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Probing viscous effects with identified particles in pp, p–Pb and Pb–Pb collisions

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Two-particle transverse momentum correlator G_2 was measured based on data collected from Pb–Pb collisions at $\sqrt{s_{NN}} = 2.76$ TeV. The evolution of the longitudinal width of the G_2 correlator vs. collision centrality nominally provides information about the specific shear viscosity, η/s , of the medium formed in the collisions. The G_2 correlator was also measured in pp and p–Pb collisions at $\sqrt{s} = 7$ TeV and $\sqrt{s_{NN}} = 5.02$ TeV, respectively, to investigate the presence of viscous effects in these smaller systems. No longitudinal broadening was observed. These smaller systems are either too small or too short-lived to manifest viscous effects based on the G_2 observable.

In this contribution, identified charged particles G_2 in pp, p–Pb, and Pb–Pb collisions at the same nucleon–nucleon collision energy ($\sqrt{s_{NN}} = 5.02$ TeV) in different multiplicity classes measured with the ALICE detector are presented. The results shed light on potential mass-ordering effects and system size dependence, leaving aside collision energy dependent effects.

Category

Experiment

Collaboration (if applicable)

ALICE

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