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Exploring light flavor hadronization in hard and soft events with event shape classifiers in small collision systems at the LHC with ALICE

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High-multiplicity pp collisions at LHC energies have revealed that small systems can exhibit QGP-like features, suggesting that light-flavor hadron production arises from complex mechanisms whose relative contributions evolve smoothly from low to high multiplicity collisions. Several analyses have recently been performed with event shape classifiers to separate soft and hard components, namely with transverse spherocity, relative transverse activity classifier, and charged-particle flattenicity.

This talk will present the charged and identified light flavour particle production as a function of event shape classifiers in pp collisions. These studies allow topological selection of events that are either "isotropic" (dominated by multiple soft processes) or "jet-like" (dominated by one or few hard scatterings). In addition, to get an insight into the underlying dynamics of ϕ meson production, this talk will highlight new results from ALICE comparing the ϕ meson production in and out of jets from pp collisions at $\sqrt{s} = 13.6$ TeV. The experimental results will be compared with the predictions from QCD-inspired models such as PYTHIA 8 and QGP-inspired models such as EPOS-LHC and EPOS4.

Category

Experiment

Collaboration

ALICE

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