Chapter 5 status: central exclusive production

LHC Working Group on Forward Physics and Diffraction

Matthias Saimpert[1]
P. Collins, L. Harland-Lang, O. Kepka

[1]CEA Saclay - Irfu/SPP

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Presentation of chapter 5

- Describes Central Exclusive Production (CEP) *"present results, incoming ones and prospects for higher luminosity/different beam conditions"*
- Includes gluons and photon exchanges contributions

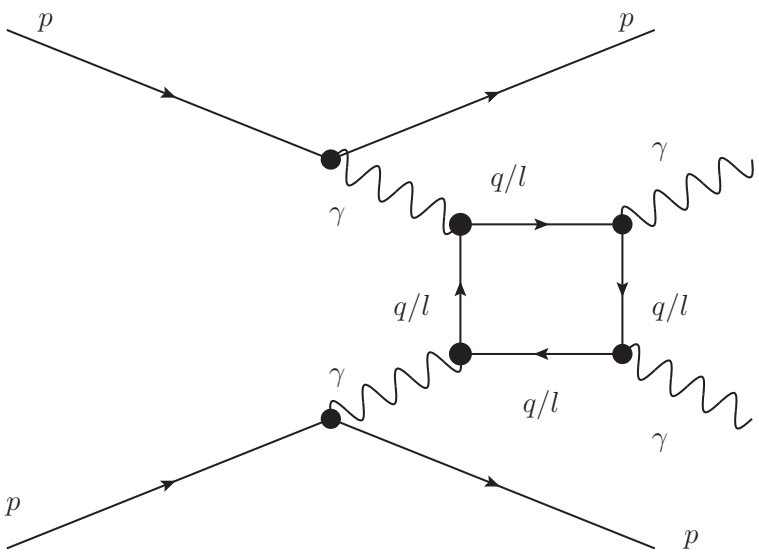

Figure: $\gamma\gamma$ production via γ exchanges

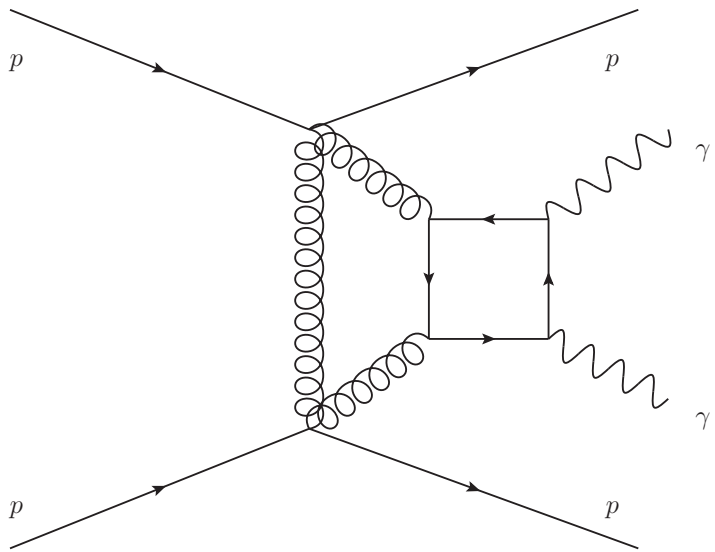

Figure: $\gamma\gamma$ production via gluon exchanges

Summary of Chapter 5 (1/2)

- Photon and exclusive QCD exchanges: present results
  - Short theoretical introduction
    (P. Collins, L. Harland-Lang, O. Kepka, M. Saimpert)
  - LHCb, ALICE and CDF published results **(no news)**
    J/Ψ (LHCb), $\Psi(2S)$, χ_c, $\gamma\gamma \to \mu\mu$ (LHCb), $\gamma\gamma$ (M. Albrow for CDF)
  - Motivations for future measurements at low/medium luminosity
    latest MC predictions of the KMR process (L. Harland-Lang, V. Khoze, M. Ryskin)
    vector meson production, technipions (A. Szczurek, R. Pasechnik, P. Lebiedowicz)
- Incoming results and prospects for rapidity gaps based analysis **(no news)**
  - (Rapidity gaps definition in CEP events?)
    (P. Collins?, O. Kepka?)
  - CMS, on-going measurements
    exclusive dijet at low luminosity
  - LHCb, on-going measurements and prospects
    hadronic modes, vector mesons, meson pairs, light mesons, exotic searches

Summary of Chapter 5 (2/2)

- Incoming results and prospects for proton tagging based analysis at high and low β^* and low/medium luminosity
  - Benefits of tagging protons
    proton azimuthal angular distribution as a probe of survival factors/spin of produced resonance, ... (L. Harland-Lang?)
  - CMS/TOTEM on-going measurements (Υ, ..., ?) **(no news)**
    (G. Silvera?)
  - CMS/TOTEM prospects (focus at high β^*)
    low mass state resonances, CEP jets
  - ATLAS prospects (focus at low β^*)
    dijet with single tag, $\Pi\Pi$ *pair (R. Staszewski, M. Trzebinski)*
- Prospects for high luminosity measurements
  - CMS/TOTEM prospects (to be defined) **(no news)**
  - ATLAS prospects
    Exclusive dijet with double tag (R. Staszewski, M. Trzebinski), $\gamma\gamma ZZ$, γWW *(O. Kepka, C. Royon)*
  - $\gamma\gamma\gamma\gamma$ anomalous couplings
    (S. Fichet, G. von Gersdorff, O. Kepka, C. Royon, M. Saimpert)

Conclusion

- Very preliminary summary
- Waiting for CMS contributions announcement
- Additional contributions are very welcome
- To contact us :

Paula Collins (Paula.Collins@cern.ch)
Oldrich Kepka (kepkao@fzu.cz)
Lucian Harland-Lang
(lucian.harland-lang@durham.ac.uk)
Matthias Saimpert (matthias.saimpert@cea.fr)