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Probing the multiplicity dependence of strangeness enhancement in pp collisions in the regime of low multiplicity and transverse spherocity with ALICE

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ALICE is the experiment at the LHC specifically designed to study the properties of the quark-gluon plasma (QGP), a deconfined state of matter created in ultrarelativistic heavy-ion collisions. In this context, light-flavour particle production measurements play a key role, as they can probe statistical hadronization and partonic collectivity. Recent measurements in small colliding systems (pp and p-Pb) highlight an enhancement of produced strange hadrons with increasing multiplicities.

How do we further probe whether the multiplicity in itself is the driving force behind this effect? In this contribution we will study the production of strange light-flavour hadrons at low-multiplicity in pp collisions at $\sqrt(s) = 5.02$ TeV, extending at low multiplicity the observations reported in pp, p-Pb and A-A interactions, in order to probe the onset of strangeness enhancement.

In contrast, this contribution we will discuss light-flavour particle production in pp collisions at $\sqrt(s) = 13$ TeV, constrained to high multiplicities as a function of event topology. The event topology in this analysis is estimated through the transverse spherocity, which categorizes events based on the azimuthal distribution of tracks. The transverse spherocity is sensitive to the hard and soft processes and is a useful tool to distinguish the isotropic and jet dominated events in pp collisions. The interplay between multiplicity and transverse spherocity classes on light-flavour production can be understood by comparing the results obtained from the extreme selection of multiplicity and/or transverse spherocity.

These measurements will be compared with the Monte Carlo (MC) predictions obtained from models such as PYTHIA 8 and Herwig7.

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