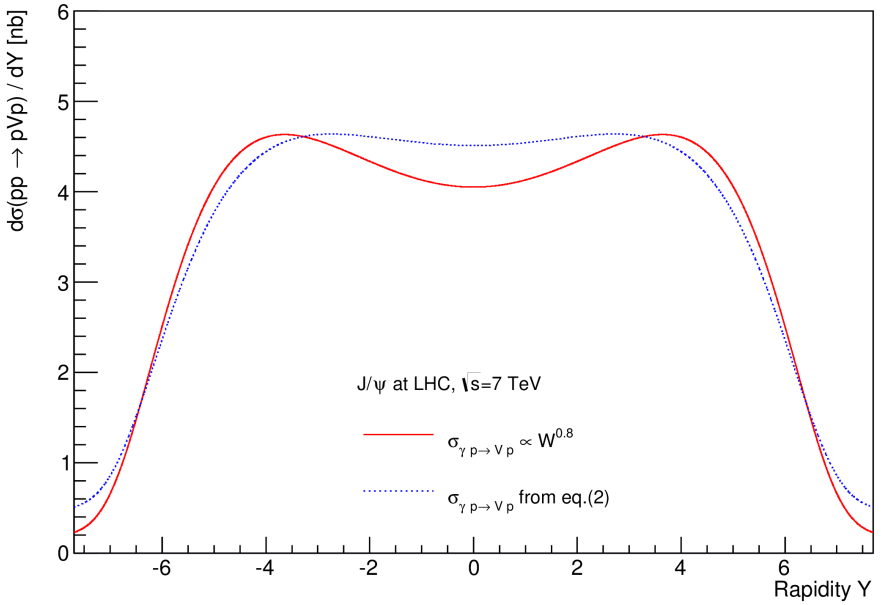
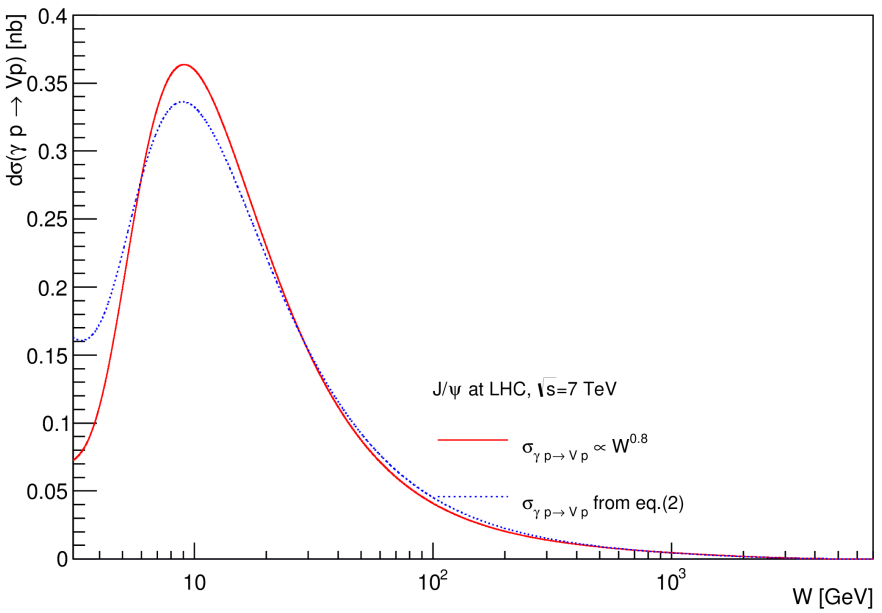
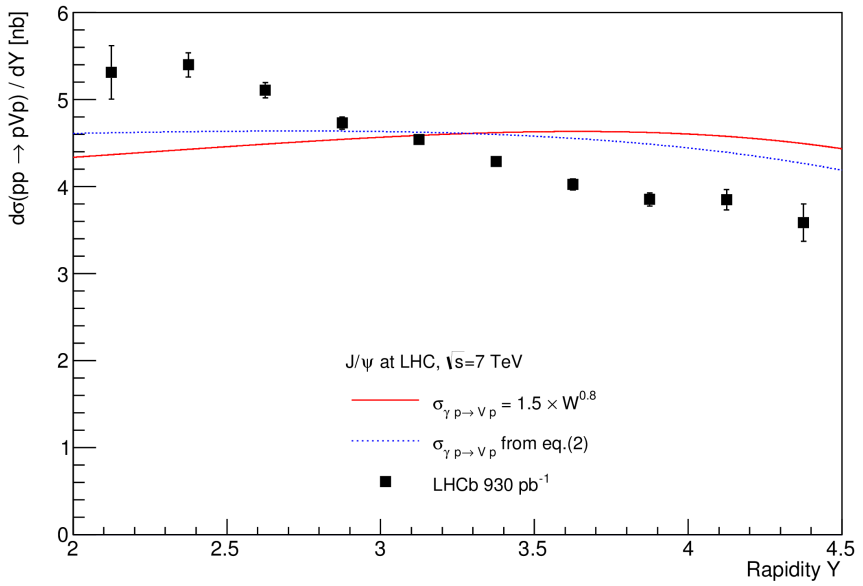
Power law vs geometric model at LHC

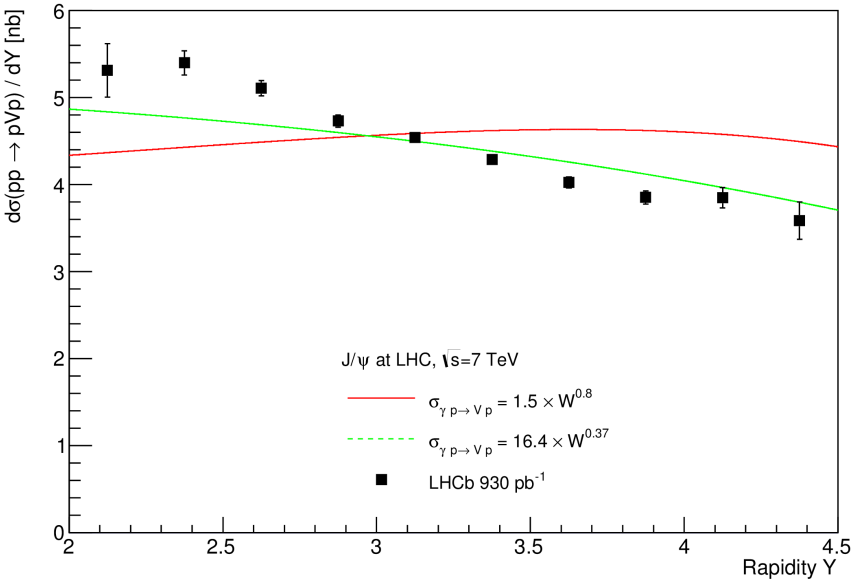




Generally similar behaviour
Power law is somewhat steeper in W → more distinct bell-like structure in y

Adding LHCb rapidity cross section



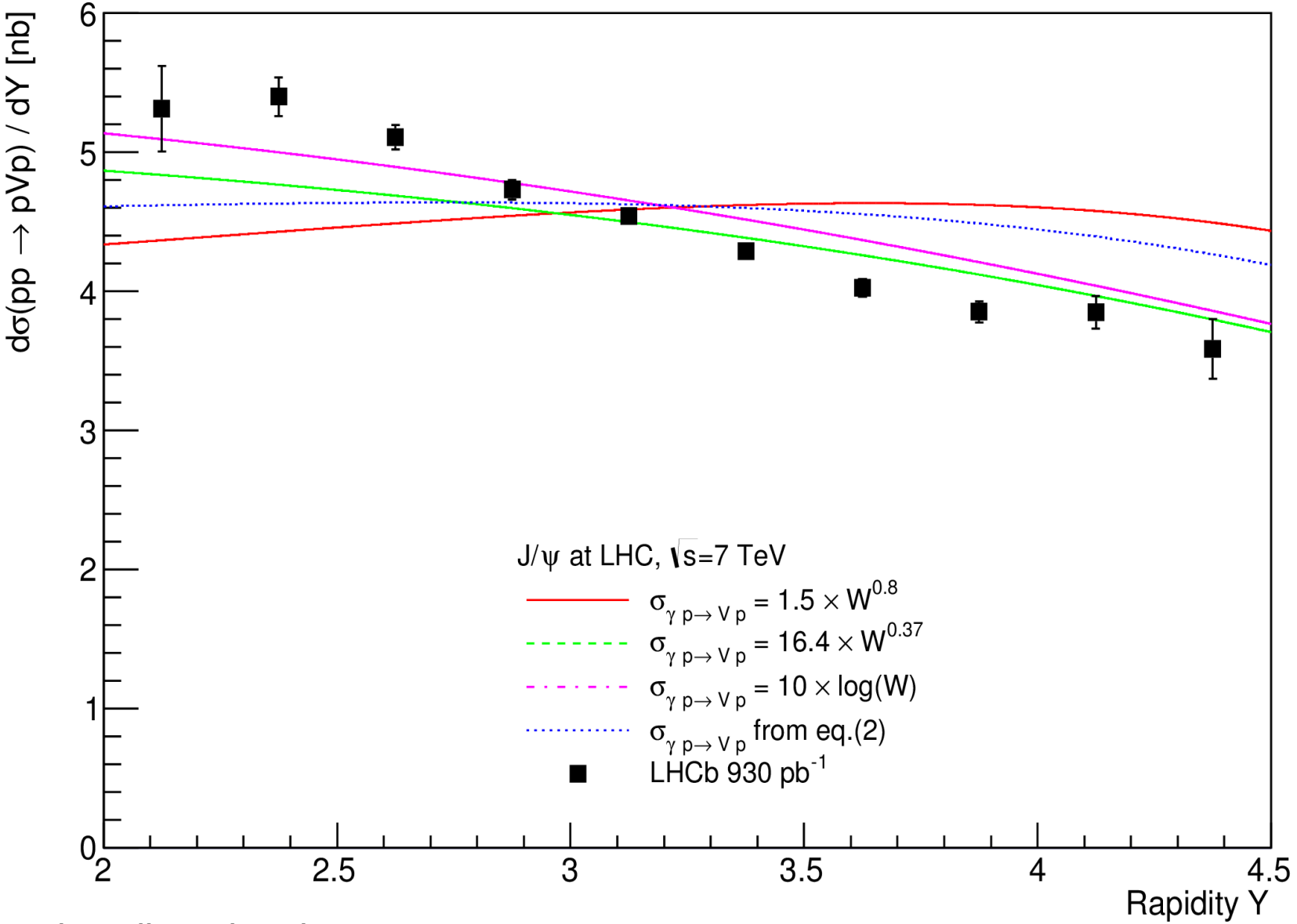


Both power law and geometric model are much flatter than the data

By fitting the power (and normalization) a much better description of data can be obtained (green curve)
However, power tends to be very small (δ=0.37) which contradicts HERA (page 4)

Grand comparison

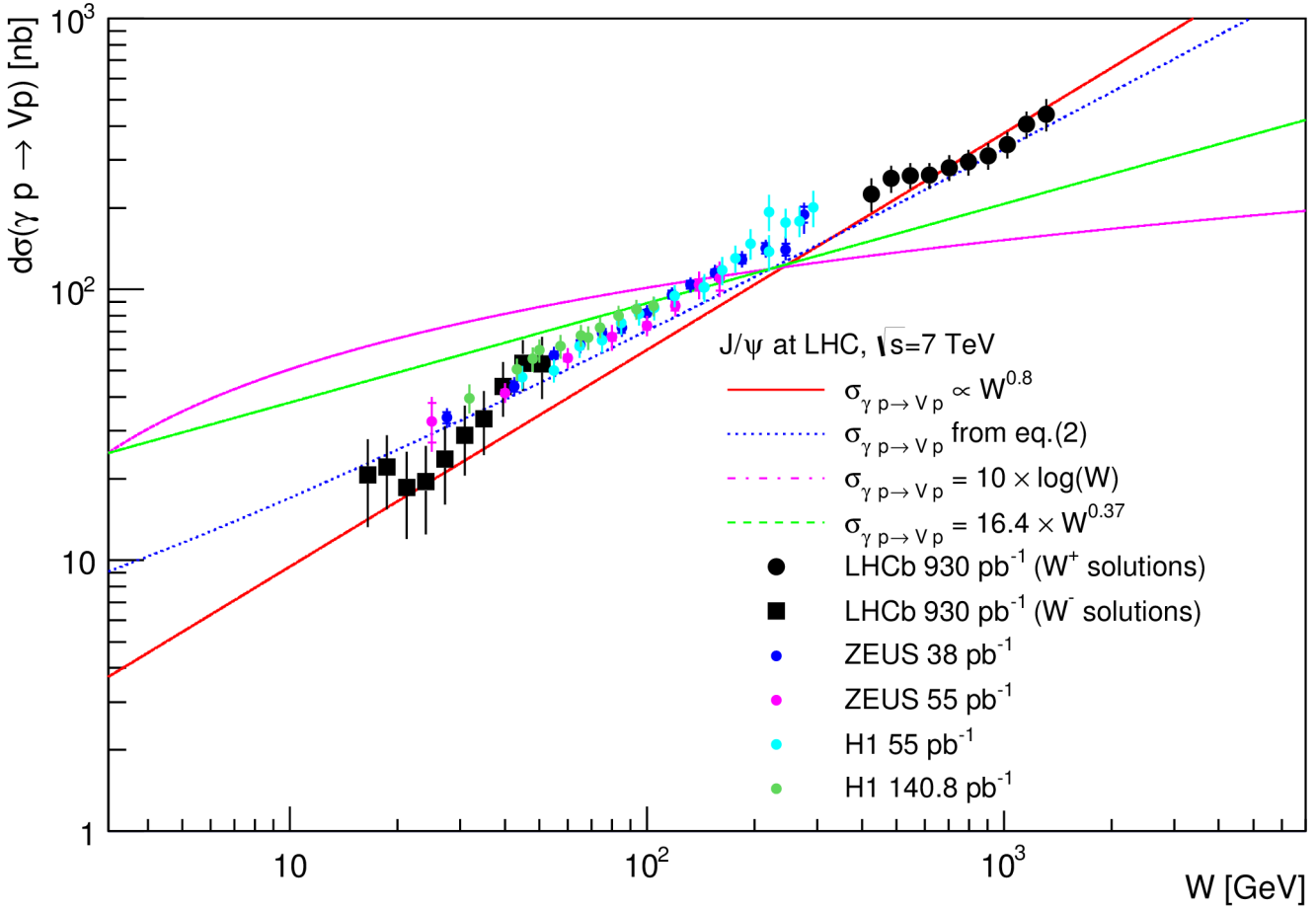
Here all available curves are summarized, also the result using the logarithmic growth of the photon-proton cross section is shown



Logarithm describes data best

γp cross section

However, the fitted power law and logarithm contradict data on the γp cross section



Geometric model gives the best description!

Note, however, that the power law with δ=0.8 might be not the best fit!

γp cross section