Strange particle production in p-Pb collisions at $\sqrt{s_{NN}} = 8.16$ TeV with ALICE at the LHC

Meenakshi Sharma
for the ALICE Collaboration
Quark Matter 2022, Krakow

Contact:
Meenakshi Sharma
meenakshi.sharma@cern.ch
University of Jammu, India
The yield ratio of strange to non-strange hadrons in the four systems
- Smooth evolution with charged-particle multiplicity across pp, p-Pb and Pb-Pb collisions
- Baryon over Meson ratio shows no significant change as a function of multiplicity
- Strangeness enhancement is not driven by mass nor it is a baryon/meson effect

Across the three systems $\Lambda/K^0_S$ evolves with multiplicity in a qualitatively similar way:
- Depletion at low $p_T$, enhancement at intermediate $p_T$

----> Hint of collective behaviour in small systems
Recent Results in ALICE

- $p_T$ spectra hardening is observed moving from low multiplicity to high multiplicity region.
- Yields of strange particles measured in different systems as a function of multiplicity lie on the same trend.
- Both $dN/dy$ and $<p_T>$ increase as a function of multiplicity.
Recent Results in ALICE

- The $\Lambda/\pi$ and $K_S^0/\pi$ ratios increase with multiplicity and then reach a saturation in central Pb-Pb collisions (consistent with the statistical hadronization model).

- $\Lambda/K_S^0$ ratio as a function of $p_T$ shows peak at intermediate \(p_T\) (Baryon enhancement)
  - interplay of radial flow and parton recombination at intermediate $p_T$

- $\Lambda/K_S^0$ ratio shows no significant change as a function of multiplicity
  - Strangeness enhancement is not driven by mass nor it is a baryon/meson effect

- Mass ordering of $R_{pPb}$ at intermediate $p_T$, which is qualitatively similar to that in Pb–Pb collisions (Mass ordering or Baryon meson splitting?)
Summary

- $p_T$ integrated yield and $<p_T>$ increase with multiplicity.
- Ratios of neutral strange hadrons to pions increase with multiplicity and then saturate (Strangeness enhancement). The ratios are found to be independent of the collision system and center-of-mass energy.
- $\Lambda/K^0_S$: Baryon enhancement at intermediate $p_T$.
- $\Lambda/K^0_S$ as a function of multiplicity shows no significant evolution.
- $R_{pPb}$: peak at intermediate $p_T$ visible for $\Lambda$.

Thank You