Contribution ID: **71** Type: **not specified**

Rapidity gap survival factors caused by remnant fragmentation for central electromagnetic production of W^+W^-

We discuss production of W^+W^- pairs in proton-proton collisions induced by two-photon fusion including, for a first time, transverse momenta of incoming photons. The unintegrated inelastic fluxes (related to proton dissociation) of photons are calculated based on modern parametrizations of deep inelastic structure functions in a broad range of their arguments (x and Q^2). In our approach we can get separate contributions of different W helicities states. We focus on processes with single and double proton dissociation. The hadronisation of proton remnants is performed with Pythia string fragmentation model, assuming a simple quark-diquark model for proton. Highly excited remnant systems hadronise producing particles that can be vetoed in the calorimeter. We calculate associated effective gap survival factors. The gap survival factors depend on the process, mass of the remnant system and collision energy. The rapidity gap survival factor due to remnant fragmentation for double dissociative (DD) collisions (SR,DD) is smaller than that for single dissociative (SD) process (SR,SD). We observe approximate factorisation: SR,DD≈(SR,SD)2, when imposing rapidity veto.

- L. Forthomme, M. Luszczak, W. Schafer, A. Szczurek, "Rapidity gap survival factors caused by remnant fragmentation for W^+W^- pair production via $\gamma\gamma \to W^+W^-$ subprocess with photon transverse momenta", arXiv:1805.07124[hep-ph].
- M. Luszczak, W. Schafer, A. Szczurek, "Production of W^+W^- pairs via $\gamma^*\gamma^* \to W^+W^-$ subprocess with photon transverse momenta", JHEP 1805 (2018) 064.
- M. Luszczak, W. Schafer and A. Szczurek, "Two-photon dilepton production in proton-proton collisions: two alternative approaches", Phys. Rev. D93 (2016) 7, 074018.
- M. Luszczak, A. Szczurek, Ch. Royon, "W^+W^- pair production in proton-proton collisions: small missing terms ", JHEP 1502 (2015) 098.

Authors: LUSZCZAK, Marta (University of Rzeszow); SZCZUREK, Antoni (Institute of Nuclear Physics)

Track Classification: Diffraction and photon physics in hadron-hadron and heavy-ion collisions