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## Differential multi-particle correlation measurements for pPb collisions at CMS

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Previous CMS measurements have demonstrated the collective nature of multiparticle correlations in high-multiplicity pPb collisions at the LHC. This collectivity is consistent with a hydrodynamic flow origin. However, it can also be interpreted in terms of initial state effects arising from gluon saturation. The pseudorapidity dependence of the azimuthal Fourier coefficients ( $v_n$ ) is expected to be sensitive to the underlying mechanism with, in the hydrodynamic picture, the longer lifetime of the fireball on the Pb-going side expected to lead to a larger flow signal than found on the p-going side. To investigate the detailed properties of the observed collectivity, differential  $v_n$  values in transverse momentum ( $p_T$ ) and pseudorapidity ( $\eta$ ) are presented over the full range of the CMS tracker detector ( $-2.4 < \eta < 2.4$ ) for pPb collisions at a nucleon-nucleon center-of mass energy of 5.02 TeV. Results based on multiparticle analyses involving four or more particles are shown. An event plane analysis is presented where the influence of recently demonstrated event-plane de-correlation is considered. Comparisons are made with peripheral PbPb collisions measured at similar mid-rapidity particle multiplicities. The results will be discussed in the context of current models of the longitudinal dependence of the multiparticle correlations.

### **On behalf of collaboration:**

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