

Charge asymmetry dependence of elliptic and triangular flow in pPb and PbPb collisions with CMS

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In nucleus-nucleus collisions, the linear dependence found for the elliptic flow harmonic of both positive or negative charged particles as a function of event charge asymmetry ($A_{ch} = (N^+ - N^-)/(N^+ + N^-)$, where N^+ and N^- are the number of positive and negative charged particles, respectively) is predicted by the phenomenon known as the Chiral Magnetic Wave (CMW) due to its induced electric quadrupole moment. However, other scenarios are also possible and may provide alternative explanations for the experimental results. New measurements of elliptic (v_2) and triangular (v_3) flow for positive and negative charged particles as a function of A_{ch} in pPb and PbPb collisions at $\sqrt{s_{NN}} = 5.02$ TeV are presented, using data collected by the CMS experiment during the LHC runs 1 and 2. The slopes and intercepts of the charged-dependent v_n harmonics vs. A_{ch} are directly compared for pPb and PbPb collisions with similar charged-particle multiplicities, where a strong CMW effect is not expected in very high multiplicity pPb events. Moreover, a comparison is made of the slope parameters between v_2 and v_3 harmonics normalized by the inclusive charge particle v_n in PbPb collisions as a function of centrality. These results provide a means to discriminate between the CMW and other scenarios such as local charge conservation as possible explanations for the observed charge dependent behavior.

Preferred Track

Correlations and Fluctuations

Collaboration

CMS

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