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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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Recent 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 the  $pp$  collision system, unlike in  $p+A$  and  $A+A$  collisions, 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 weak 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 presence of Z boson identified via its  $\mu\mu$  decay channel. The analysis uses ATLAS data recorded with nominal  $pp$  luminosity with high pileup. A new procedure is used 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.

### Collaboration

ATLAS

### Content type

Experiment

### Centralised submission by Collaboration

Presenter name already specified

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