Contribution ID: **104** Type: **not specified**

Quarkonium production and elliptic flow in small systems with ALICE

Wednesday 26 October 2022 16:45 (20 minutes)

Quarkonium production has long been identified as one of the golden signatures of the quark-gluon plasma (QGP) formation in heavy-ion collisions.
The LHC data from small colliding systems, namely pp and p–Pb, showed unexpected QGP-like behaviours when selecting high multiplicity events. These results include the non-zero elliptic flow of identified hadrons and the strangeness enhancement observed in high-multiplicity pp and p–Pb collisions. Multiple parton-parton interactions (MPI) taking place in a single hadron-hadron collision are one of the main explanations for these observations.
Quarkonium studies in small systems offer several ways to probe MPI, in particular through measurements of double quarkonium production as well as quarkonium production as a function of the charged-particle multiplicity. In addition, measurements of elliptic flow (v_2) of quarkonia in small systems enable to investigate collective effects in the heavy flavour sector. Moreover, heavy quarkonium production in hadronic collisions is sensitive to both perturbative and non-perturbative aspects of quantum chromodynamics (QCD). Therefore, quarkonium production and polarization measurements in pp collisions also represent a benchmark test of QCD based models.

In this contribution, the multiplicity dependent production of quarkonium states, such as J/ψ, ψ(2S) and Υ(nS), reconstructed with the ALICE detector in pp and p-Pb collisions, will be presented together with their excited-to-ground state ratios. New J/ψ results in pp collisions at $\sqrt{s}$ = 13 TeV and forward rapidity will be shown, in particular the v_2 in high multiplicity pp collisions, the measurement of the J/ψ pair production and Υ(1S) polarization. Recent quarkonium cross section measurements in pp collisions at mid and forward rapidity will also be presented. Results will be compared with available model calculations.

Primary author: ALOCCO, Giacomo (Universita e INFN, Cagliari (IT))

Presenter: ALOCCO, Giacomo (Universita e INFN, Cagliari (IT))

Session Classification: P5 Heavy Ion Collisions and QCD Phases

Track Classification: P5 Heavy Ion Collisions and QCD Phases