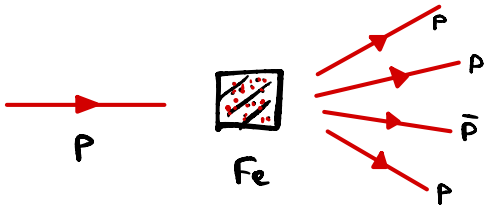


# PP → PP $\bar{P}$ P

παράγωγη αυτη πρωτονιων

S



$$PP \rightarrow PP\bar{P}P$$

$$1\ 2 \quad 3\ 4\ 5\ 6$$

(+ - - -)

$$P_1^\mu + P_2^\mu = P_3^\mu + P_4^\mu + P_5^\mu + P_6^\mu$$

$$\left( \begin{pmatrix} E_1 \\ \vec{p}_1 \end{pmatrix} + \begin{pmatrix} m \\ \vec{0} \end{pmatrix} \right)^2 = \left( P_3^\mu + P_4^\mu + P_5^\mu + P_6^\mu \right)^2$$

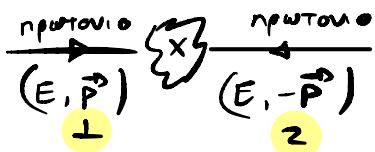
$$m^2 + m^2 + 2(E_1 m - \vec{p}_1 \cdot \vec{0}) = \left( \begin{pmatrix} m \\ 0 \end{pmatrix} + \begin{pmatrix} m \\ 0 \end{pmatrix} + \begin{pmatrix} m \\ 0 \end{pmatrix} + \begin{pmatrix} m \\ 0 \end{pmatrix} \right)^2_{K_0}$$

$$E_1^{min} = ? = (4m)^2$$

$$2m^2 + 2E_1^{min} = 16m^2$$

$$E_1^{min} = 7m \approx 7\text{GeV}$$

εαν ειχαμε πειραμα συγκρουομενων δεσμων αυτη ελαττωου εσοχου



$$PP \rightarrow X$$

$$2E^{min} = M_X$$

$$X \text{ για } X = PP\bar{P}P \quad E^{min} = 2\text{GeV}$$

$$P_1^\mu + P_2^\mu = (2E, \vec{p} - \vec{p}) = (\sqrt{s}, \vec{0})$$