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Production of ω mesons in pp collisions at $\sqrt{s} = 5.02$ TeV with ALICE

Tuesday 24 September 2024 18:10 (20 minutes)

Measurements of neutral meson production cross sections in proton-proton (pp) collisions at LHC energies are important as a reference for heavy-ion studies and to test our understanding of QCD. At high transverse momenta (p_{T}) where pQCD is applicable these measurements can be used to constrain model calculations. At low momenta, the production rates of neutral mesons are crucial inputs for measurements of direct photons and dielectrons. Therefore, the production cross-section of the ω meson at midrapidity needs to be measured down to the lowest p_{T}.

This poster will present the first measurement of the ω meson at midrapidity in pp collisions at $\sqrt{s} = 5.02$ TeV using the decay channel $\omega \rightarrow \mathrm{e}^{+}\mathrm{e}^{-}$. This analysis extends the low p_{T} range of previous measurements significantly to $0 < p_{\mathrm{T}} < 6\,\mathrm{GeV}/c$ and enables the determination of the total yield without any extrapolation uncertainties. We will discuss the challenges in the signal extraction and background estimation related to the dielectron measurement. The final results will be shown in comparison to different model calculations as well as to measurements at different collision energies.

Category

Experiment

Collaboration

ALICE

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