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Exclusive production of vector mesons in pp and $p\bar{p}$ collisions.

Protons and antiprotons at collider energies are a source of high energy Weizs\"acker–Williams photons. This opens up a possibility to study at the LHC exclusive photoproduction of heavy vector mesons at energies much larger than possible at the HERA accelerator.
We present selected results on the production of vector mesons $\rho, \omega, \phi, J/\Psi$ and Υ. I will show distributions in rapidity, transverse momentum of mesons and azimuthal angle between outgoing protons for RHIC, Tevatron and LHC energies. The absorption effects are discussed.
The amplitude for $\gamma p \to \phi p$ is calculated in a pQCD k_T - factorization approach with an unintegrated gluon distribution constrained by inclusive deep-inelastic structure function. The total cross section for diffractive meson (virtual) photo-production as a function of energy and photon virtuality is calculated and compared to HERA data. We also discuss the ratio of the first radial excitation state (2S) to the ground state (1S) in difractive J/Ψ and Υ production.

Primary author: Mrs CISEK, Anna (Institute of Nuclear Physics PAN, Krakow)

Co-authors: Prof. SZCZUREK, Antoni (Institute of Nuclear Physics PAN, Krakow); Dr SCHAFER, Wolfgang (Institute of Nuclear Physics PAN, Krakow)

Presenter: Mrs CISEK, Anna (Institute of Nuclear Physics PAN, Krakow)

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