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Studying the p+Pb ridges using two-particle correlations and cumulants with the ATLAS detector

Two particle correlation measurements in p+Pb collisions at the LHC have shown a feature or features commonly referred to as the “ridge” in high-multiplicity events. The ridge describes a long-range correlation in relative pseudorapidity originally observed at small azimuthal angle separations. More recent measurements have shown a similar feature for pairs of particles with azimuthal angle difference near π . Theoretical calculations assuming saturation at low x can reproduce the measured correlations, but similarities between the transverse momentum dependence of the two-particle correlations in p+Pb and Pb+Pb collisions have also led to speculation that the ridges might arise from collective dynamics similar to that observed in Pb+Pb collisions. Results will be presented for ATLAS measurements of two-particle correlations and multi-particle cumulants in p+Pb collisions using data from the 2012 p+Pb run. The implications of these measurements for the interpretation of the ridge phenomenon will be discussed.

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