

LHCb results on central exclusive charmonium production and measurements with electroweak bosons

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Central exclusive production is a class of very clean reactions in which one or two particles are produced but the colliding protons emerge intact. Measurements of the integrated and differential cross-sections of the exclusive production of J/Ψ and $\Psi(2S)$, as well as double charmonium, will be discussed. The measurements are compared to different models. Some of them include saturation effects, which may become important at such low x -values. The results are further compared to photoproduction results from HERA and fixed target experiments.

Measurements with electroweak bosons test QCD predictions at next-to-next-to-leading order and are sensitive to the parton distribution (PDF) of the proton. The forward reach of the LHCb detector probes small values of the longitudinal momentum fraction x of the partons in the proton. Thus, the LHCb results can be used to constrain the PDF in a previously unexplored region. Recent measurements of W boson production and the associated production of Z bosons will be shown together with the first observation of Z production in proton-ion collisions.