Contribution ID: **65** Type: **Talk**

Light-flavor hadron production in small collision systems with ALICE

Tuesday 14 June 2022 10:00 (20 minutes)

High-multiplicity proton-proton collisions at LHC show the onset of phenomena typical of heavy-ion collisions, such as collective effects, suppression of short-lived resonances, and strangeness enhancement. These effects, whose origin is still under debate, suggest a complex particle production mechanism whose relative contributions evolve smoothly going from low to high multiplicity collisions. Light-flavor hadrons are the most abundant particles produced in pp collisions and multi-differential measurements of their production yields play a key role in the study of the hadronization mechanism.

In this contribution, recent measurements of light-flavor hadron production as a function of the charged-particle multiplicity and the (unweighted) transverse spherocity in pp collisions are presented and discussed in the context of phenomenological models implemented in general-purpose Monte Carlo generators. These results are complemented by detailed measurements of the neutral pion, eta, and omega mesons in several multiplicity classes in pp collisions at $\sqrt{s}$ = 13 TeV up to an unprecedented high p_{T}. These measurements allow a test of perturbative QCD calculations and represent an important baseline for heavy-ion studies. Finally, preliminary results that show the ALICE performance in measuring particle production using the newest 900 GeV pp data sample collected in October 2021 will also be presented.

Present via

Offline

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Session Classification: PA-Light-flavor and Strangeness

Track Classification: Light-flavor and Strangeness