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Correlation between multiparticle cumulants and mean transverse momentum in small collision systems with the CMS detector

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The azimuthal anisotropies observed in small systems can originate from the final state response to the initial geometry as well as from initial momentum anisotropies. Recently it has been proposed that the correlation between the flow coefficient v_2^2 and the mean p_{T} carries information on the origin of flow in small collision systems by showing a characteristic sign change at very low multiplicity. However, this sign change exists in PYTHIA8 events as a result of nonflow effects. To reduce the nonflow dependence , a new correlator that correlates multiparticle cumulants and mean p_{T} is suggested. In this talk, we present results for this correlator using two and four particle correlations in pp, pPb and peripheral PbPb collisions. We also report our high precision measurements of v_2 using four-, six-, and eight-particle correlations, together with v_3 from four particle correlations, in both pPb and peripheral PbPb collisions. The ratios between v_n harmonics involving different numbers of particles are compared to model calculations to study the fluctuation-driven initial state anisotropies. The results provide insights to the origin of flow in small collision systems.

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