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Measurement of event plane correlations in Pb-Pb collisions with the ATLAS detector

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Recently harmonic flow coefficients v_1 - v_6 have been measured in heavy-ion collisions at LHC. The magnitude of these coefficients and their centrality dependence suggest that they are associated with the various shape components in the initial geometry, arising from fluctuations of the participating nucleons in the overlap region. The orientation of these harmonic flow (event plane or Ψ_n) are generally correlated due to the correlations between the original shape components in the initial geometry; the correlations between event plane can also be generated dynamically during the hydrodynamic evolution of the medium. We present first measurements of various event plane correlations involving Ψ_2 to Ψ_6 in Pb-Pb collisions at the LHC. The large detector acceptance of ATLAS, i.e. calorimeter covering $-5 < \eta < 5$ and tracking detector covering $-2.5 < \eta < 2.5$, allows for a precise measurement of these correlations. The procedure for obtaining these correlations and the detailed comparison of the results obtained from sub-events in different η ranges are discussed.

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