Rate estimate vs. 0

$\gamma + p \to \rho p \to \pi^+ \pi^- p$

$$\sigma = \frac{N}{\epsilon \mathscr{L}}$$

σ: Cross section
ϵ: Efficiencies
$\mathscr{L}$: Luminosity

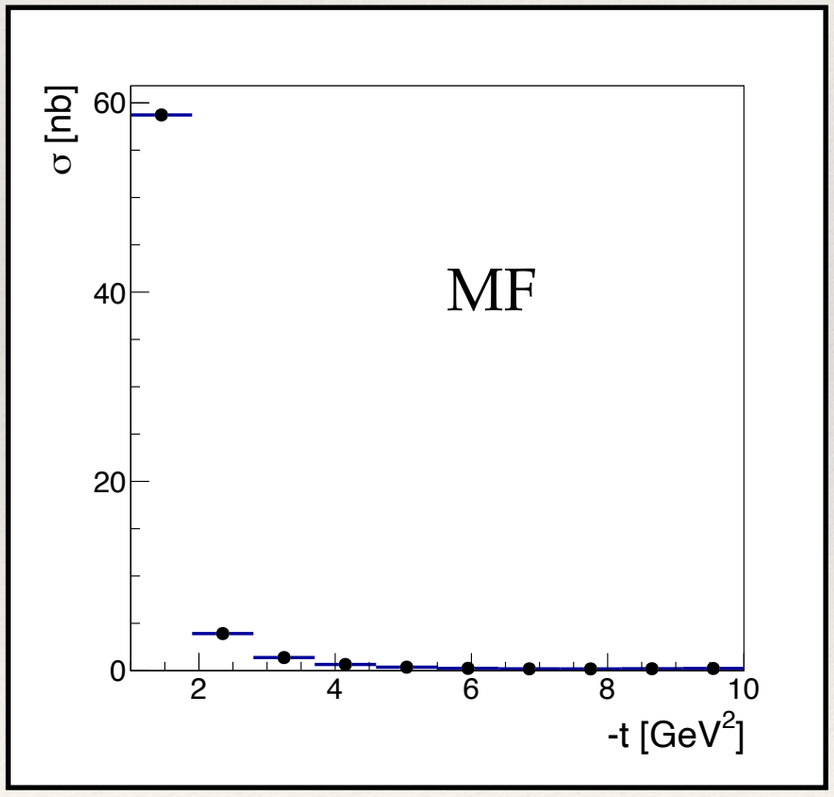
Based on: $\gamma + p \to \rho p \to \pi^+ \pi^- p$

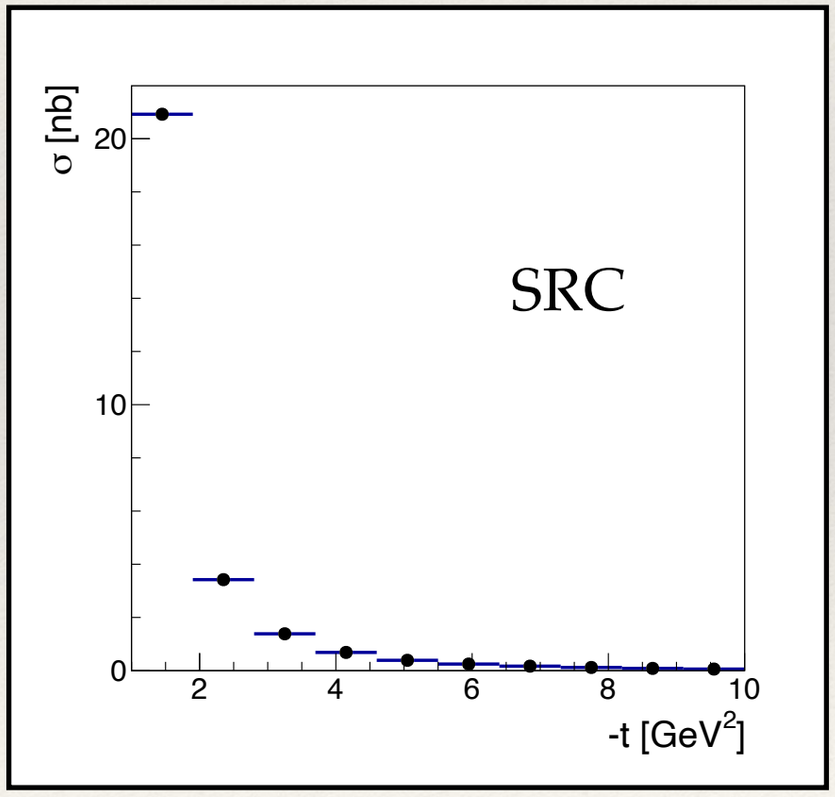
$$\sigma = \frac{N}{\epsilon \mathscr{L}}$$

σ: Cross section
ϵ: Efficiencies
$\mathscr{L}$: Luminosity

From the generator:

$$\gamma + p \rightarrow \rho p \rightarrow \pi^+ \pi^- p$$





$$\sigma = \frac{N}{\epsilon \mathscr{L}}$$

σ: Cross section

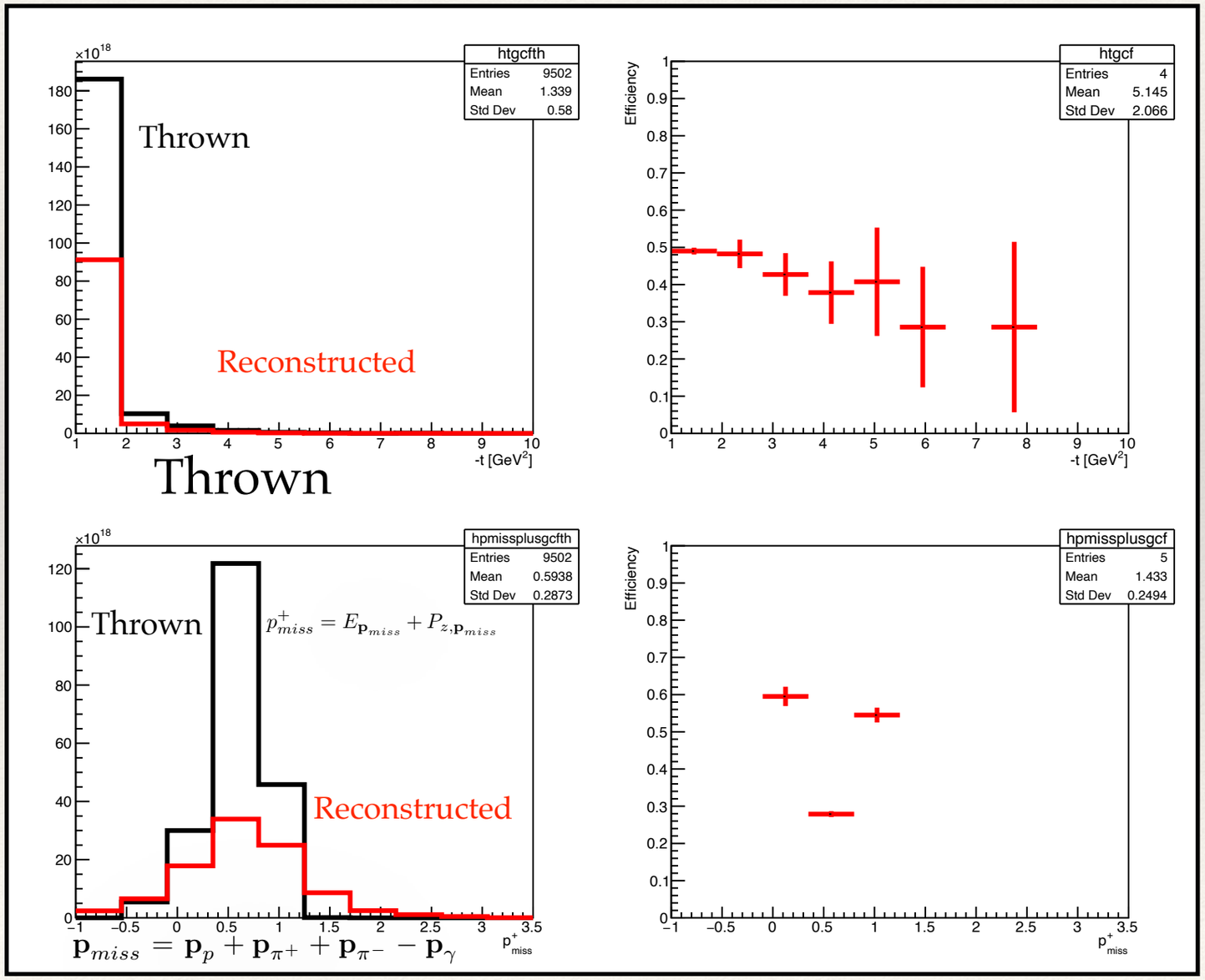
ϵ: Efficiencies

$\mathscr{L}$: Luminosity

$$\gamma + p \rightarrow \rho p \rightarrow \pi^+ \pi^- p$$

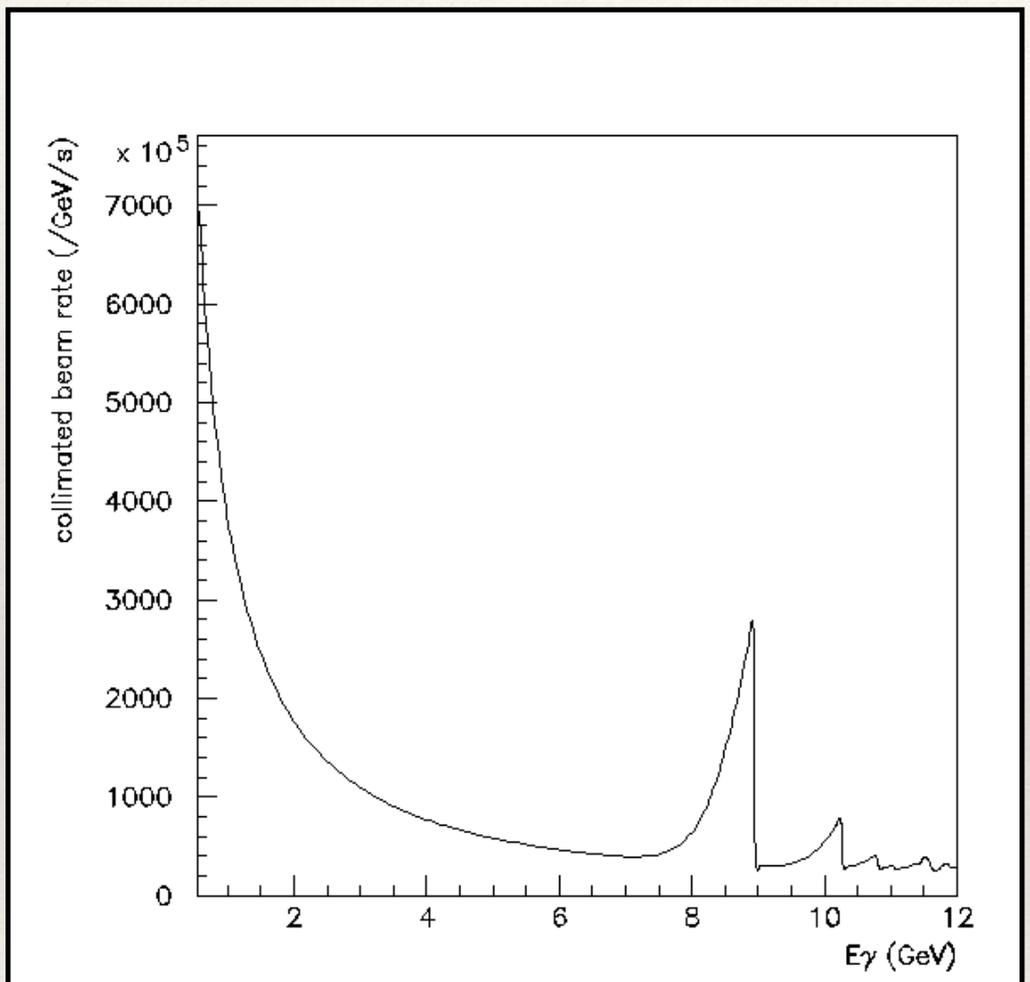
Efficiencies: $\epsilon = \frac{N_{reconstructed}}{N_{thrown}}$

Monte-Carlo based: Assumes the simulation reproduces the data.



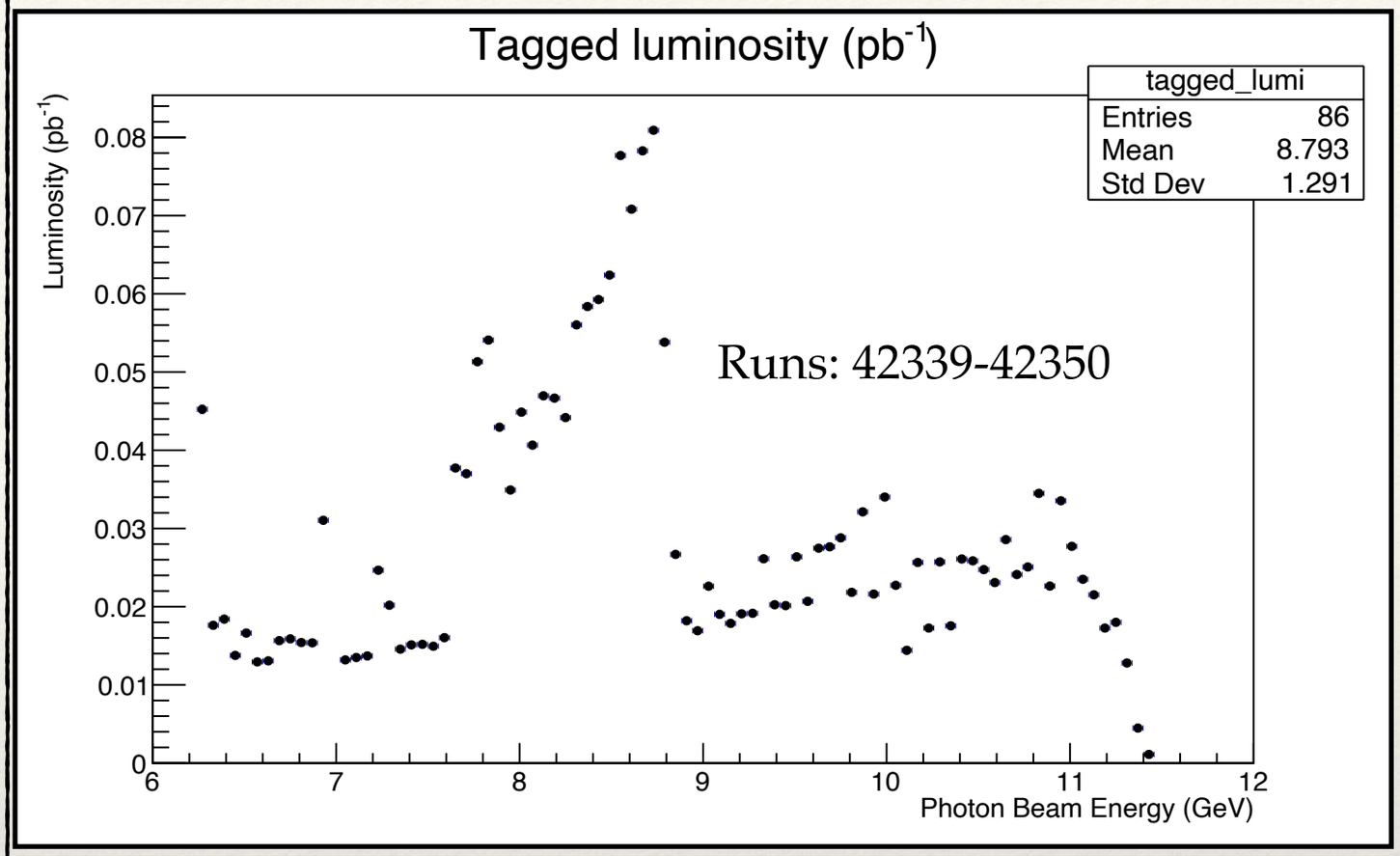
$$\mathscr{L} = \text{Flux} \cdot \text{Target Thickness}$$

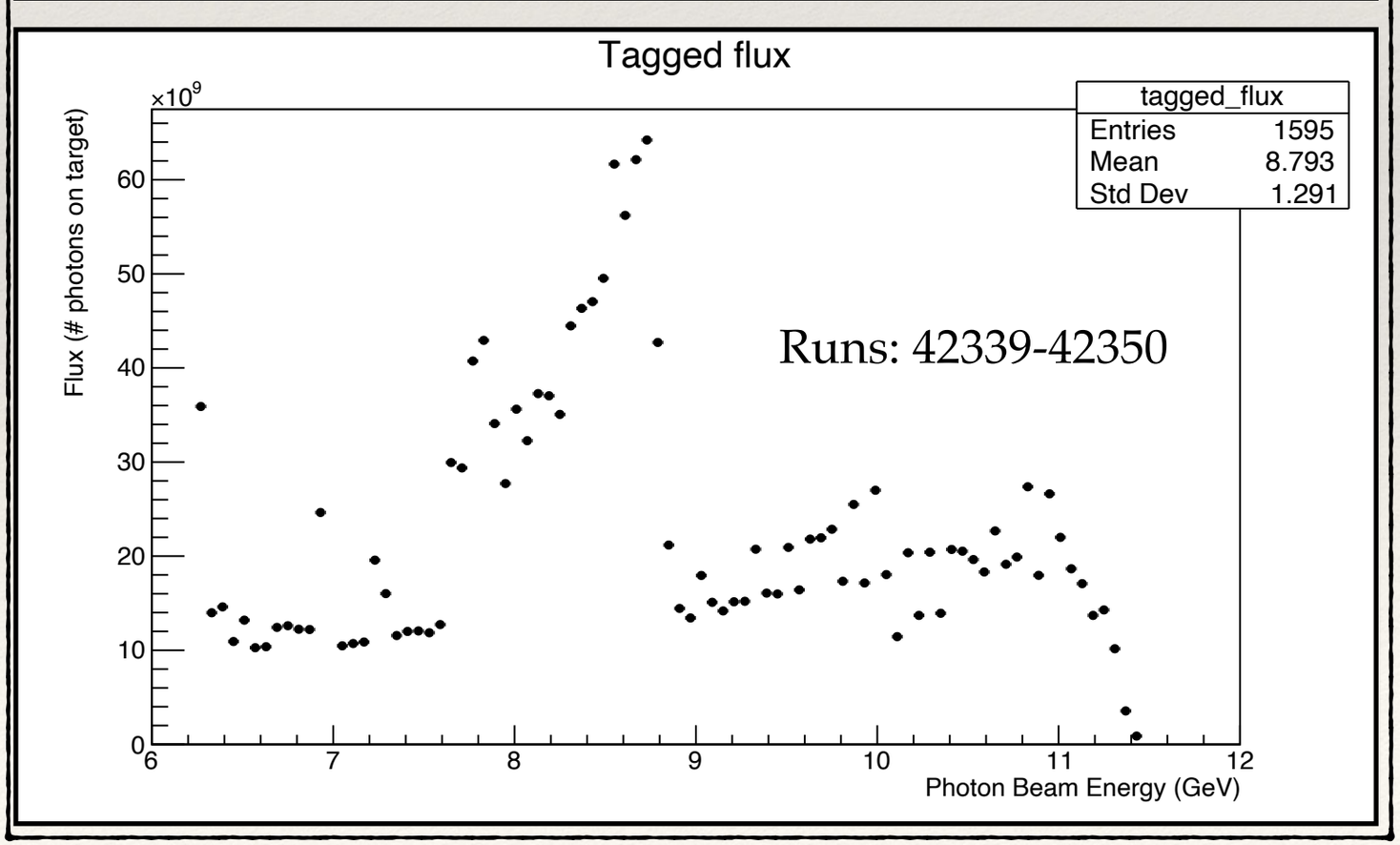
From the calculator:
http://zeus.phys.uconn.edu/halld/cobrems/ratetool.cgi



Energy Dependent:
Using the number on the proposal: $2 \times 10^7 \gamma/s$

Using the hd_utilities:

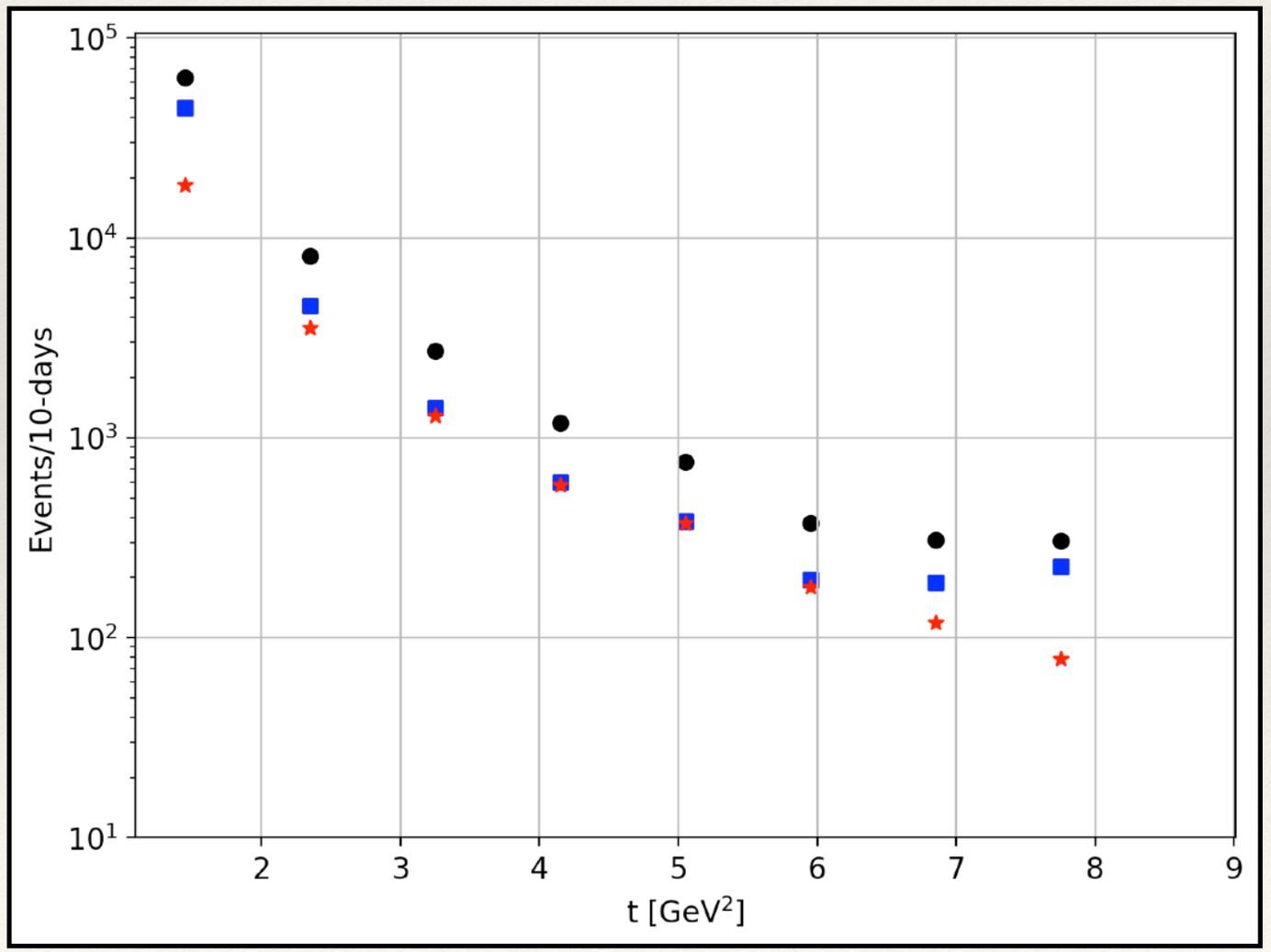




Target

	Thickness [cm] / % X0	Atoms/cm2
D	30 / 4.1	1.51E+24
4He	30 / 4	5.68E+23
12C	1.9 / 7	1.45E+23
LH	30 / 3.4	1.28E+24

$$\gamma + p \rightarrow \rho p \rightarrow \pi^+\pi^- p$$



$$\gamma + p \rightarrow \rho p \rightarrow \pi^+\pi^- p$$