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Type: Experimental talk

Studying light-flavour hadrons produced in the collisions of different nuclei at the LHC with ALICE

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The study of identified particle production as a function of event multiplicity is a key tool for understanding the similarities and differences among different colliding systems. The multiplicity dependence of particle production has been previously studied as a function of center-of-mass energy in pp and Pb-Pb collisions. Now for the first time, we can investigate how particle production is affected by the collision geometry in heavy-ion collisions at the LHC.

In this talk, we report newly published ALICE results on charged and identified particle production in Pb-Pb and Xe-Xe collision at $\sqrt{s_{NN}} = 5.02$ TeV and $\sqrt{s_{NN}} = 5.44$ TeV, respectively, as a function of transverse momentum (p_T) and collision centrality. Particle spectra and ratios are compared between two different colliding systems at similar charged-particle multiplicity densities ($\langle dN_{ch}/d\eta \rangle$), and different initial eccentricities. We find that in central collisions, spectral shapes of different particles are driven by their masses. The p_T -integrated particle yield ratios follow the same trends with $\langle dN_{ch}/d\eta \rangle$ as previously observed in other systems, further suggesting that at the LHC energies, event hadrochemistry is dominantly driven by the charged-particle multiplicity density and not the collision system, geometry, or center-of-mass energy. Finally, results are discussed in the context of statistical hadronization models as well as pQCD-inspired models.

Collaboration

ALICE

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