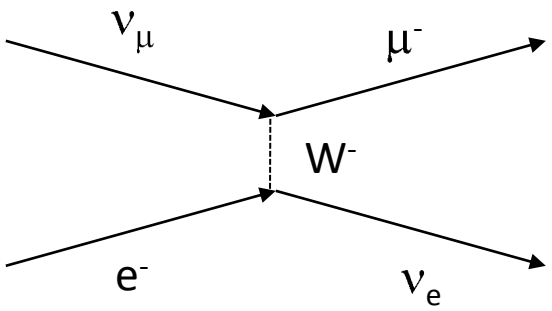
$\nu_\mu e^- \rightarrow \mu^- \nu_e$

Fermilab, eksperiment E744

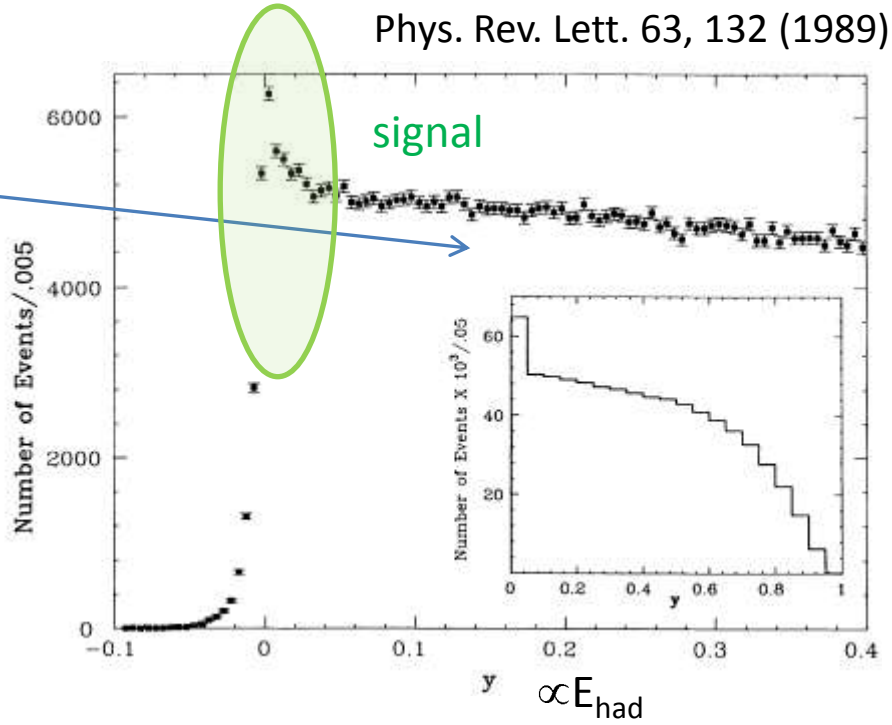


$\pi^+ \rightarrow \mu^+ \nu_\mu$
$\pi^- \rightarrow \mu^- \bar{\nu}_\mu$

ν_μ ali $\bar{\nu}_\mu$ se sipajo na e^- v snovi

ozadje predstavlja sipanje na nukleonih v materijalu detektorja,
$\nu_\mu (\bar{\nu}_\mu)\ n(p) \rightarrow \mu^- (\mu^+)\ p(n)$;
ker je v končnem stanju hadron to povzroči relativno veliko izmerjeno energijo v hadronskem kalorimetru

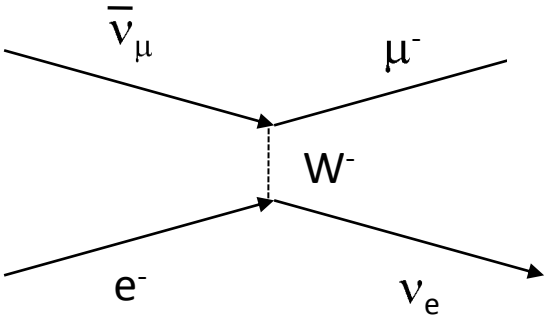
Phys. Rev. Lett. 63, 132 (1989)



$\bar{\nu}_\mu$ ne povzročijo takega procesa
$\bar{\nu}_\mu e^- \not\rightarrow \mu^- \nu_e$

L_μ=-1 L_μ =1

neohranitev L_μ



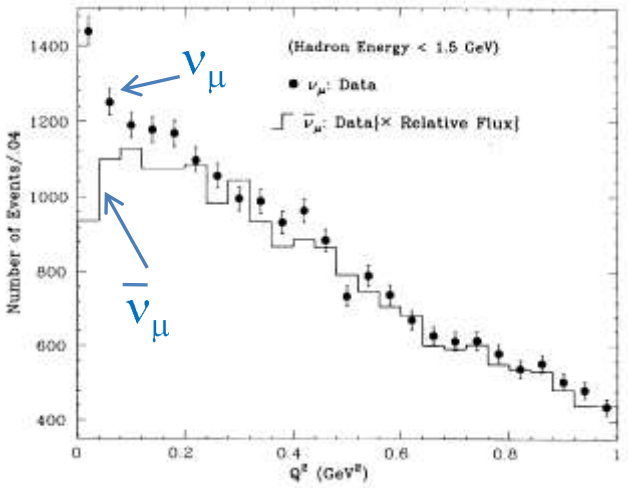
Phys. Rev. Lett. 63, 132 (1989)

$\nu_\mu e^- \rightarrow \mu^- \nu_e$

Fermilab, eksperiment E744

$$q^2 = (k'-k)^2 \approx -E_{\nu\mu} E_\mu \frac{\theta^2}{2}$$

$$Q^2 = 2|q^2|$$



razlika med ν_μ in $\bar{\nu}_\mu$ predstavlja signal

$$\frac{d\sigma}{d\Omega} = \frac{G_F^2 E^2}{4\pi^2}$$

$$\sigma = \frac{G_F^2 E^2}{\pi}$$

razlika: 1161 ±88

izračunano $(1-\gamma^5)$: 1174 ±28

izračunano $(1+\gamma^5)$: 391 ±9

če $(1+\gamma^5)$ namesto $(1-\gamma^5)$:

$$\frac{d\sigma}{d\Omega} = \frac{G_F^2 E^2}{16\pi^2}(1-\cos\theta)^2$$

$$\sigma = \frac{G_F^2 E^2}{3\pi}$$