Results - Strangeness Enhancement

The strangeness enhancements are defined as ratios between the yields measured in Pb-Pb collisions, normalized to the average number of participant nucleons (N_{part}), and the corresponding quantities in pp interactions at the same energy:

\[ E = \frac{Y_{\text{lead}}}{N_{\text{part}}} / \frac{Y_{\text{pp}}}{N_{\text{part}}} \]

pp reference values obtained from interpolation: ALICE data at \( s = 0.9\) and 7 TeV for \( \Xi^- \) and \( \Omega^- \), and STAR data at \( s = 200 \text{ GeV} \) and ALICE at 7 TeV for \( \Omega^- \), assuming PYTHIA 6 dependence.

Results:

- Enhancements for all the cascades (particles and anti-particles) are observed also at the LHC energy and their magnitude increases when going from peripheral to most central collisions.
- As expected at lower energies, they follow the hierarchy based on the strangeness content of the particle: \( \Omega^- \) are more enhanced than \( \Xi^- \).
- Also confirmed their decreasing trend with increasing centre-of-mass energy, first established when going from SPS to RHIC energies.

Outlook:

- Further studies currently being finalized, mainly aiming to:
  - Lower the minimum p_{T} to reduce the systematic uncertainties due to the yield extrapolation;
  - Obtain a finer centrality binning for the most central class to better understand the behavior in centrality;
  - Look at the hyperon-to-pion ratios for A-A and pp collision, both at LHC(\( s = 7 \)) and RHIC(\( s = 200 \)) energies, in order to separate the contribution to the enhancement which is specific to the strange particles from the common increase of multiplicity at mid-rapidity when going from pp to Pb-Pb.

References