Simeon-Denis Poisson

p, D, α

"top" of atmosphere
50-70 miles
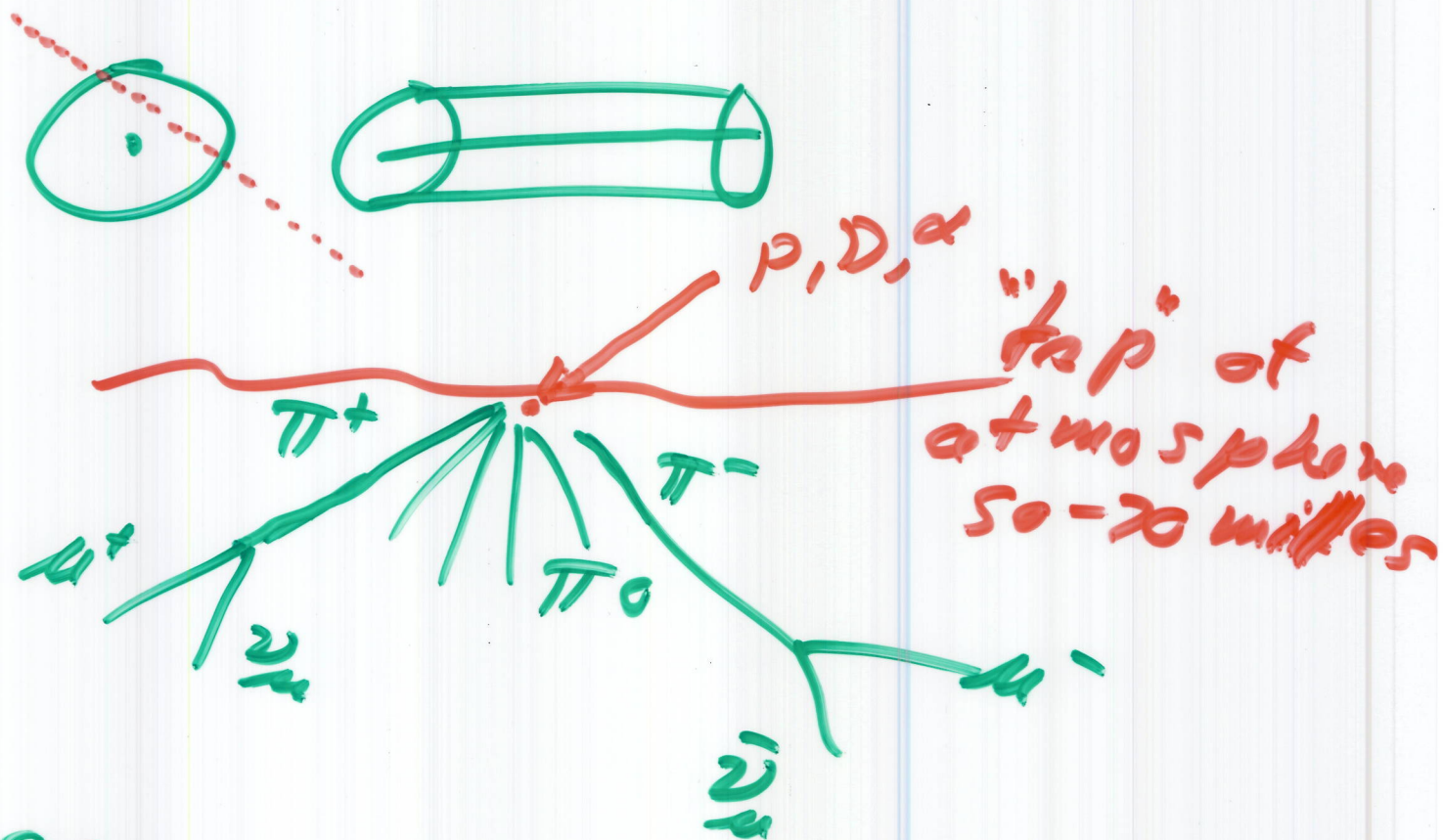
π^+

μ^+

$\bar{\nu}_\mu$

π^-

π^0

ν_μ

μ^-

e.g. Background count is
58 counts in 5 minutes.

Source + Background count:
1232 in 10 minutes.

What is source count alone
And what is error?

CPM count per minutes

$$\frac{58}{5} = 11.6 \qquad error = \sqrt{58}$$

Careful

In five minutes, the count

$$58 \pm \sqrt{58} = 58 \pm 7.6$$

In one minutes

$$CPM = \frac{58 \pm \sqrt{58}}{5} = 11.6 \pm 1.5$$

$$\underline{not} \pm \sqrt{11.6} = 3.4$$

Source + Background
1232 in 10 minutes

$$1232 \pm \sqrt{1232} = 1232 \pm 35.1 \quad \text{in 10 min.}$$

$$CPM = 123.2 \pm 3.51$$

Source alone

CPM $\quad 123.2 - 11.6 = 111.6$ CPM

error $\quad \sqrt{(1.5)^2 + (3.51)^2} = 3.82$ CPM

$$\boxed{112 \pm 4 \text{ CPM}}$$