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## Measurement of $R_2(\Delta\eta, \Delta\varphi)$ and $P_2(\Delta\eta, \Delta\varphi)$ correlation functions in pp collisions at $\sqrt{s} = 13$ TeV using ALICE data

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Two-particle normalized cumulants of particle number correlations ( $R_2$ ) and transverse momentum correlations ( $P_2$ ) measured as a function of relative pseudorapidity and azimuthal angle difference ( $\Delta\eta, \Delta\varphi$ ) provide key information about particle production mechanism, diffusivity, charge and momentum conservation in high-energy collisions. To complement the recent ALICE measurements in Pb–Pb collisions, as well as for better understanding of the jet contribution and nature of collectivity in small systems, we measure these observables in pp collisions at  $\sqrt{s} = 13$  TeV with similar kinematic range,  $0.2 < p_T \leq 2.0$  GeV/c. The near-side and away-side correlation structures of  $R_2$  and  $P_2$  are qualitatively similar, but differ quantitatively. Additionally, a significantly narrower near-side peak is observed for  $P_2$  as compared to  $R_2$  for both charge-independent and charge-dependent combinations like in the recently published ALICE results in p–Pb and Pb–Pb collisions. Being sensitive to the interplay between underlying event and mini-jets in pp collisions, these results not only establish a baseline for heavy-ion collisions but also allow one to understand better signals which resemble collective effects in small systems.

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