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Search for the Chiral Magnetic Wave using the ALICE detector in Pb-Pb collisions at $\sqrt{s_{NN}} = 5.02$ TeV

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In heavy-ion collisions a strong magnetic field is created ($\sim 10^{15}$ T), which together with the presence of a non-zero electric and axial charge density, leads to vector and axial currents called the Chiral Magnetic Effect (CME) and Chiral Separation Effect (CSE), respectively. Their coupling gives rise to a collective excitation in the quark-gluon plasma (QGP) called the Chiral Magnetic Wave (CMW), causing a charge-dependent elliptic flow. As a result, the normalized difference of v_2 of positive and negative charges, ($\Delta\ v_{2_{Norm}}$), exhibits a positive slope as a function of charge asymmetry A_{ch}. However, non-CMW mechanisms like Local Charge Conservation (LCC) can also describe the $\Delta\ v_2$ dependence on A_{ch} and can be probed by a similar kind of measurement with v_3 as we expect it not to be affected by the CMW.\\

In this talk, we present ALICE measurement of v_2, $\Delta\ v_{2_{Norm}}$, v_3 and $\Delta\ v_{3_{Norm}}$ of charged hadrons as function of the charge asymmetry (A_{ch}) in Pb-Pb collisions at $\sqrt{s_{NN}} = 5.02$ TeV. The slope parameters from v_2 and v_3 are compared to estimate the background contribution in CMW phenomena at LHC energies.

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