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Type: Talk

Identified and strange hadron production and their flow in $O + O$ collisions at $\sqrt{s_{NN}} = 7$ TeV using various models

Tuesday 3 September 2024 16:45 (20 minutes)

LHC is planning to collect oxygen-oxygen ($O + O$) data at a center-of-mass energy of $\sqrt{s_{NN}} = 7$ TeV in order to investigate the particle production mechanisms and associated observables. We present predictions of various observables for identified ($\{\pi^\pm\}$, $\{K^\pm\}$ and $\{p(\bar{p})\}$) and (multi-)strange hadrons (K_S^0 , $\Lambda(\bar{\Lambda})$, $\Xi^-(\bar{\Xi}^+)$, ϕ , and $\Omega^-(\bar{\Omega}^+)$) using the recently updated 3+1D hydrodynamics-based model EPOS4 and two versions the AMPT model. In this study, we report the transverse momentum (p_T -spectra), dN/dy , yield ratios relative to pions, p_T -differential ratios for $O + O$ collisions at $\sqrt{s_{NN}} = 7$ TeV. It is observed that the AMPT model fails to adequately predict strangeness enhancement in $O+O$ collisions, whereas EPOS4 predicts a significant enhancement. Furthermore, there are indications of stronger radial flow in EPOS4 compared to AMPT. Both models interestingly predict that the final state multiplicity overlaps with pp, p+Pb, and Pb+Pb collisions, reflecting their robustness and consistency in different experimental conditions. The results on anisotropic flow as a function of charged particle multiplicity (N_{ch}) will be presented. The anticipated data from $O + O$ collisions at the LHC is set to be instrumental in both fine-tuning the model parameters and deepening our understanding of these theoretical frameworks.

Internet talk

Yes

Is this an abstract from experimental collaboration?

No

Name of experiment and experimental site

N/A

Is the speaker for that presentation defined?

Yes

Details

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