Determination of the Upper Limit

$$
\begin{aligned}
N_{observed} &= 13 \\
N_{background} &= 4 \\
\text{Confidence Level} &= 95\% \\
\text{Systematic Uncertainty} &= 24.5\%
\end{aligned}
$$

$$\Downarrow$$

$$N_{limit} = 22$$

Result: Upper limit on σ on a 95% CL:

$\sigma_{\gamma p \xrightarrow{\mathbb{O}} \pi^0 N^*} < 39$ nb (H1 preliminary)

$\sigma_{\gamma p \xrightarrow{\mathbb{O}} \pi^0 N^*} = 400$ nb (MSV prediction)

Model of the Stochastic Vacuum

restricted to the visible t range: 0.02 GeV$^2 < t <$ 0.3 GeV^2

$0.3 < y < 0.7$ and $Q^2 < 0.01$ GeV^2

$W_{\gamma p} \approx 210$ GeV

neutron tagged and extrapolated via Clebsch Gordan formalism