

Beams of pions made from collisions of high energy protons

$$L_0 = 780\text{ m} \quad t = 2.6 \times 10^{-8}\text{ sec}$$

$$v = 3 \times 10^8\text{ m/sec} \quad \& \quad t = L_0 / v$$

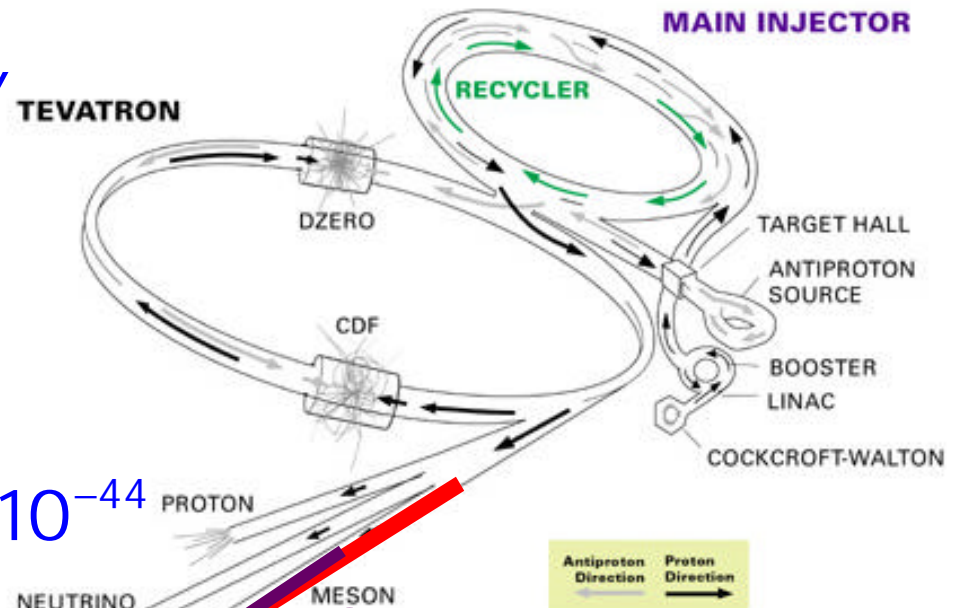
$$t = 2.6 \times 10^{-6}\text{ sec}$$

Nonrelativistic, $\frac{t}{t} = 100$

so fraction left = $e^{-100} = 3.7 \times 10^{-44}$

WRONG!!

FERMILAB'S ACCELERATOR CHAIN



p
Beam line, 0.78 km long,
transports 140 GeV **p**'s
made at tgt



Fermilab 00-035