



Contribution ID: 170

Type: Talk

Production of dileptons via photon-photon processes in proton-proton collisions with one forward proton measurement at the LHC

Monday 5 September 2022 16:30 (20 minutes)

We discuss photon-photon fusion mechanisms of dilepton production in proton-proton collisions with rapidity gap in the main detector and one forward proton in the forward proton detectors. This is relevant for the LHC measurements by ATLAS+AFP and CMS+PPS. Transverse momenta of the intermediate photons are taken into account and photon fluxes are expressed in terms of proton electromagnetic form factors and structure functions. Differential distributions in $\xi^{1/2}$, M_{ll} , Y_{ll} , $p_{t, ll}$, M_R are shown, and the competition of different mechanisms is discussed. Both double-elastic and single-dissociative processes are included in the analysis. Different parametrizations of the structure functions are used. We discuss also mechanism with one forward Δ^+ isobar or other proton resonances in the final state. The role of several cuts is studied. We also use the superchic generator and compare corresponding results to the results of our codes. The soft rapidity gap survival factor is calculated for each contribution separately. The gap survival factor for the single-dissociative mechanism due to minijet emission into the main detector is calculated in addition. It depends on the type of contribution (fully elastic, single dissociation, double dissociation). The soft rapidity gap survival factor for the case of single proton measurement is significantly smaller than that for the inclusive case (no proton measurement). We found only weak dependence on the invariant mass of the dilepton system as well as the lepton pair transverse momentum and sizeable dependence on the pair rapidity.

Published in: Phys.Rev.D 104 (2021) 7, 074009.

Is this abstract from experiment?

No

Name of experiment and experimental site

no

Is the speaker for that presentation defined?

Yes

Details

Marta Luszczak,

Internet talk

No

Author: LUSZCZAK, Marta

Presenter: LUSZCZAK, Marta

Session Classification: High Energy Particle Physics

Track Classification: Main topics: High Energy Particle Physics