



Contribution ID: 36

Type: **not specified**

A double differential study of the particle production in pp collisions at $\sqrt{s} = 13$ TeV using transverse sphericity and multiplicity with ALICE

Tuesday, 19 September 2017 16:10 (20 minutes)

The event structure analysis allows to gain insight into the details of the physics mechanism which causes the novel collective phenomena observed in high multiplicity pp collisions at the LHC energies. In this context, transverse sphericity can be used to isolate hard and soft events in pp collisions. We present the study of the inclusive and identified charged particle production as a function of mid-rapidity charged particle multiplicity and transverse sphericity for pp collisions at $\sqrt{s} = 13$ TeV.

The results include measurements of transverse momentum distributions of charged pions, kaons and (anti)protons as well as the mean transverse momentum and particle ratios using data recorded with the ALICE detector. For a fixed multiplicity, the evolution of radial flow-like effects as a function of transverse sphericity is studied.

Comparisons with QCD inspired event generators such as EPOS LHC and PYTHIA 6 and 8 will be shown and discussed.

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Session Classification: Small systems