

Recent ATLAS measurements of azimuthal anisotropies in pp and $p+Pb$ collisions

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The azimuthal anisotropies of particle yields observed in relativistic heavy-ion collisions have been traditionally considered as a strong evidence of the formation of a deconfined quark-gluon plasma produced in these collisions. However multiple recent measurements from the ATLAS Collaboration in pp and $p+Pb$ systems show similar features as those observed in A+A collisions, indicating the possibility of the production of such a deconfined medium in smaller collision systems. This talk presents a comprehensive summary of these ATLAS measurements in pp collisions at 2.76, 5.02 and 13 TeV and in $p+Pb$ collisions at 5.02 and 8.16 TeV. It includes measurements of two-particle hadron-hadron and muon-hadron correlations in $\Delta\phi$ and $\Delta\eta$, with a template fitting procedure used to subtract the dijet contributions. Measurements of multi-particle cumulants $c_n\{2-8\}$ are also presented. The cumulant measurements confirm presence of collective phenomena in $p+Pb$ collisions, but are biased by non-flow correlations and are not able to provide evidence for collectivity in pp collisions. To address this, measurements from a new sub-event cumulant method that suppresses the contribution of non-flow effects are presented.

Presenter: MOHAPATRA, Soumya (Columbia University (US))