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Measurement of long-range correlations in pp collisions characterized by presence of a Z boson with the ATLAS detector

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Measurements of correlations between two particles separated in pseudorapidity and azimuthal angles have shown striking similarities between results obtained in *pp*, *p*+A and A+A collision systems. In *pp* collisions, unlike in *p*+A and A+A, the strength of the correlations, quantified by the anisotropy parameter v_2, shows little dependence on the observed charged-particle multiplicity. Recent theoretical models suggest that this can result from an intrinsically weaker correlation between the charged-particle multiplicity and the impact parameter of the *pp* collision. An independent handle on the impact parameter can be obtained in principle by requiring the presence of a hard-scattering process in the collision. This talk presents the first measurement of two-particle correlations in pp collisions with a Z boson identified via its dimuon decay channel. The analysis uses ATLAS data recorded with nominal *pp* luminosity, with high pileup, and is analyzed using a new procedure developed to correct for the contribution of tracks arising from pileup vertices. The multiplicity and transverse momentum dependence of the inclusive charged-particle v_2 measured in Z-tagged events at $\sqrt{s}$ = 8 and 13 TeV is compared to the v_2 measured in minimum-bias collisions. They are found to be of a similar magnitude to each other and to that measured in typical events.

Summary

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