

ω and η' production in proton-proton collisions at the LHC measured with ALICE

Wednesday, 29 July 2020 20:00 (15 minutes)

While the ω and η' mesons are composed out of the lightest quarks, they are among the heaviest vector and pseudoscalar mesons, respectively, without having net strangeness. As such, they serve as ideal laboratory to test and constrain perturbative quantum chromodynamics in a regime where it is difficult to constrain the fragmentation of the lightest quarks into the different hadrons. Furthermore, the ω/π^0 particle momentum distribution ratio carries information about the probability of the corresponding spin states to be produced in the hadronization as they consist of the same quarks. In addition, their measurements in pp collisions provide a baseline for heavy-ion collisions, where a large fraction of the mesons will decay within the produced quark-gluon plasma, which might lead to a change of the mass and/or width of the meson with respect to their values in vacuum.

In this talk, the first results on the ω production cross sections at mid-rapidity in pp collisions at $\sqrt{s} = 7$ and 13 TeV measured in the $\pi^+\pi^-\pi^0$ decay channel by the ALICE collaboration will be presented. These spectra reach unprecedented transverse momenta and complement the overall picture of parton fragmentation into neutral mesons. They will be compared to different event generators and a recent next-to-leading order calculation attempting to simultaneously describe the fragmentation into ω and ϕ mesons using a broken SU(3) symmetry. Furthermore, the first results on the η' production in the ALICE central barrel detectors will be presented using the $\gamma\gamma$ and $\pi^+\pi^-\eta$ decay channels.

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Secondary track (number)

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Session Classification: Strong Interactions and Hadron Physics

Track Classification: 06. Strong Interactions and Hadron Physics