Probing the multiplicity dependence of strangeness enhancement in pp collisions in the regime of low multiplicity and transverse spherocity with ALICE

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**NEW RESULTS**

Particle Ratios at the lowest and highest multiplicities

- $p_T$-differential particle ratios showcase a clear distinction between behavior at low and high multiplicities.
  - Universal trend across collision systems
- Upcoming analysis of the 900 GeV pilot-beam data for LHC Run 3 will yield new results at even lower multiplicities, complementing the current results.
Strangeness enhancement in pp collisions

- Strangeness enhancement has been observed in high-multiplicity pp collisions.

- Signature associated with the quark-gluon plasma
  - Unresolved if this also applies to pp collisions.

- Is multiplicity the driving factor behind the strangeness enhancement?
  - Can we find low-multiplicity strange dynamics in high-multiplicity events?
High-multiplicity events Vs Transverse Spherocity

- Transverse Spherocity can be used to categorize events into two types:
  - **Jetty**: Back-to-Back "jet-like" events
    - Particle production mainly driven by hard physics
  - **Isotropic**: Azimuthally isotropic events.
    - Particle production driven by multiple softer collisions.

\[ S_0^{p_T=1} = \frac{\pi^2}{4} \min \left( \frac{\sum_i |p_{T,i} \times \hat{n}|}{N_{trk}} \right) \]

We focus on mid-rapidity multiplicity selection, due to constrained dN/dy.
High-multiplicity events Vs Transverse Spherocity

Subtle modification in $K$-to-$\pi$ ratio

$\phi$-to-$\pi$ ratio suggests no dependence on Transverse Spherocity.

$\Xi$-to-$\pi$ ratio highlights significant modification, with clear enhancement/suppression in Isotropic/Jetty events.

Results suggest that strangeness enhancement is prevalent in events with Isotropic shapes.