

Quarkonium production in small collision systems in ALICE

Monday, June 5, 2023 2:24 PM (20 minutes)

Quarkonium measurements in proton-proton (pp) collisions represent a fundamental tool for studying quantum chromodynamics (QCD), due to the involvement of both perturbative and non-perturbative regimes and their interplay in the resonance formation process. In p-Pb collisions, quarkonium production is sensitive to the nuclear modifications on parton distribution functions and potentially to final-state effects, that can either be related to cold nuclear matter or to the potential formation of a strongly interacting system at high collision energy and particle multiplicity.

The ALICE experiment has measured quarkonia in various collision systems at the LHC, through their dilepton decays.

Quarkonia can be reconstructed in the e^+e^- decay mode at midrapidity ($|y| < 0.9$) in the central barrel, and at forward rapidity ($2.5 < y < 4.0$) in the muon spectrometer, through their $\mu^+\mu^-$ decay.

In this contribution, a summary of the recent ALICE measurements of quarkonium-related observables in pp and p-Pb collisions will be presented. In pp collisions at $\sqrt{s} = 13$ TeV, preliminary results on $\Upsilon(nS)$ cross section measurements and prompt and not-prompt J/Ψ -tagged jets, as well as final results on double J/Ψ production, will be shown. A preliminary measurement of charm and beauty cross sections at forward rapidity, which can serve as a reference for open heavy flavour and quarkonium measurements in nuclear collisions, will be presented.

Results on J/Ψ elliptic flow v_2 in pp collisions will also be discussed and compared with the corresponding ones in p-Pb. Finally, recently published prompt and non-prompt J/Ψ cross sections and nuclear modification factors in p-Pb collisions at $\sqrt{s_{NN}} = 8.16$ TeV will be shown. Results will be compared to available theoretical models.

Primary author: PENNISI, Michele (INFN UniTO)

Presenter: PENNISI, Michele (INFN UniTO)

Session Classification: Hadron decays, production and interaction

Track Classification: Hadron decays, production and interactions