ICHEP 2022 BOLOGNA
ICHEP 2022 XLI International Conference on High Energy Physics Bologna (Italy)
6 13 07 2022

Contribution ID: **276** Type: **Parallel Talk**

Light flavour particle production in the smallest hadronic systems created in ALICE at the LHC

Thursday, 7 July 2022 09:00 (15 minutes)

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 collision systems (pp and p-Pb) highlighted a progressive onset of collective phenomena where charged-particle multiplicity is the driving quantity for all the considered observables. This evidence raised the question: what is the smallest hadronizing system which features collective-like phenomena? For this reason, small collision systems play a key role in the study of particle production in high-granular multiplicity intervals, going from low centre-of-mass energies to higher ones. In this contribution, final results on the production of light-flavour hadrons in pp collision at $\sqrt{s}$ = 5.02 TeV will be presented, extending at low multiplicity the observations reported in pp, p-Pb and A-A interactions. Final considerations will be discussed concerning the system-size dependence of charged-particle distributions in ultra-thin multiplicity intervals. Finally, a first look into the newest 900 GeV pp data sample collected in October 2021 will also be proposed to reach the lowest multiplicity ever probed at the LHC.

In-person participation

Yes

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Session Classification: Heavy Ions

Track Classification: Heavy Ions