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Diffraction pQCD mechanisms of exclusive production of $b\bar{b}$ dijets and W^+W^- pairs in proton-proton collisions

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We discuss central exclusive production of W^+W^- pairs in proton-proton collisions at LHC. Several observables related to this

process are calculated. Predictions for the total cross section and differential distributions in rapidity and transverse momentum of W^\pm and WW invariant mass are presented.

We show results for different polarization states of the final W^\pm bosons. We discuss both $\gamma\gamma \rightarrow W^+W^-$ mechanism as well as a new mechanism of exclusive diffractive production.

The amplitude for the latter process is calculated in the Durham model used recently to estimate cross section for exclusive production of Higgs boson, gluon-gluon, $b\bar{b}$ dijets as well as for pairs of photons. Some results for those processes will be discussed briefly and compared to the CDF collaboration data.

The amplitude for the $pp \rightarrow ppW^+W^-$ process is expressed in terms of off-diagonal unintegrated gluon distribution functions.

We compare the two (QED and QCD) types of contributions.

The phase space integrated diffractive contribution when separated is only a small fraction of fb compared to 115.4 fb of the $\gamma\gamma$ contribution.

The $\gamma\gamma$ contribution dominates at small four-momentum transfers squared in the proton lines as well as in a broad range of W^+W^- invariant masses.

This opens a possibility of searches for anomalous four-boson $\gamma\gamma W^+W^-$ coupling due to new physics

beyond Standard Model. The example are Higgsless models.

The presentation will be based mostly on our recent study.

I will also show some published results on exclusive production of Higgs and dijets.

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