



Contribution ID : 157

Type : **not specified**

Diffractive processes in electron-proton and proton-proton collisions

Wednesday, 8 October 2008 19:00 (2:00)

Abstract content

Summary

The diffractive deep inelastic scattering (DDIS) in electron-proton collisions at HERA provide a very interesting example of the interplay between hard and soft aspects of QCD interactions. We use new diffractive data from HERA and determined diffractive parton distributions of the proton from fits to this data. In addition to the twist-2 contribution, the twist-4 contribution from longitudinally polarized virtual photons is considered, which is important in the region of small diffractive masses. A new prediction for the longitudinal diffractive structure function is presented which differs significantly from that obtained in the pure twist-2 analyses. This extracted diffractive parton distributions we use to describe more complicated processes in proton-proton collisions at the LHC. We show also the new analysis for the heavy quark production in diffractive processes. Diffractive processes are very important to discover new particles at the LHC- because the background in such kind of processes is very small.

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Session Classification : Posters