

Azimuthal anisotropies at very high p_T from two- and multi-particle correlations in PbPb collision at 5.02 TeV with CMS

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Studies of azimuthal anisotropies for very high p_T particles in relativistic heavy ion collisions provide crucial information on the path length dependence of the parton energy loss mechanism in the quark-gluon plasma. Final high-precision data on the elliptic (v_2) and triangular (v_3) anisotropy harmonics of charged particles, obtained with the scalar product method, are presented up to $p_T \sim 100$ GeV/c in PbPb collisions at $\sqrt{s_{NN}} = 5.02$ TeV, using data recorded during the LHC run 2 with the CMS detector. In particular, the v_3 harmonic is explored to a very high p_T regime for the first time, allowing for an improved understanding of the effect of initial-state fluctuations on the parton energy loss. The v_2 values reaching up $p_T \sim 100$ GeV/c are also determined using 4-, 6- and 8-particle cumulants, shedding new light on the origin of the observed high- p_T azimuthal anisotropies. These new results are compared to theoretical calculations and provide stringent constraints on the parton energy loss mechanisms and the influence of initial-state fluctuations.

Preferred Track

Collective Dynamics

Collaboration

CMS

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