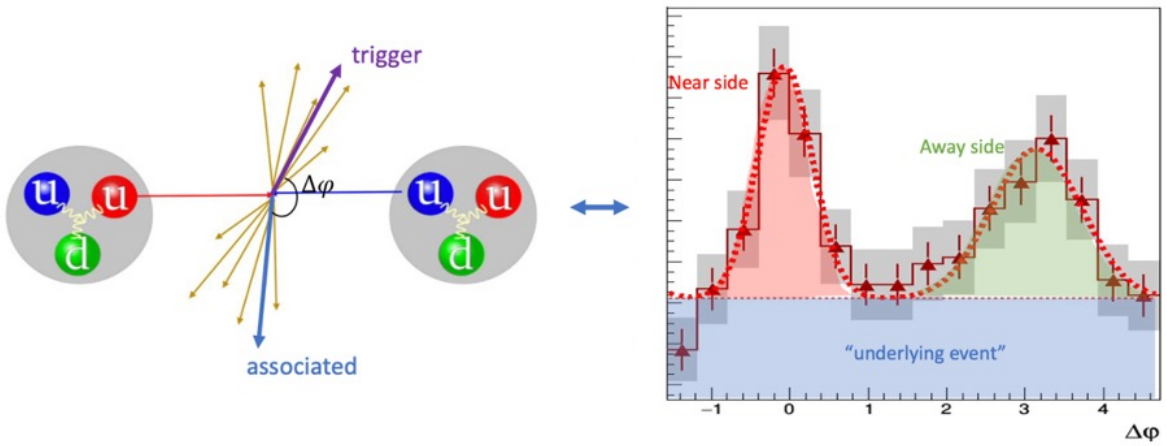
ϕ(1020) : s $\bar{s}$

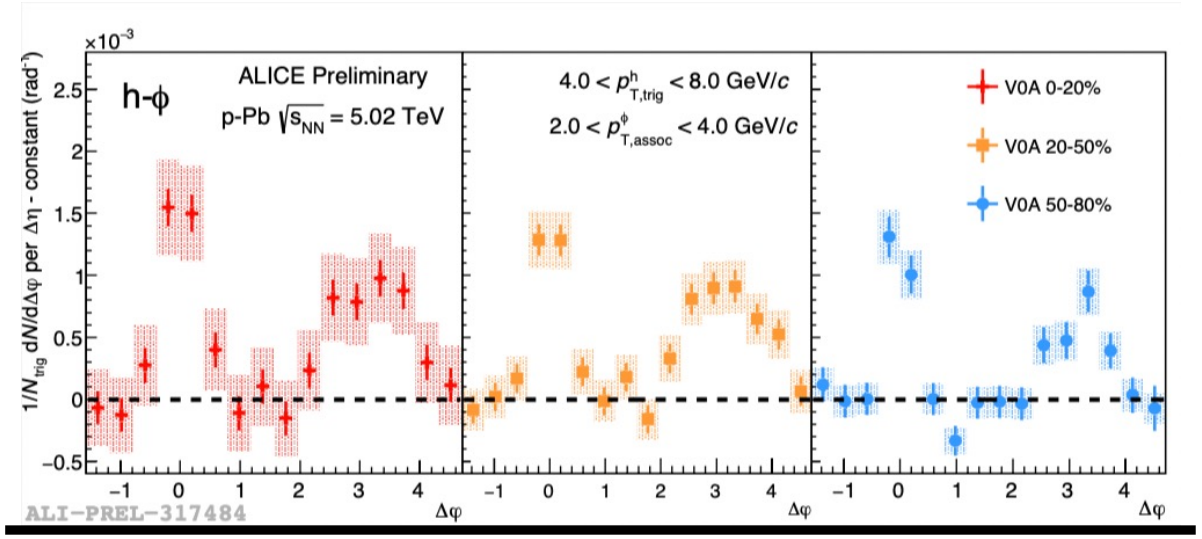
Motivation: *Baryon over meson ratio*

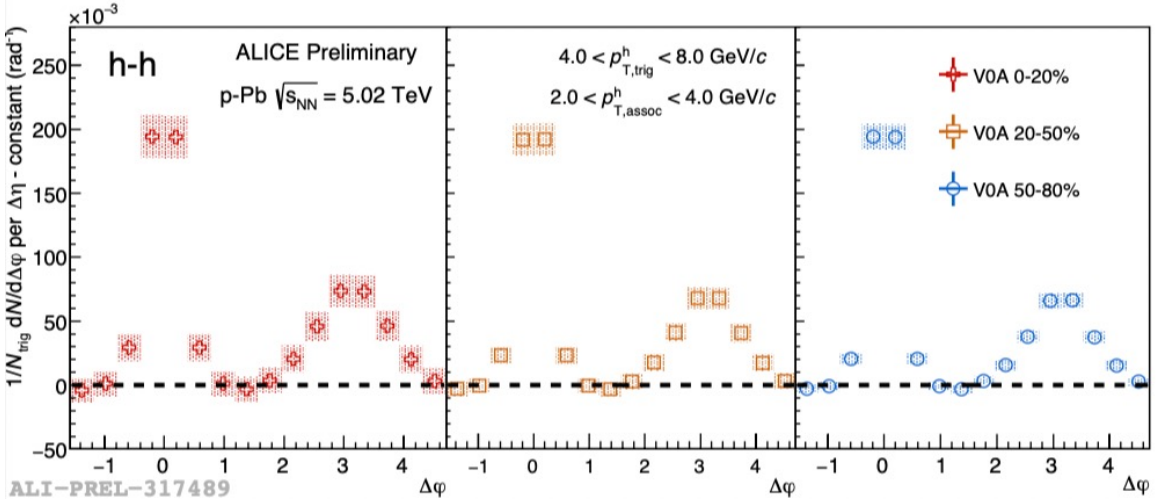


- We see an increase in the ratio of baryons over mesons as a function of multiplicity across all collision systems
- The baryon over meson ratio is used to study fragmentation, recombination
- We can investigate the Λ over ϕ(1020) ratio in different kinematic regions with respect to multiplicity to gain insight into the origins of this enhancement

Analysis: *Two-particle correlations*

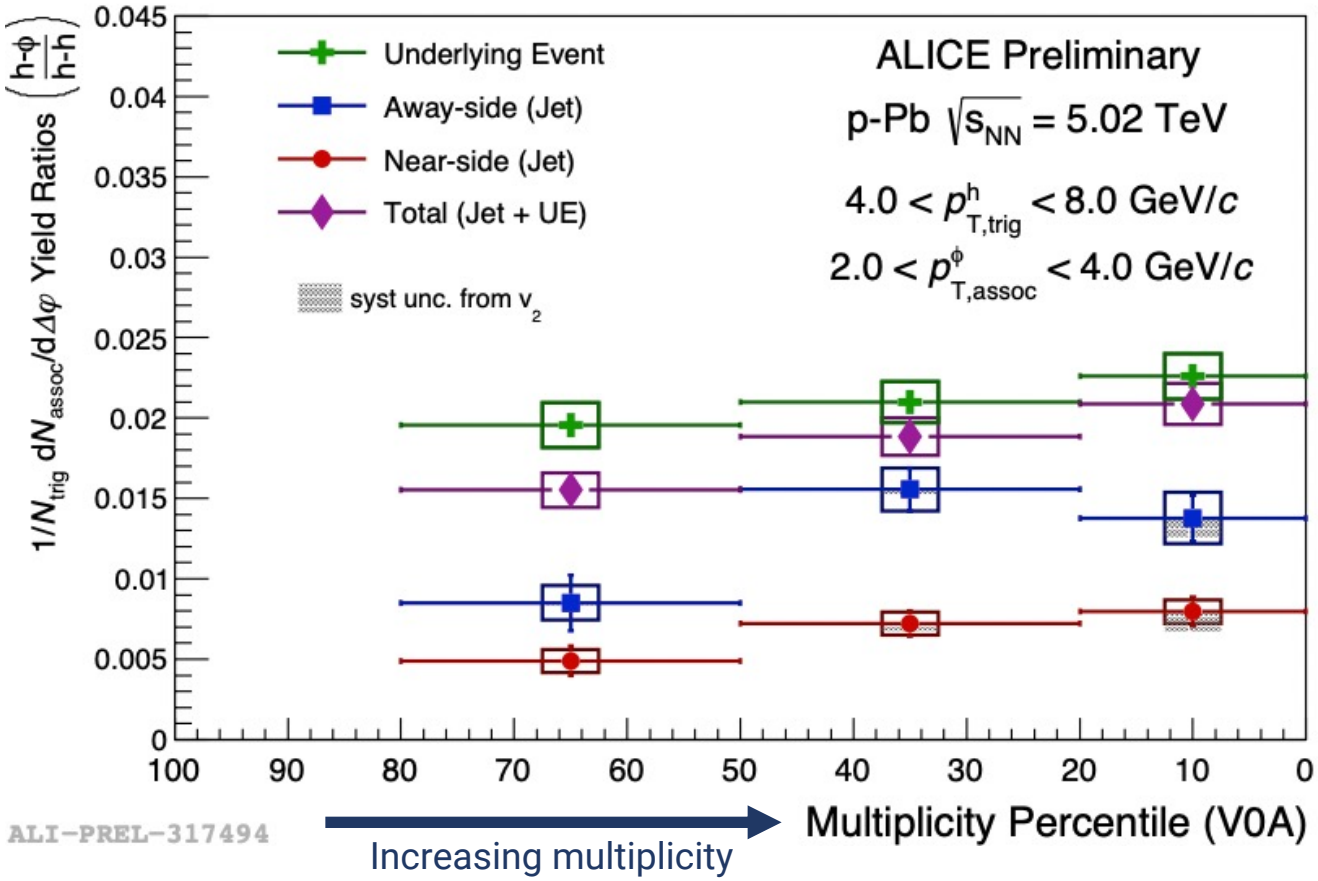




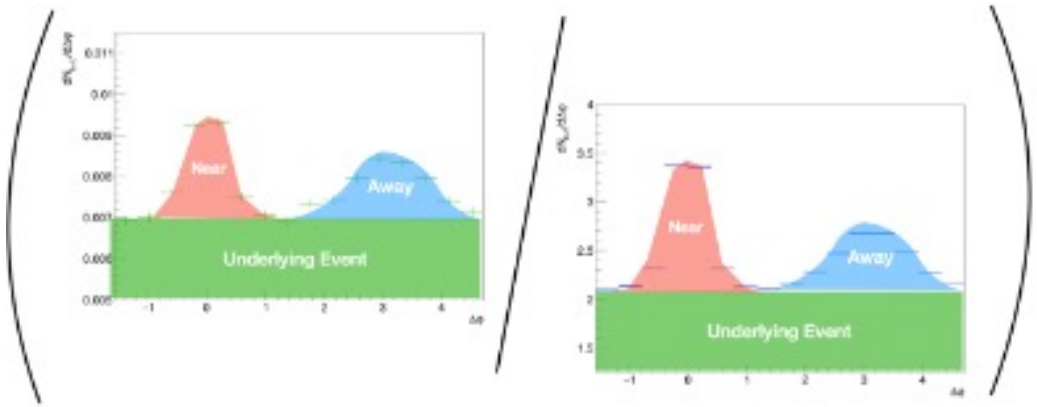


- Used to separate events into 3 kinematic regions:
  - near side
  - away side
  - underlying event
- Can investigate h-Λ/h-h and h-ϕ(1020)/h-h with respect to multiplicity in each kinematic region

Results: *h-ϕ(1020)/h-h ratio*



- The inclusive ratio lines up with previously published ϕ(1020)/π ratios
- The near-side ratio appears much flatter than the away-side ratio with respect to multiplicity
- Strangeness production appears to be modified by medium interaction (away-side)

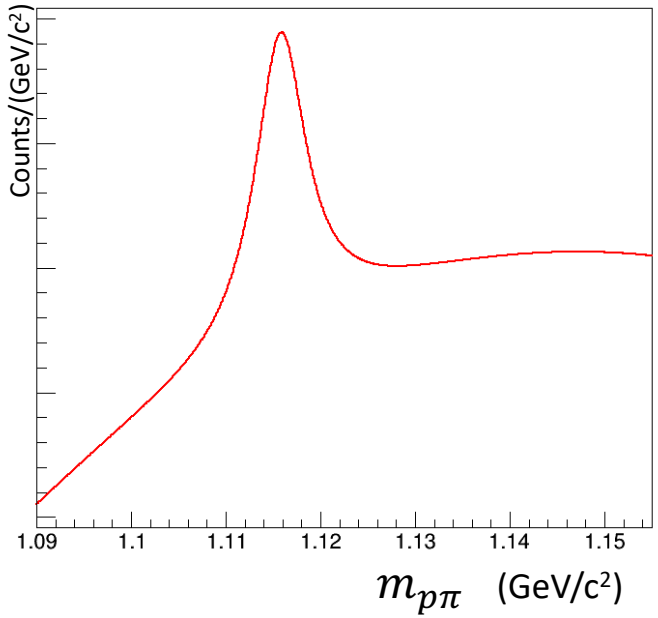


Next steps: *Λ reconstruction*

Two techniques for reconstructing lambdas:

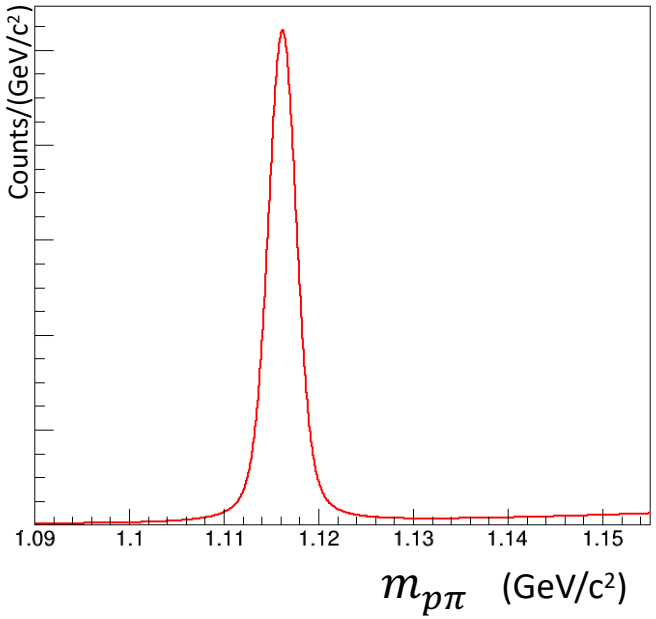
Resonance technique

- Combine all p-π pairs in the event
- Large combinatorial background
- Maximal statistics
- Invariant mass schematic shown to right



V0 technique

- Use *V0 finder*: unlike sign p-π tracks that have small DCA
- Very small background
- ~40% less statistics when compared with resonance technique
- Invariant mass schematic shown to right



- In this analysis we will be using both techniques in parallel (to be used for comparison)
- Once we have the final h-Λ/h-h ratio results, we can combine these results with the ϕ to extract the Λ/ϕ ratio with respect to multiplicity!