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Methods for event plane determination in flow measurements with HADES

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Anisotropic transverse flow is one of the main observables in the study of strongly interacting matter created in nucleus-nucleus collisions. Spatial asymmetry of overlapping region of two ions transforms due to particles interaction into momentum anisotropy of produced hadrons. Comparison of measured azimuthal anisotropy with theoretical calculations allows to extract properties of the created matter such as its equation of state.

The results of flow analysis in Au-Au collisions relative to the spectator symmetry plane at the beam energy of 1.23A GeV recorded with the HADES experiment are presented. The spectator symmetry plane is estimated with subevents from the HADES Forward Wall hodoscope. Three-subevent technique is used for differential measurements of the directed and elliptic flow of protons and to extract systematic uncertainties in the event plane determination. Corrections for the detector azimuthal non-uniformity are applied using an extension of the Qn-Corrections Framework developed originally for the ALICE experiment at the LHC.

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