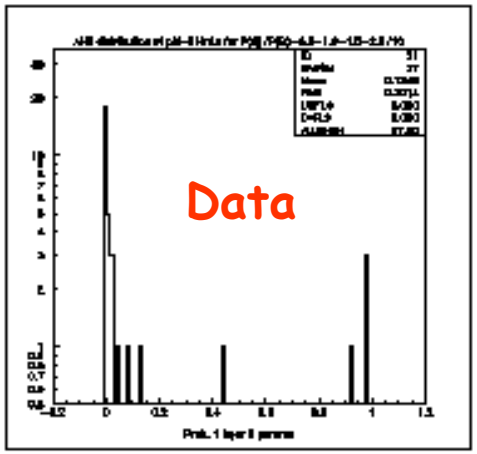
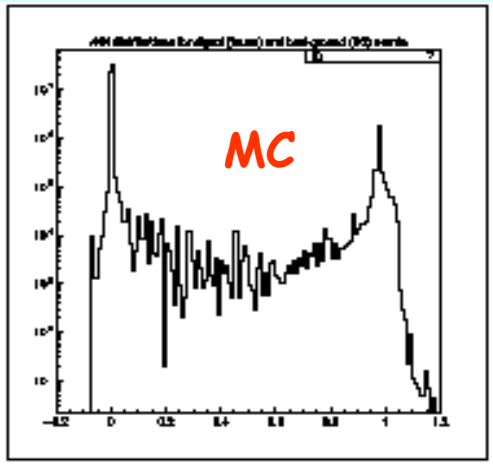
Poissonian probability of the background fluctuating to the Signal level revisited

-ANN ν_T CC - hadron scattering results on the 37 recognized kinks-



$\Delta p/p=30\%$



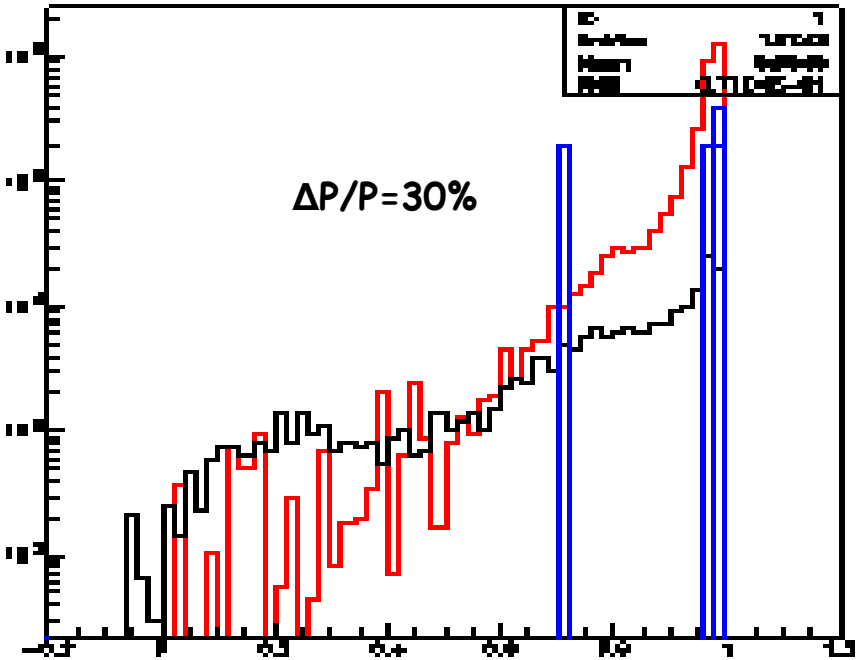
EVENTS THAT EXCEED THE 0.5 CUT IN THE ANN OUTPUT FUNCTION

RUN	EVENT	P_d	θ_d	P_T	L_d	θ_p	$\Delta\varphi$	Probabilities
3263	25102	1.900	0.1300	0.247	1890.1	0.1772	0.176	0.136***
3024	30175	2.900	0.0936	0.271	4504.8	0.0279	1.027	0.971
3039	1910	4.600	0.0895	0.412	276.5	0.0653	2.684	1.000
3333	17665	21.400	0.0130	0.278	564.6	0.0154	2.806	1.000
3193	1361	20.000	0.0187	0.374	1863.6	0.0838	2.341	1.000 CHARM

- Considering as "Signal" events (ν_T CC) the ones with probabilities P > 0.5 we can compute the background to these events by adding 1-P. Therefore :

Bkg = 0.029

-ANN ν_τ CC - charm one prong kink decay background estimation-



RUN	EVENT	P_d	θ_d	P_T	L_d	θ_p	$\Delta\varphi$	Prob.	
3024	30175	2.900	0.0936	0.271	4504.8	0.0279	1.027	0.710	
3039	1910	4.600	0.0895	0.412	276.5	0.0653	2.684	0.990	
3333	17665	21.400	0.0130	0.278	564.6	0.0154	2.806	0.990	
3193	1361	20.000	0.0187	0.374	1863.6	0.0838	2.341	0.990	CHARM

We compute the background to these events by adding 1-P. Therefore :

Bkg = 0.310

-Tau neutrino CC and Charm interactions-

ν_τ CC 1-prong observed : N_s=3.00 Bkg=0.34 ***individual event probabilities***

(ν_τ CC 1-prong observed : **N_s=** 4.00 **Bkg=** 0.34 ***P_T cut)***

Poisson Probability of the Background fluctuating to the Signal Level : 2.3×10^{-5} which is found by multiplying individual poissonian events probabilities, as Vittorio suggested. (4×10^{-4})

ν_τ CC 1-prong expected : 5.3 ± 1.6

ν_τ CC candidates observed : 6

ν_τ CC expected : 6.3 ±1.8

Total Charm events observed : 8

Charm events observed : 6.9 ±1.8

- **Charged Charm events observed : 4**
- Charged Charm events observed : 3.0 ±1.2
  - **Charged Charm 1-prong events observed : 3**
  - Charged Charm 1-prong events observed : 1.3 ±0.5