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Measurement of elliptic flow of neutral pions with ALICE-EMCal in Pb-Pb collisions at $\sqrt{s_{NN}} = 2.76$ TeV

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The measurement of azimuthal anisotropy in bulk particle production plays a key role in understanding the property of quark gluon plasma. The second order Fourier component of the particle azimuthal distribution is referred as elliptic flow (v_2), whose transverse momentum dependence is suggested to be a sensitive probe for different physics processes, like hadron production mechanism and path-length dependence of energy loss in intermediate and high p_T range, respectively. Neutral pions are considered to carry more direct information from the early stage of collisions.

In this work, we present the current status and strategy for the measurement of the elliptic flow of neutral pions in mid and high p_T range in Pb + Pb collisions at ALICE with Electromagnetic Calorimeter (EMCal)[1]. Neutral pions are identified by the study of the shape of the overlapping electromagnetic showers developed in the calorimeter by the 2 decaying photons at high p_T (>6 GeV) or via invariant mass analysis at low p_T . v_2 is measured in standard event plane way[2]. This measurement will serve as an important check for the current knowledge of neutral pion flow as well as corresponding physics interpretation.

[1] J. Allen et al. (ALICE EMCal Collaboration), Nucl. Instrum. Methods Phys. Res., Sect. A 615, 6 (2010).

[2] A. M. Poskanzer and S. A. Voloshin, Phys. Rev. C 58, 1671 (1998).

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