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ALICE constraints on the chiral magnetic effect from charge-dependent azimuthal correlations with identified hadrons

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The strong magnetic field generated by colliding nuclei could create a current in the QGP medium resulting in charge separation along the direction of the magnetic field which is perpendicular to the reaction plane. This phenomenon is called the chiral magnetic effect (CME). Initial studies by ALICE showed that the magnitude of the three particle correlator used in the search for the CME is comparable at the LHC and at RHIC. Recent results from the ALICE and CMS experiments have shown that the magnitude of these correlators are similar in Pb-Pb and p-Pb collisions for events with similar multiplicity, which indicates that the measured correlations are dominated by effects not related to the magnetic field and the CME.

We present results for two- and three-particle correlations measured for identified (π , K, p) hadrons and for different order harmonics relative to various symmetry planes (Ψ_n), estimated using the forward detectors of ALICE, for Pb-Pb collisions at $\sqrt{s_{NN}} = 5.02$ TeV. The measurements are presented as a function of centrality as well as differentially with respect to the pair separation in rapidity and average pair transverse momentum. The results are compared with similar measurements reported previously by ALICE at the lower energy $\sqrt{s_{NN}} = 2.76$ TeV and recent studies from the CMS Collaboration.

Content type

Experiment

Collaboration

ALICE

Centralised submission by Collaboration

Presenter name already specified

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