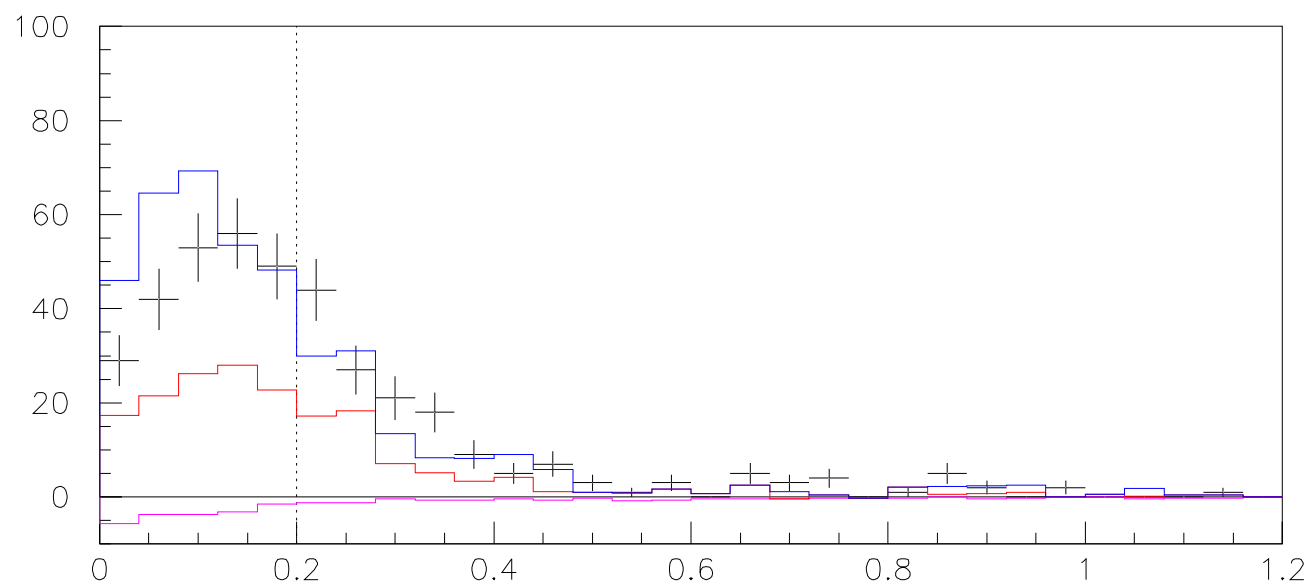
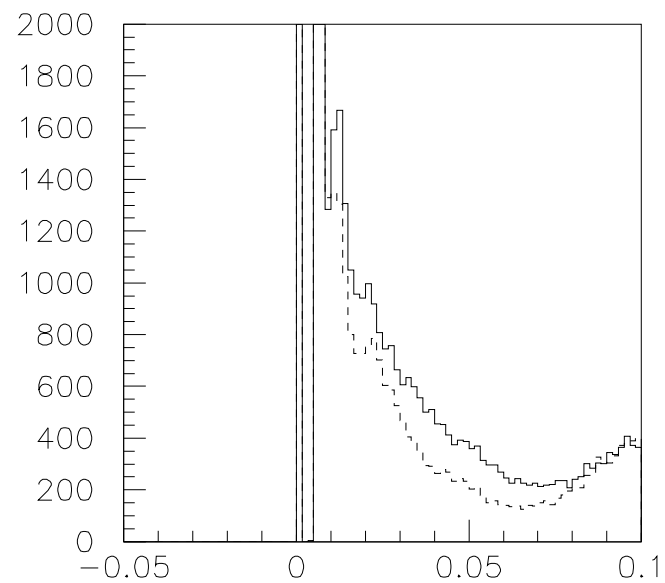
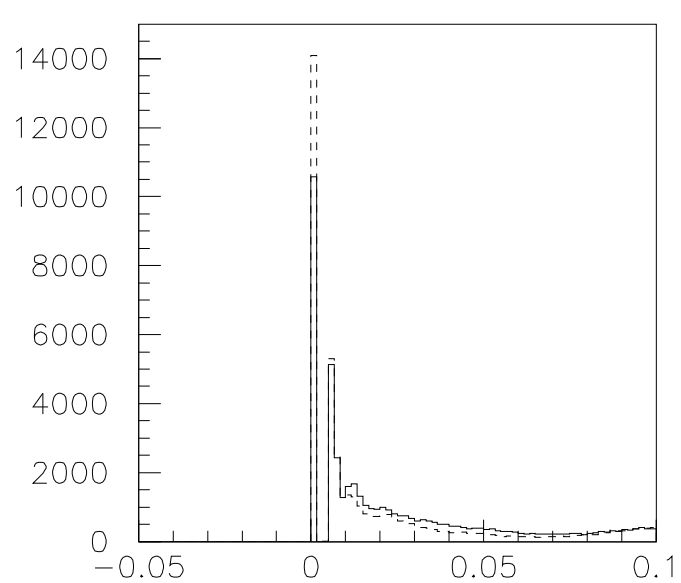


Visible energy (strictly > 0)

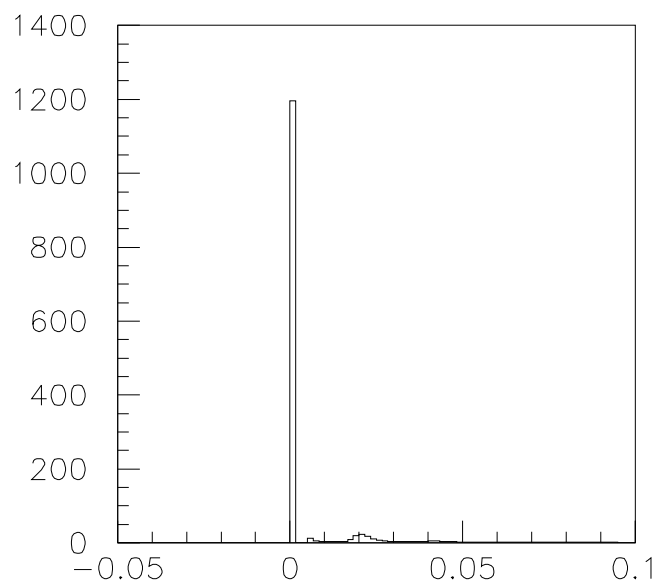


Peak visible energy with beamgas cuts

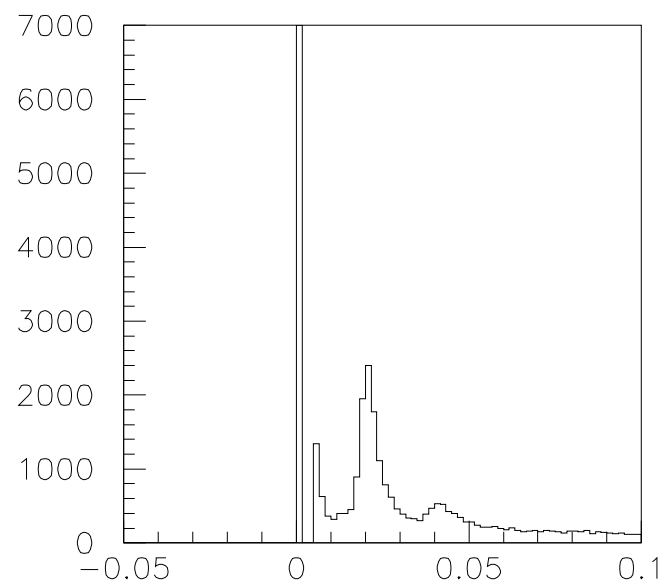


$\times 10^2$

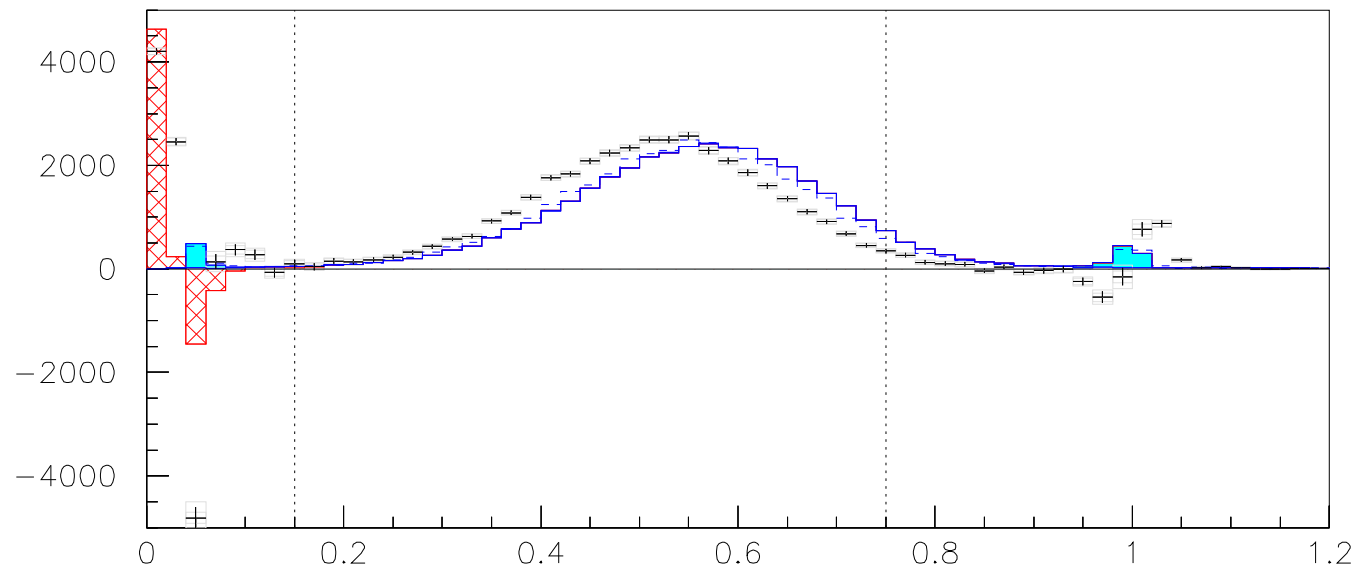
Visible energy peak is solid, cont is dashed    Visible energy peak is solid, cont is dashed



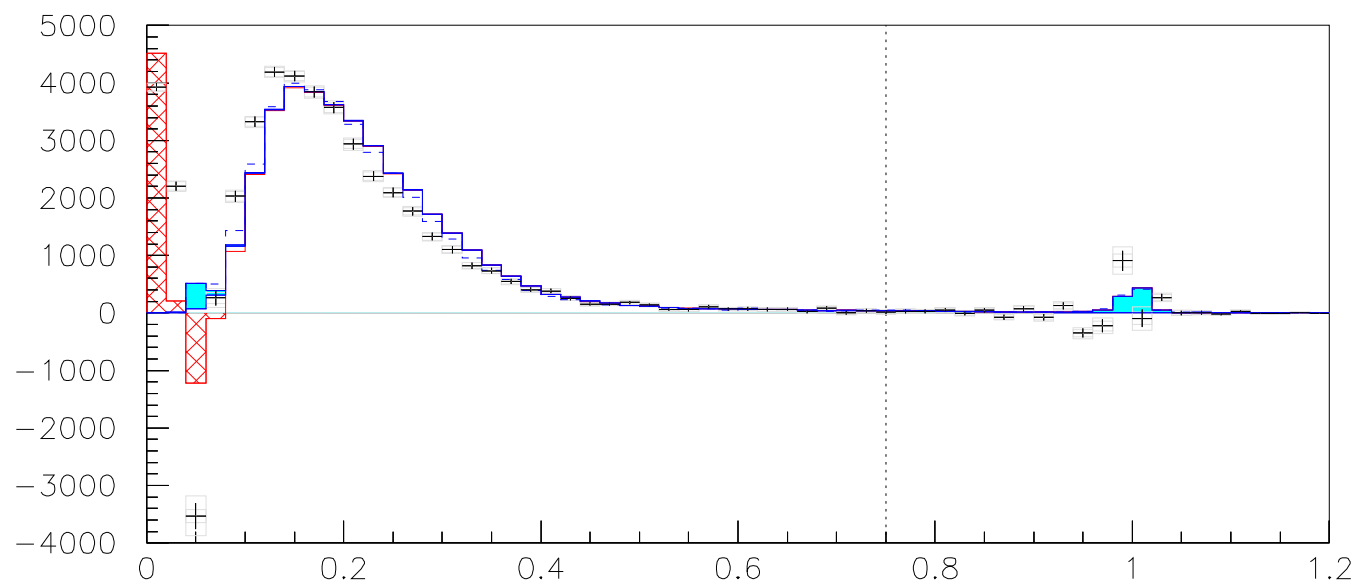
Visible energy no-beam



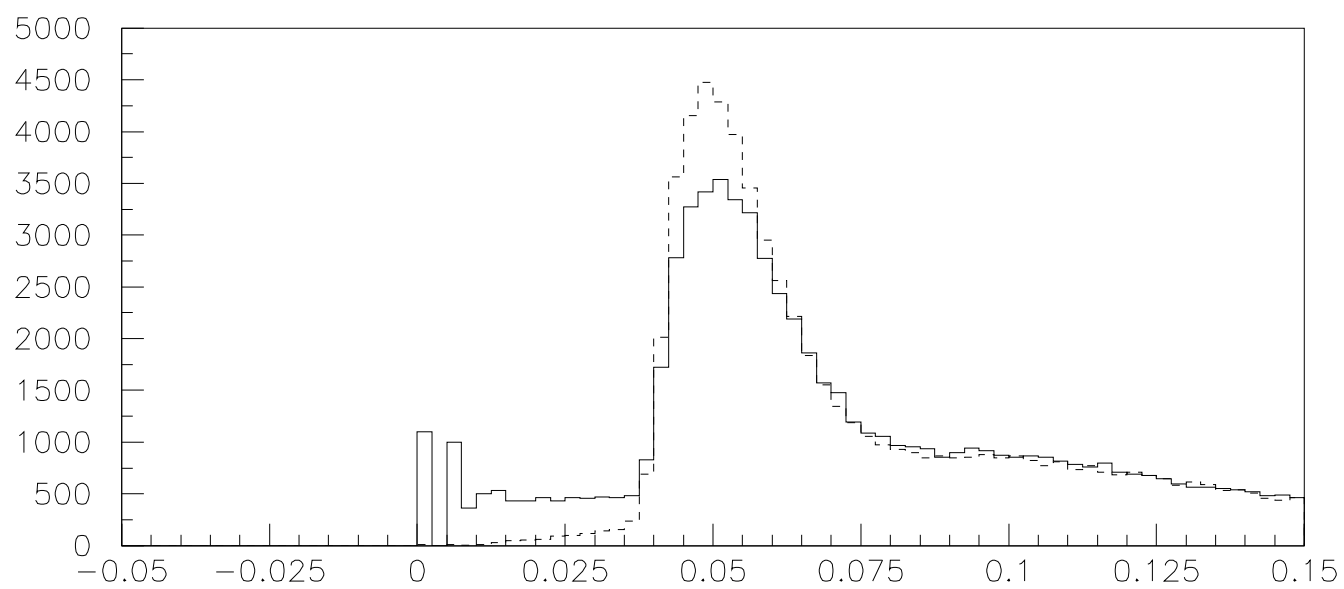
Visible energy no-beam



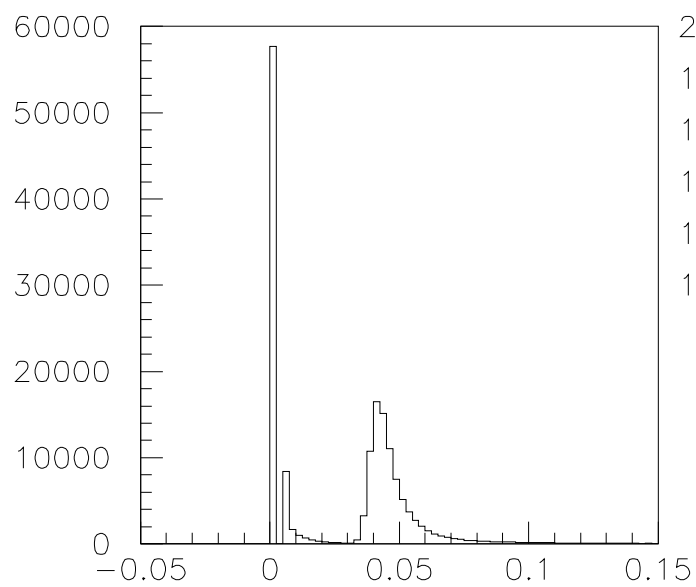
Total CC energy



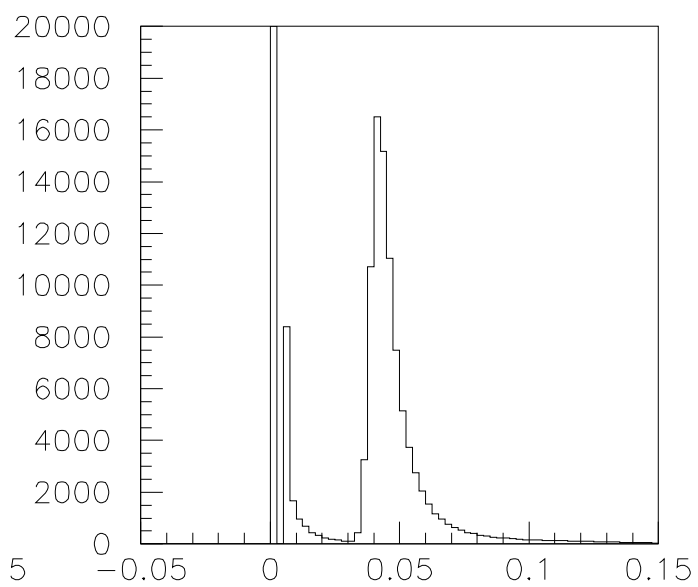
Biggest CC shower



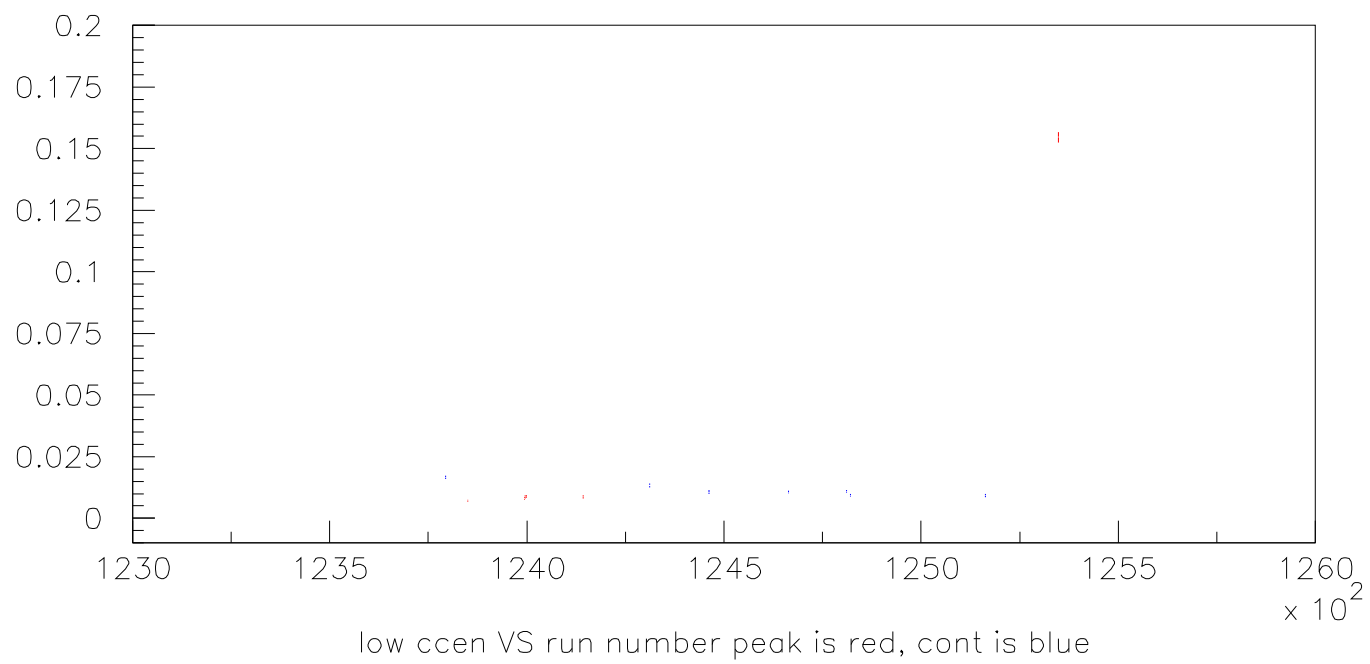
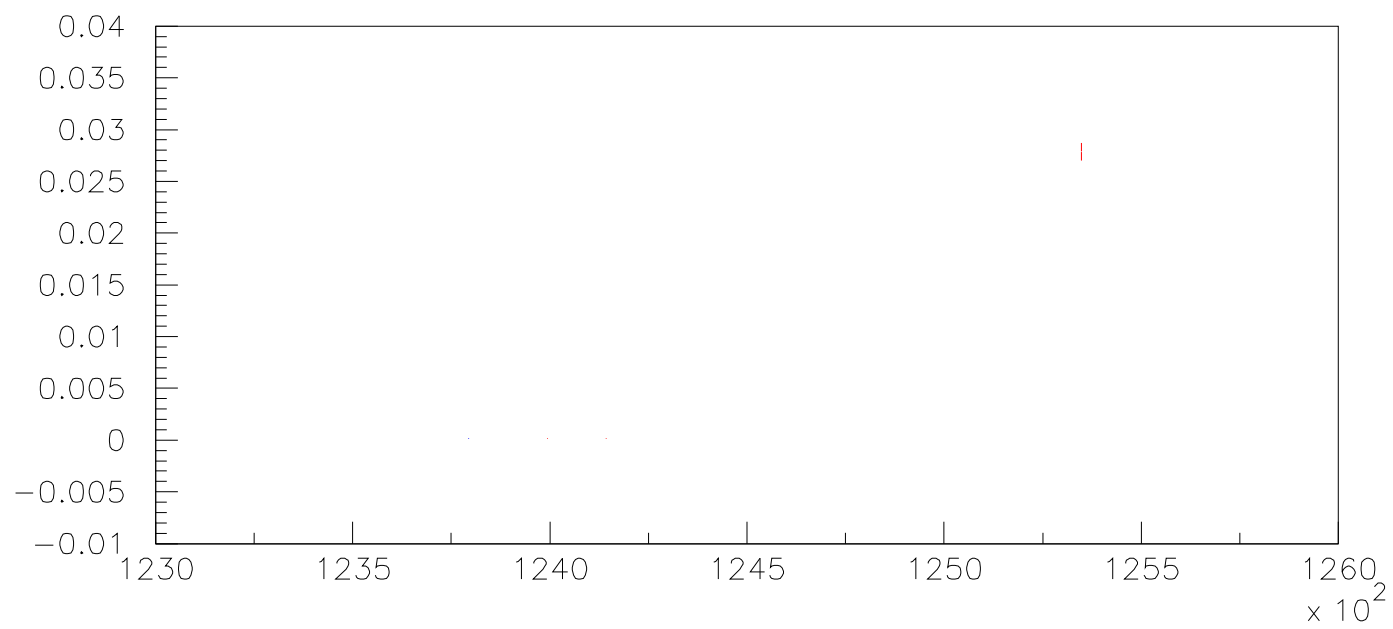
CC energy, peak is solid, cont is dashed

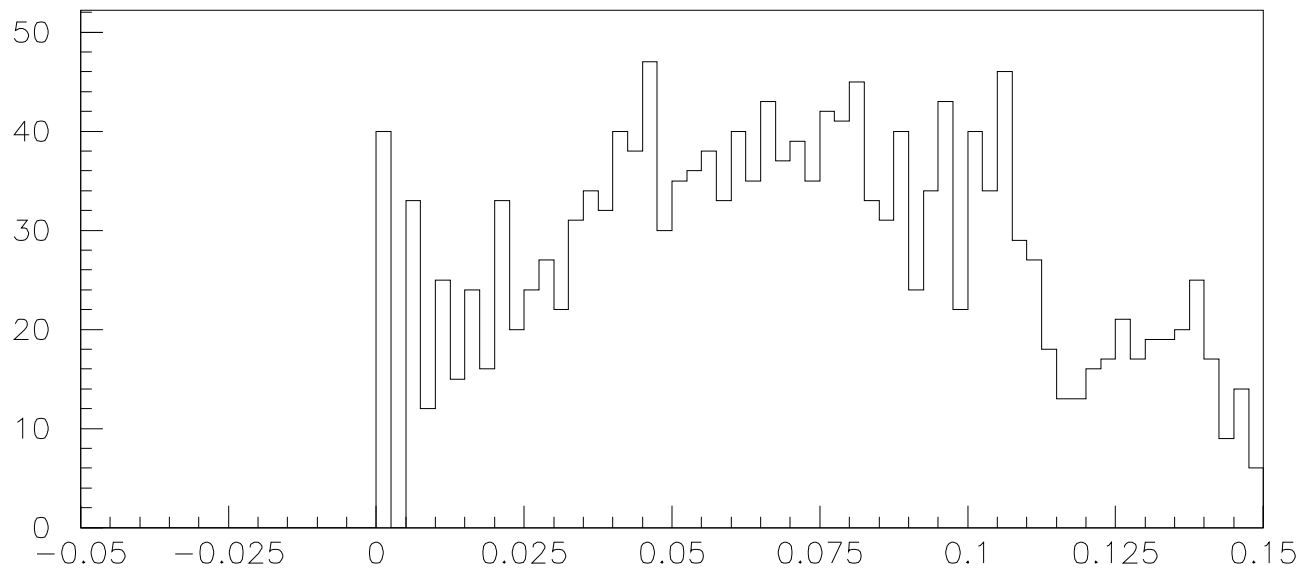


CC energy, no-beam

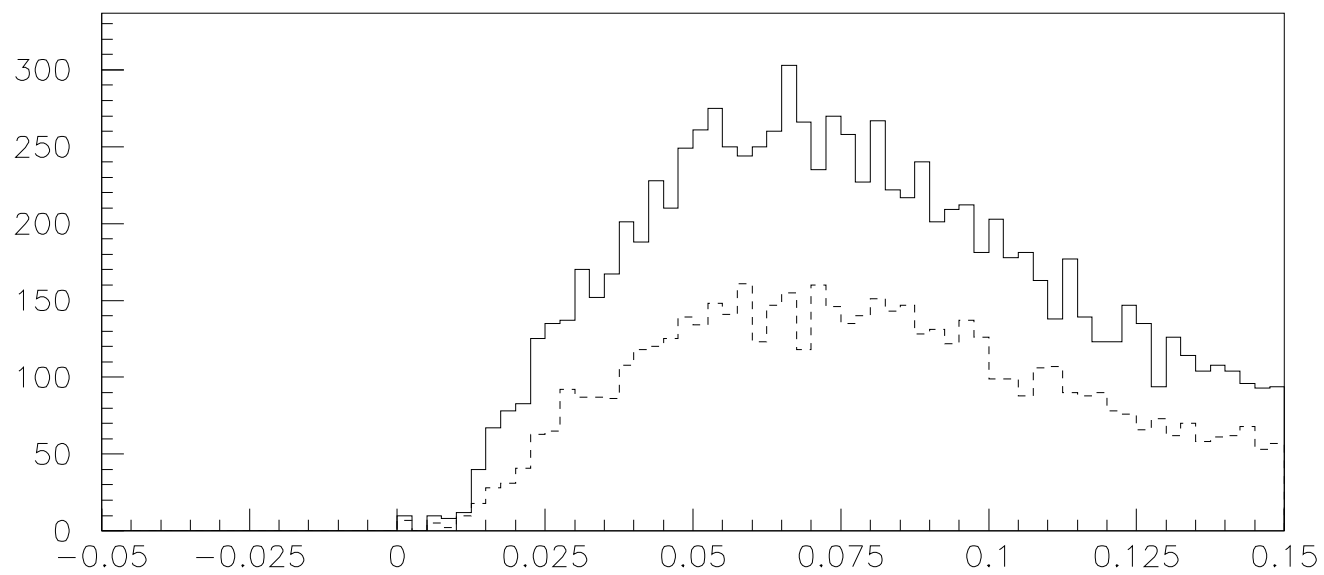


CC energy, no-beam

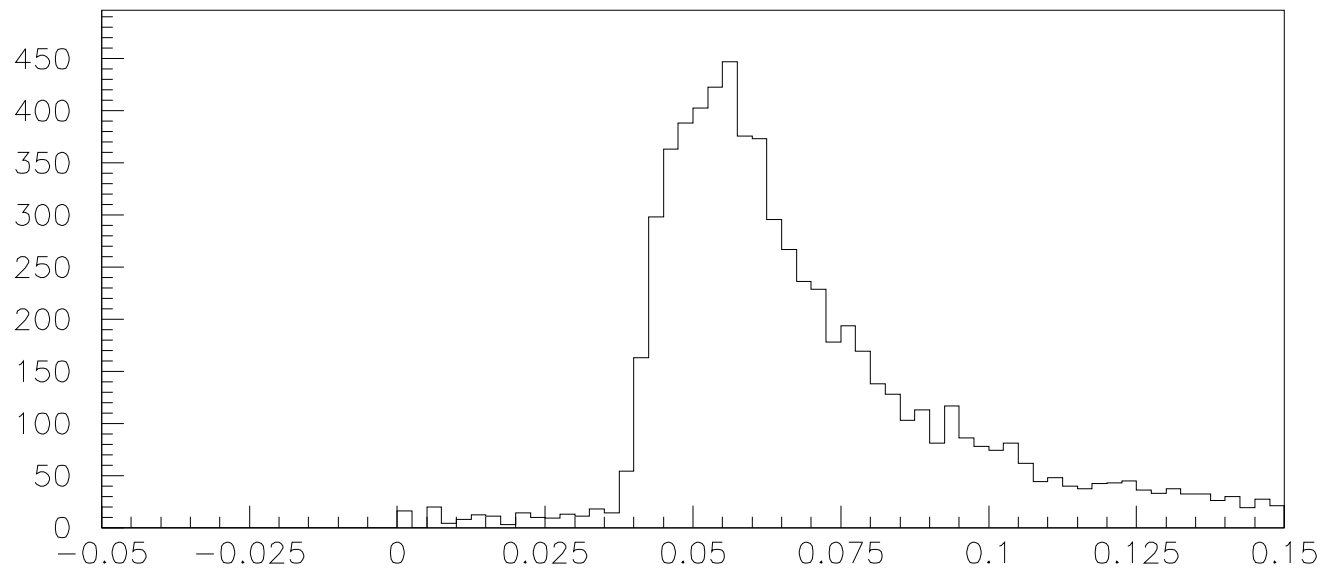




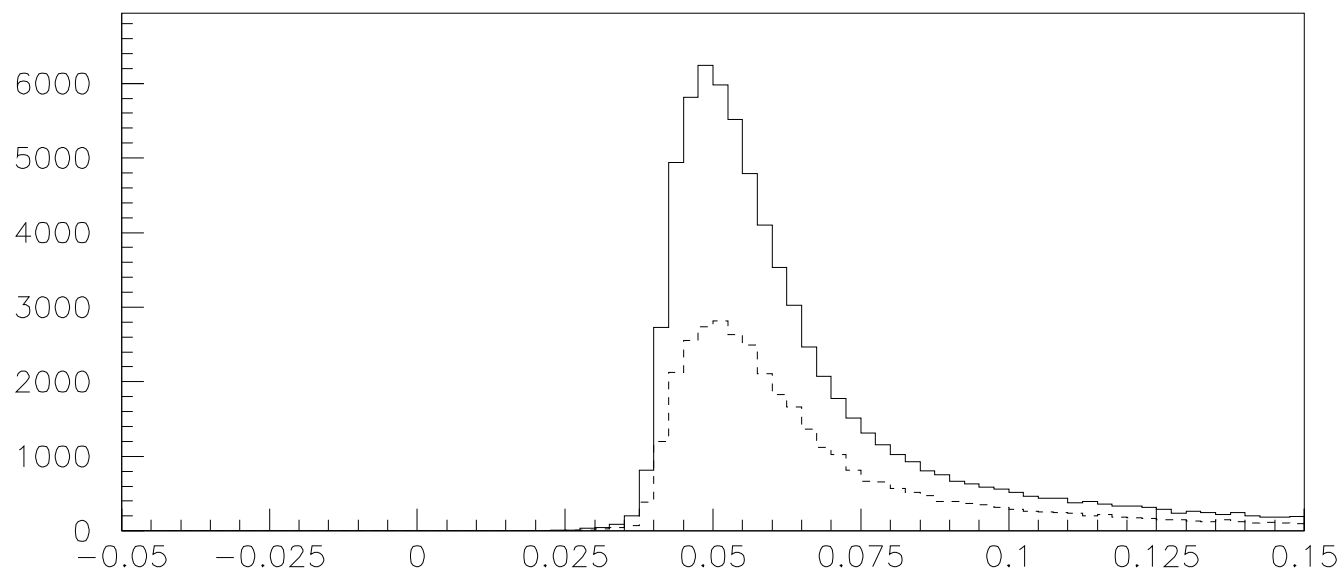
CC energy for run 125348, trigger line Hadron



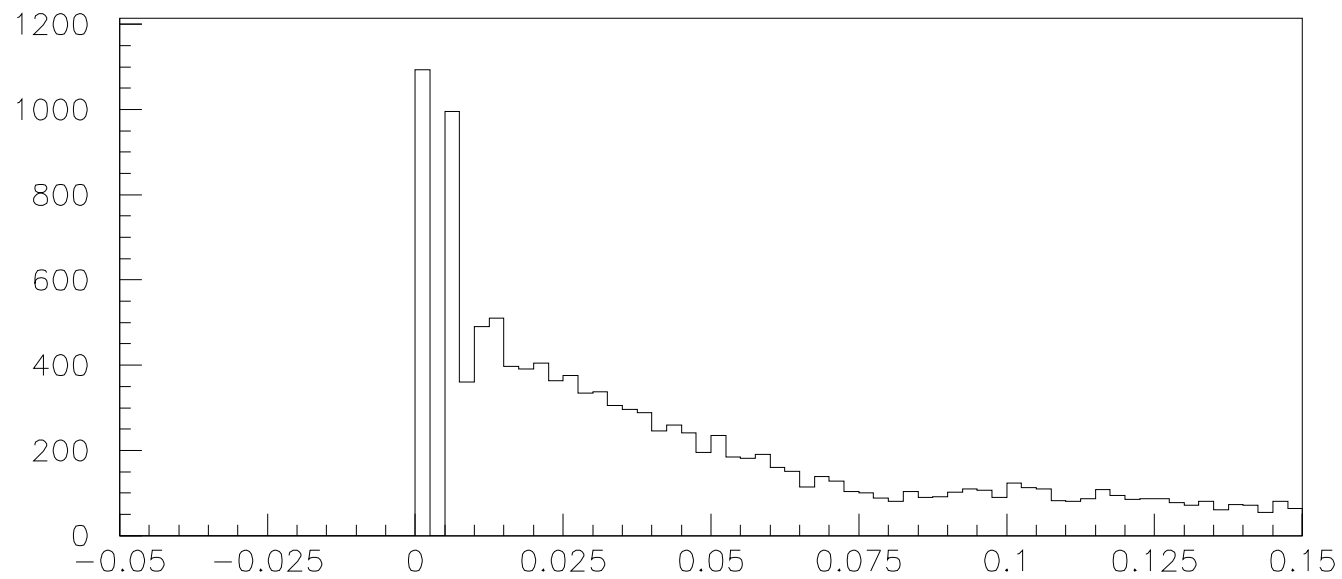
CC energy for other runs, trigger line Hadron



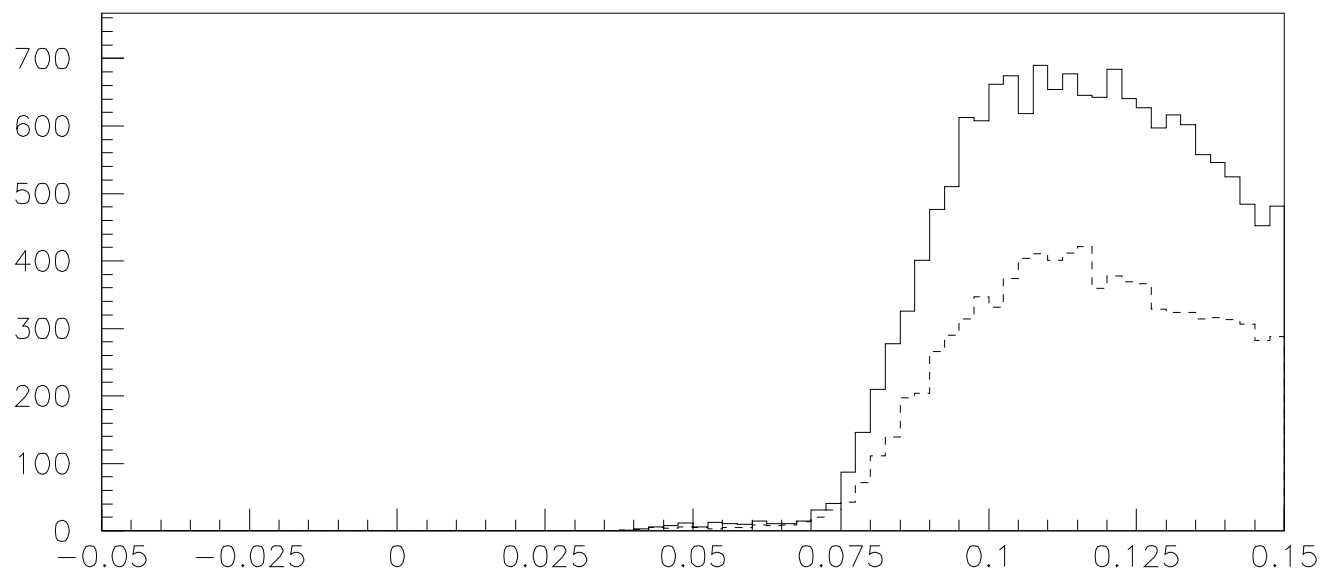
CC energy for run 125348, trigger line RadTau



CC energy for other runs, trigger line RadTau



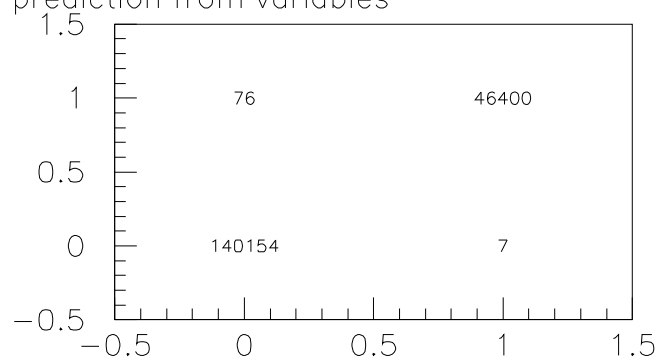
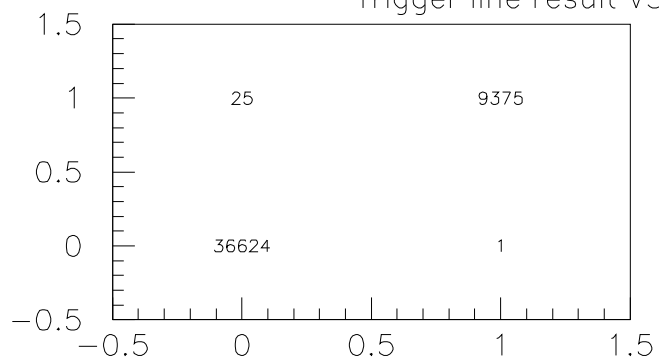
CC energy for run 125348, trigger line EITrack



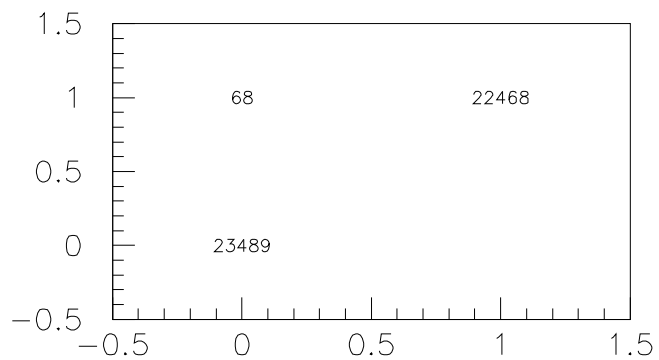
CC energy for other runs, trigger line EITrack



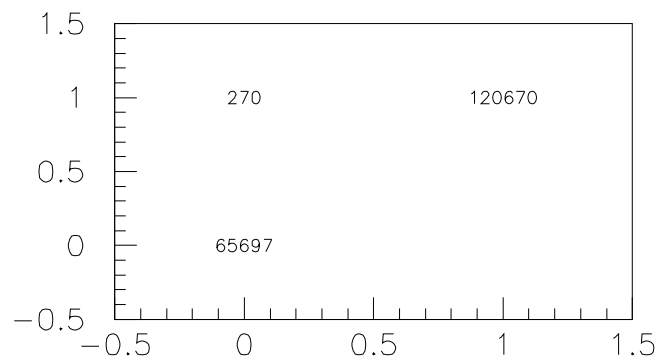
Trigger line result VS prediction from variables



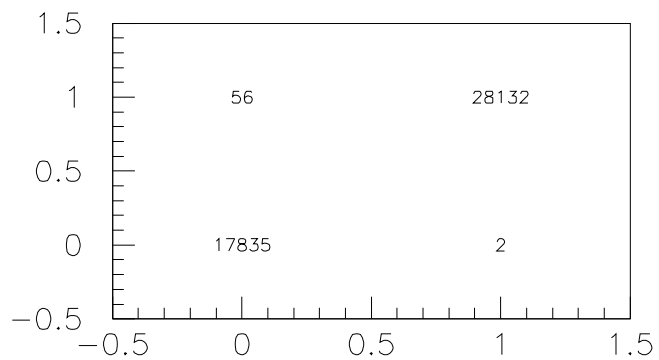
Hadron 125348



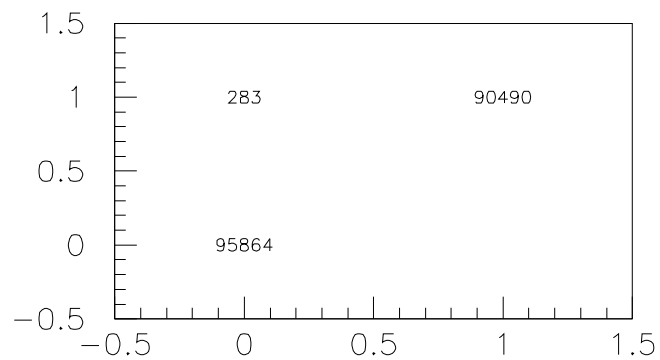
Hadron other



RadTau 125348



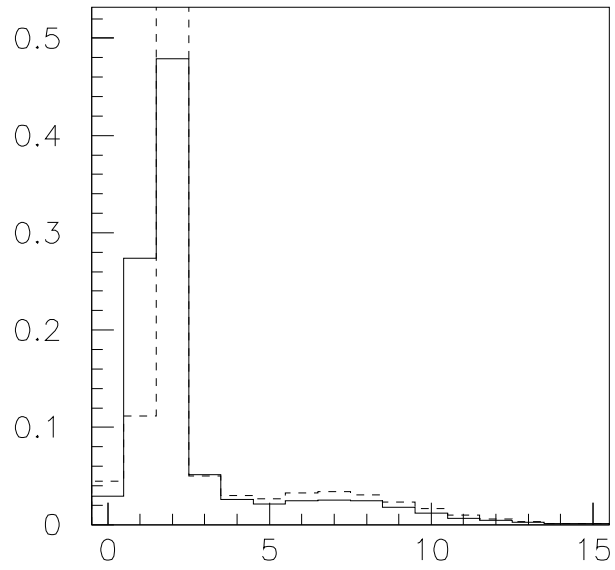
RadTau other



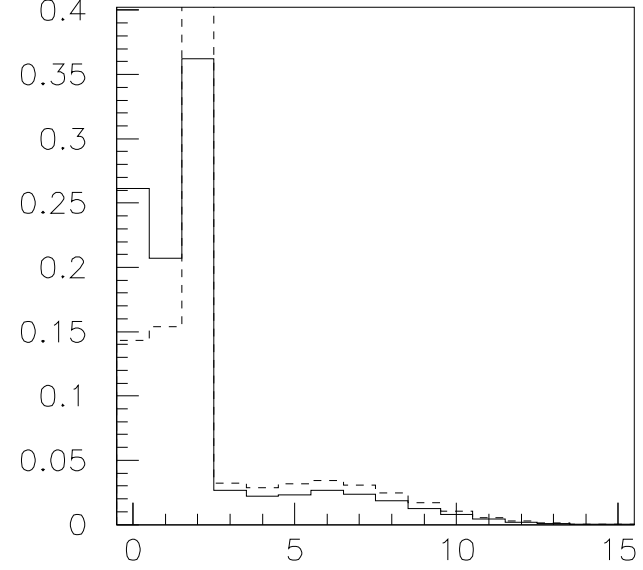
EITrack 125348

EITrack other

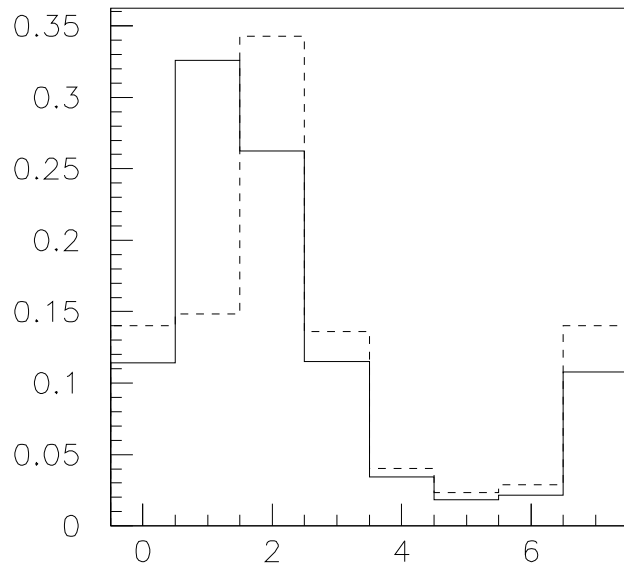
Dashed is 125348



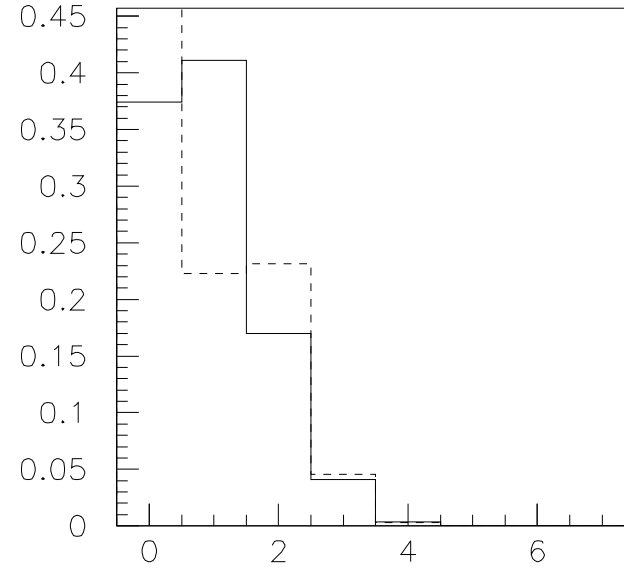
Axial Tracks



Stereo Tracks

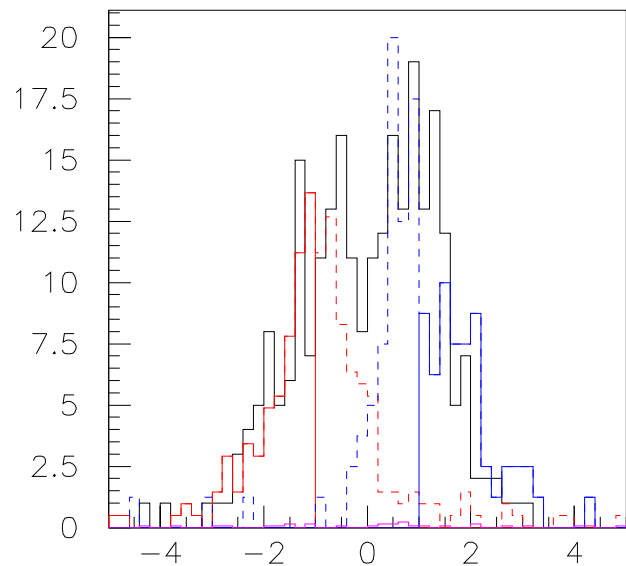


CBLO Showers

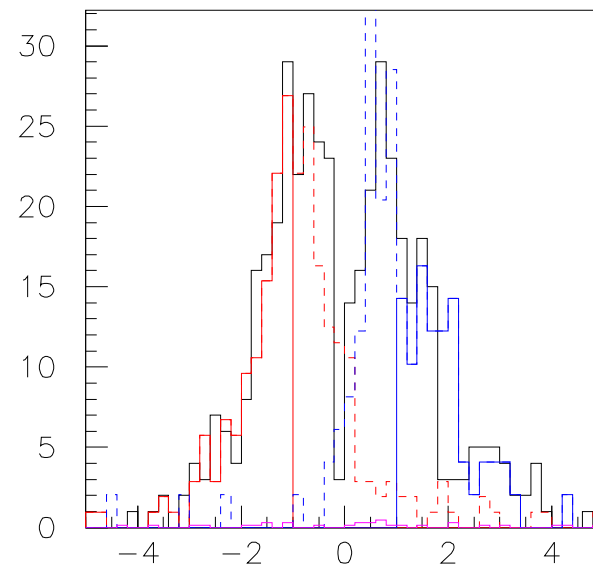


CBMD Showers

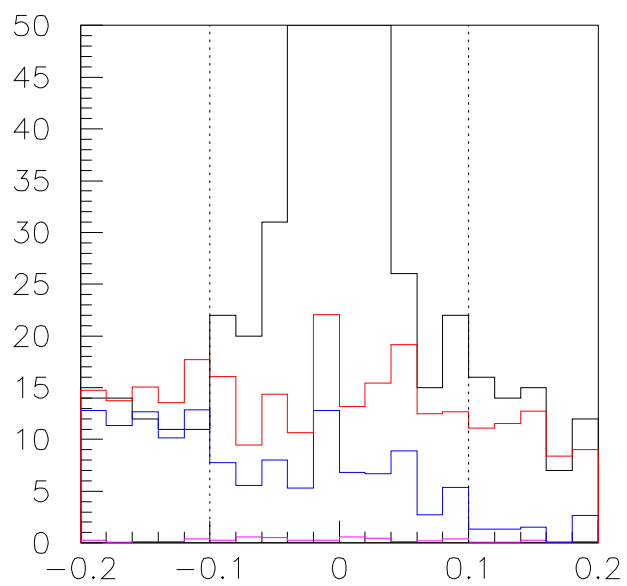
And now back to our regularly-scheduled plots...



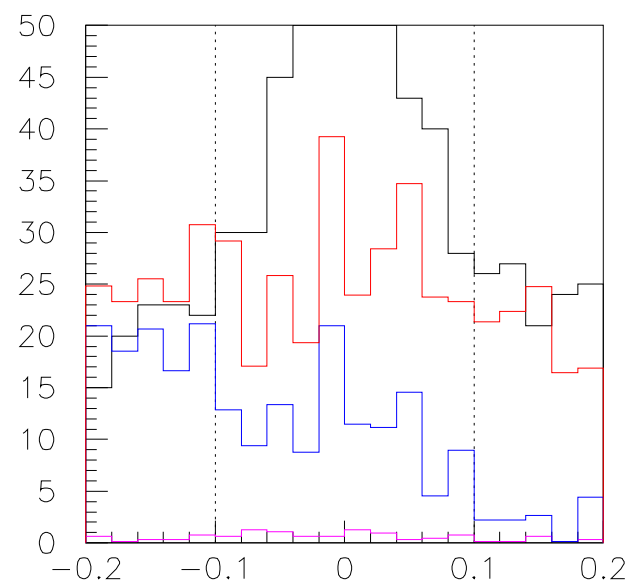
Peak data  $p_z$  with beamgas cuts



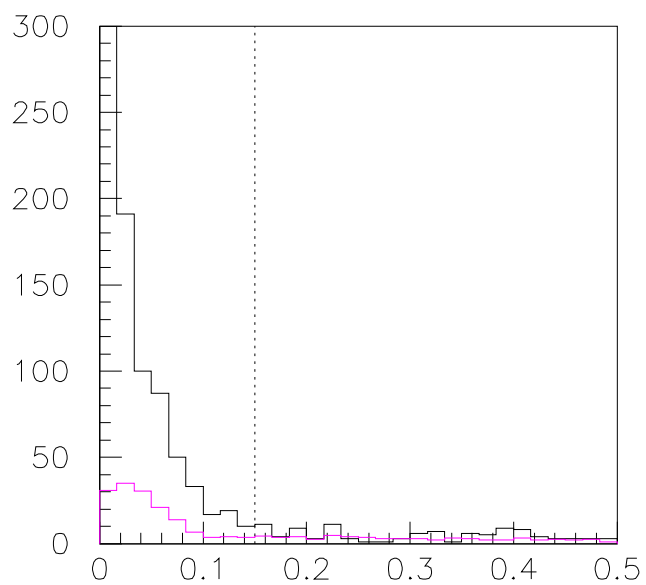
Cont data  $p_z$  with beamgas cuts



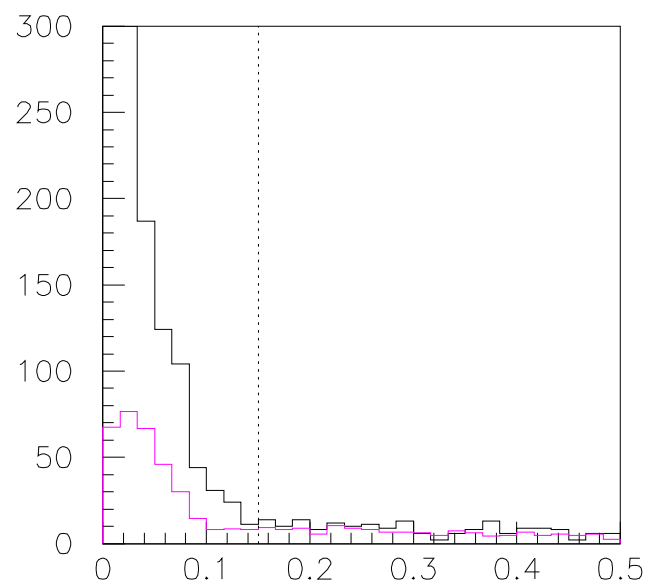
Peak data  $Z$  with beamgas cuts



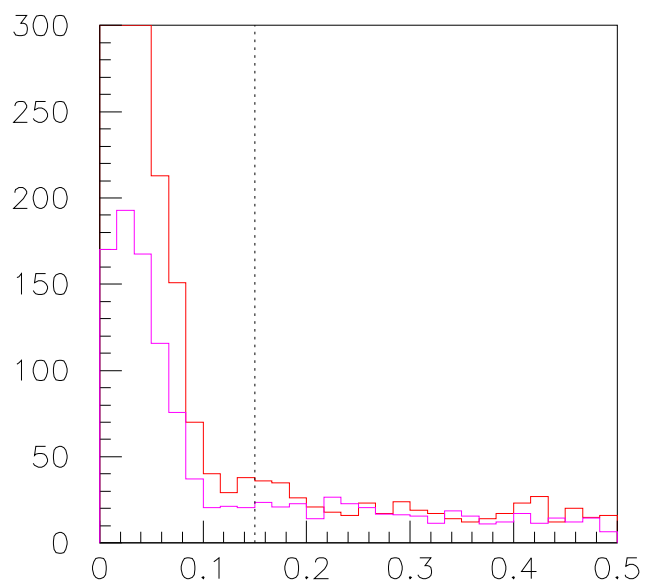
Cont data  $Z$  with beamgas cuts



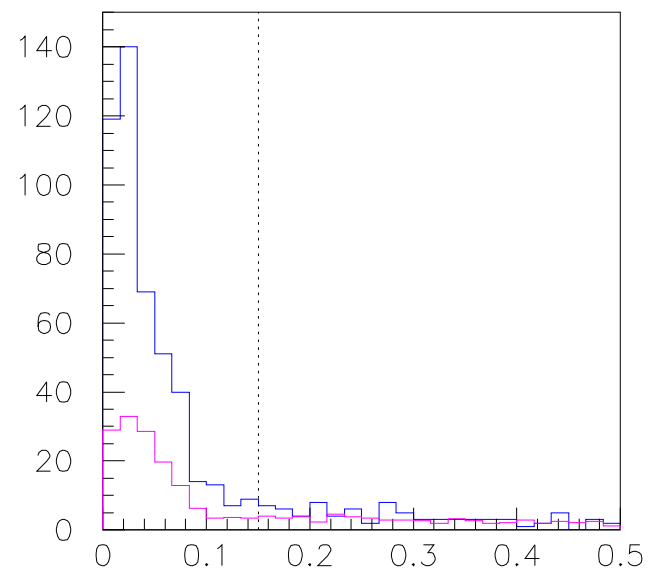
Peak data RPHI with cosmic cuts



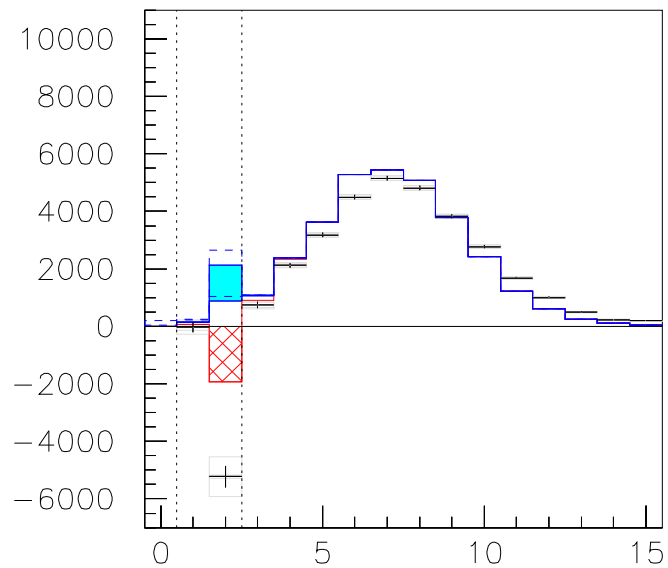
Cont data RPHI with cosmic cuts



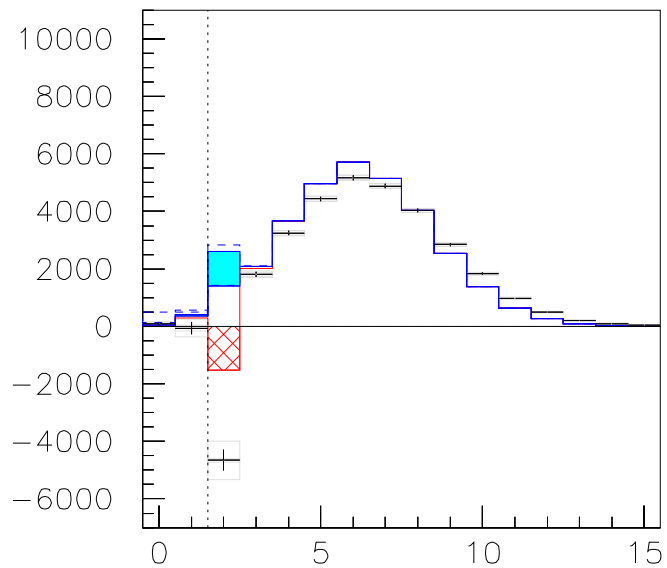
Electron BG RPHI with cosmic cuts



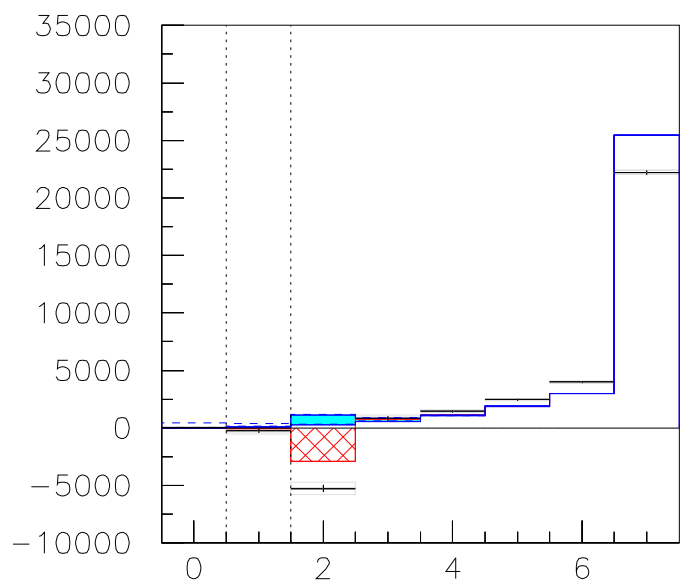
Positron BG RPHI with cosmic cuts



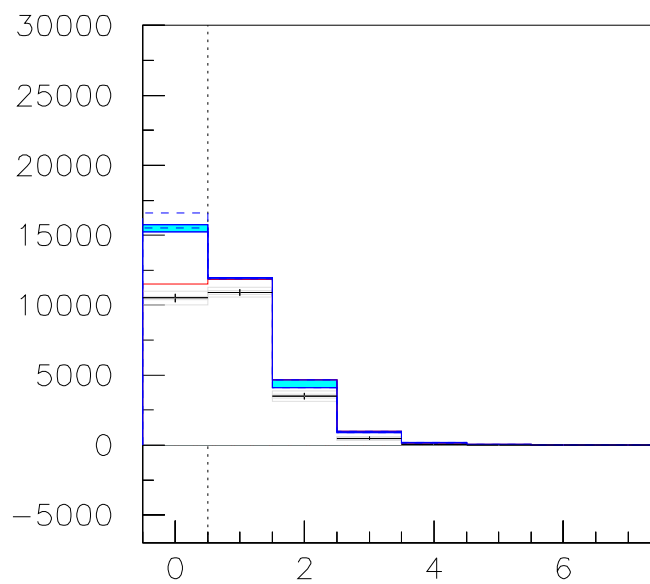
Axial Tracks



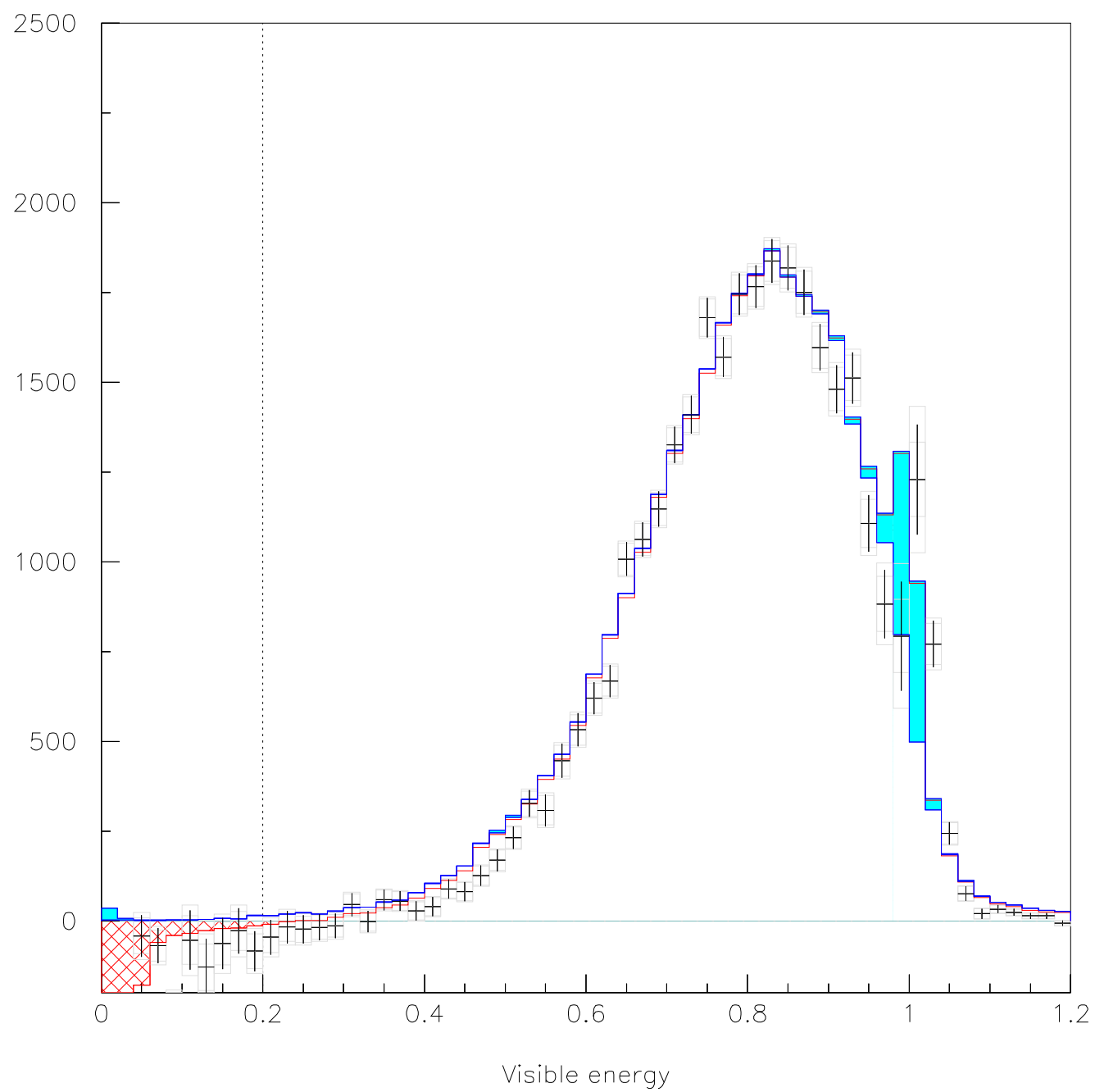
Stereo Tracks

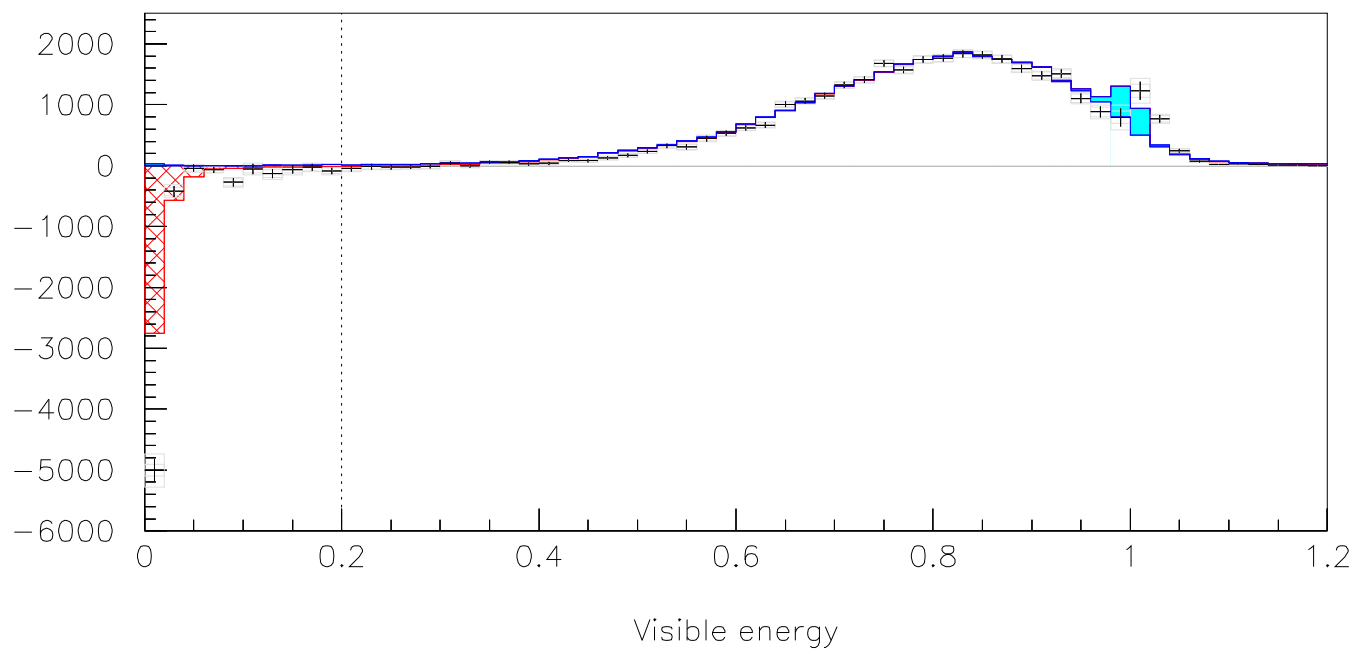
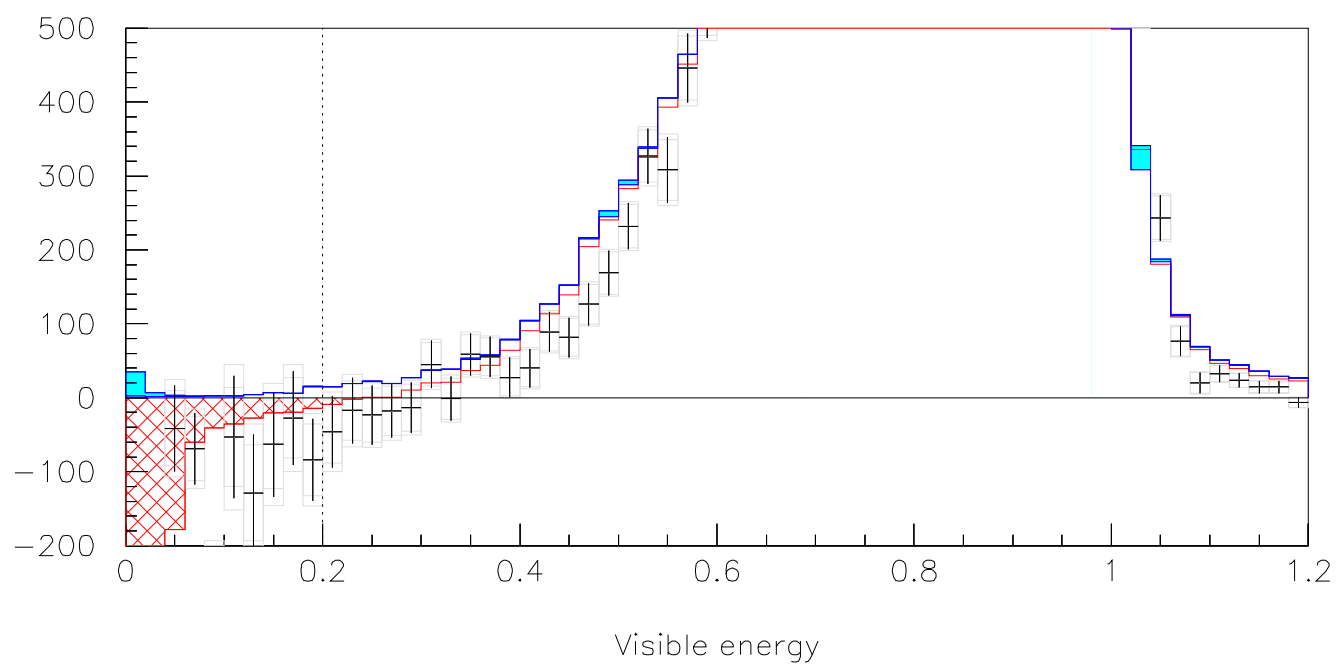


CBLO Showers

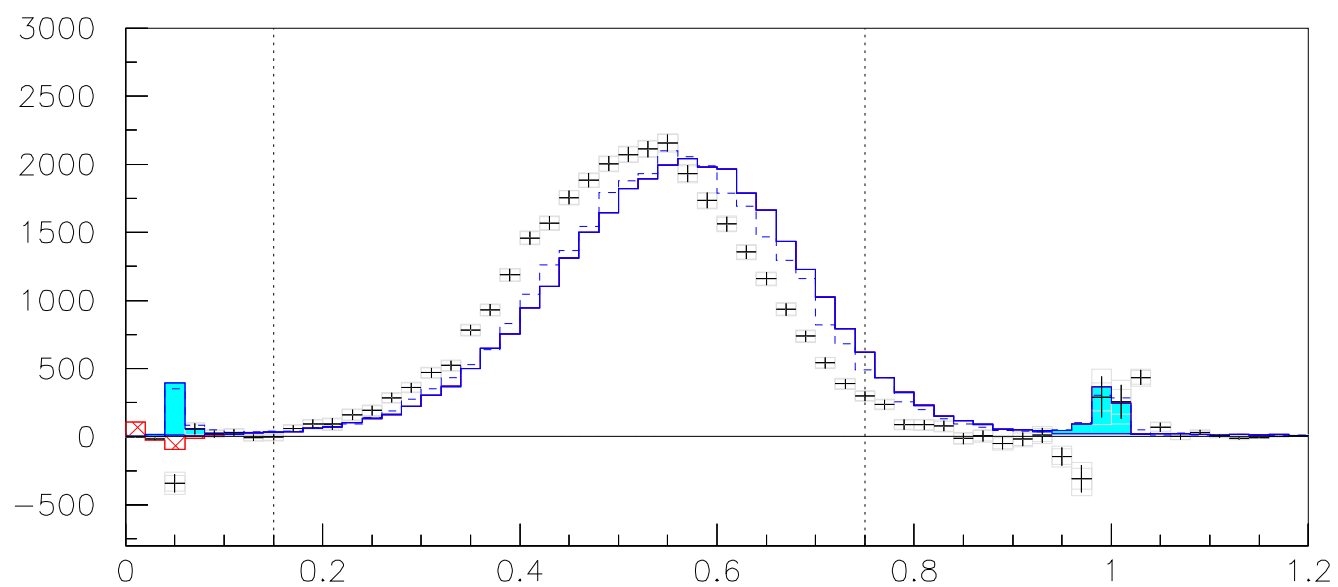


CBMD Showers

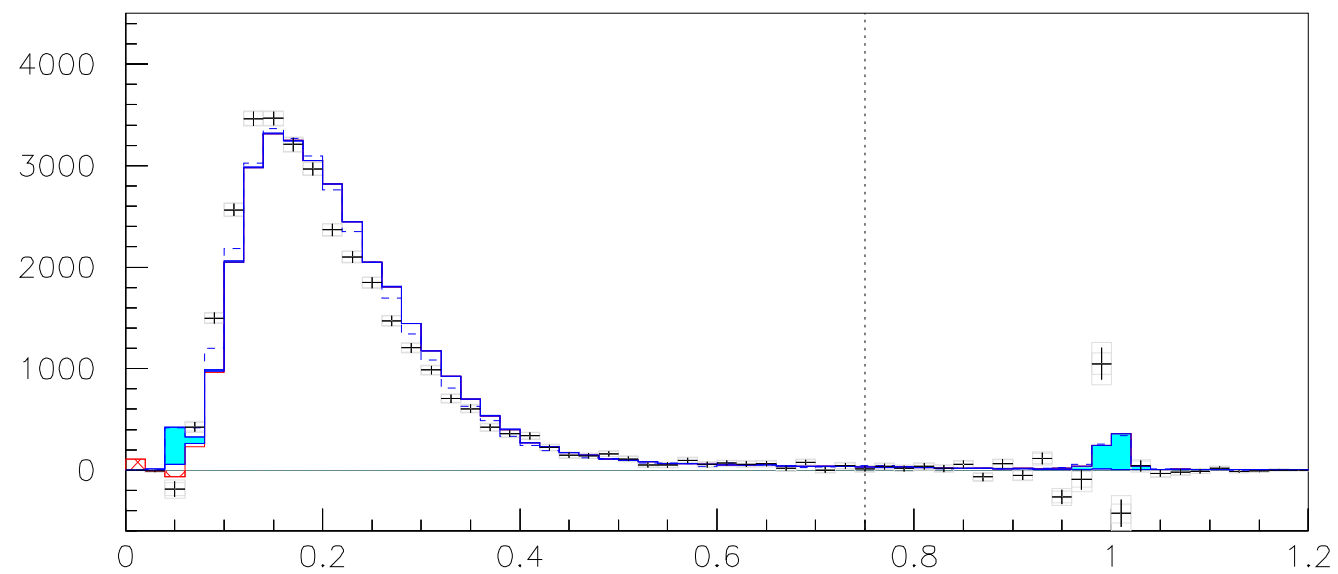




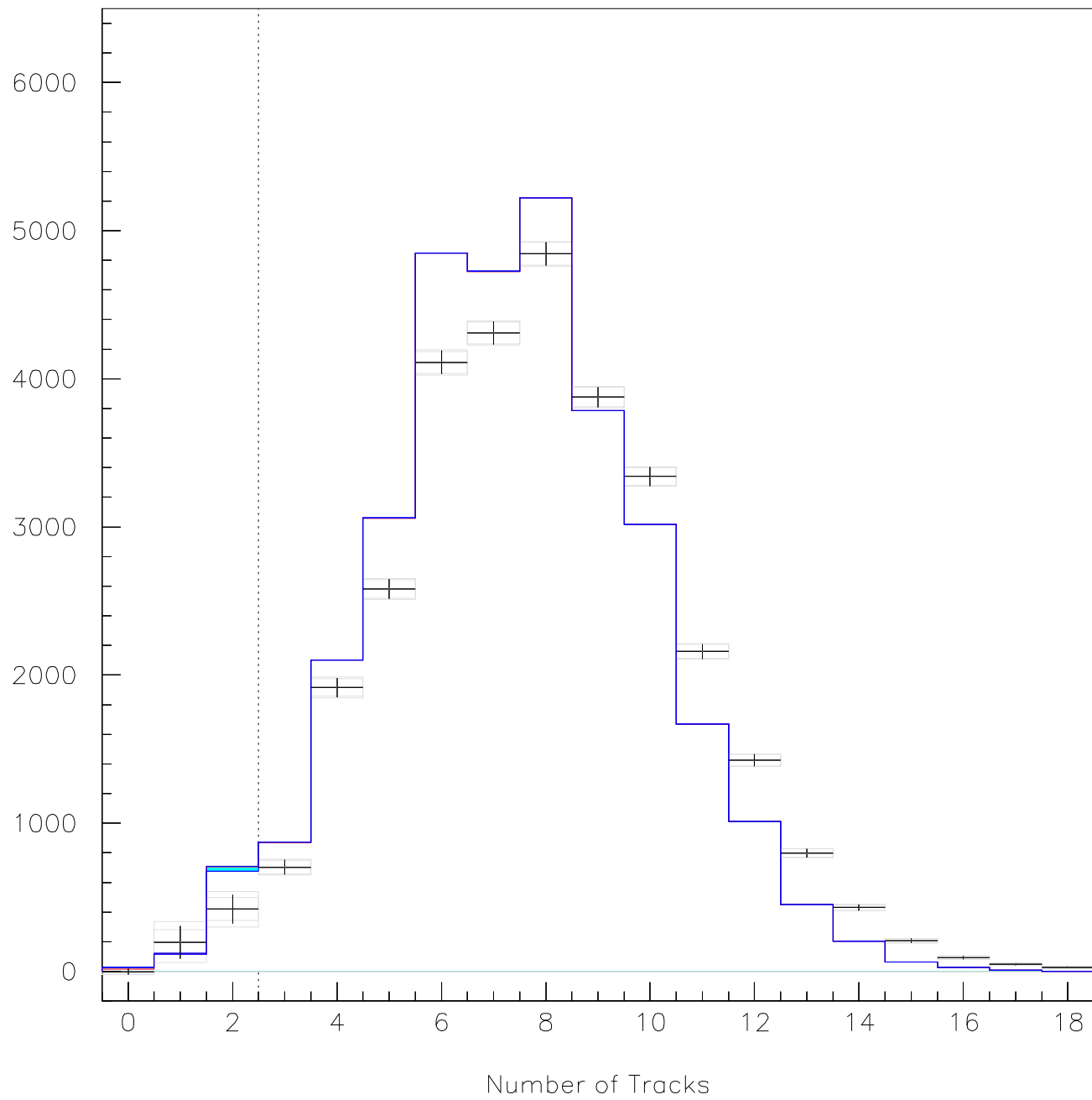


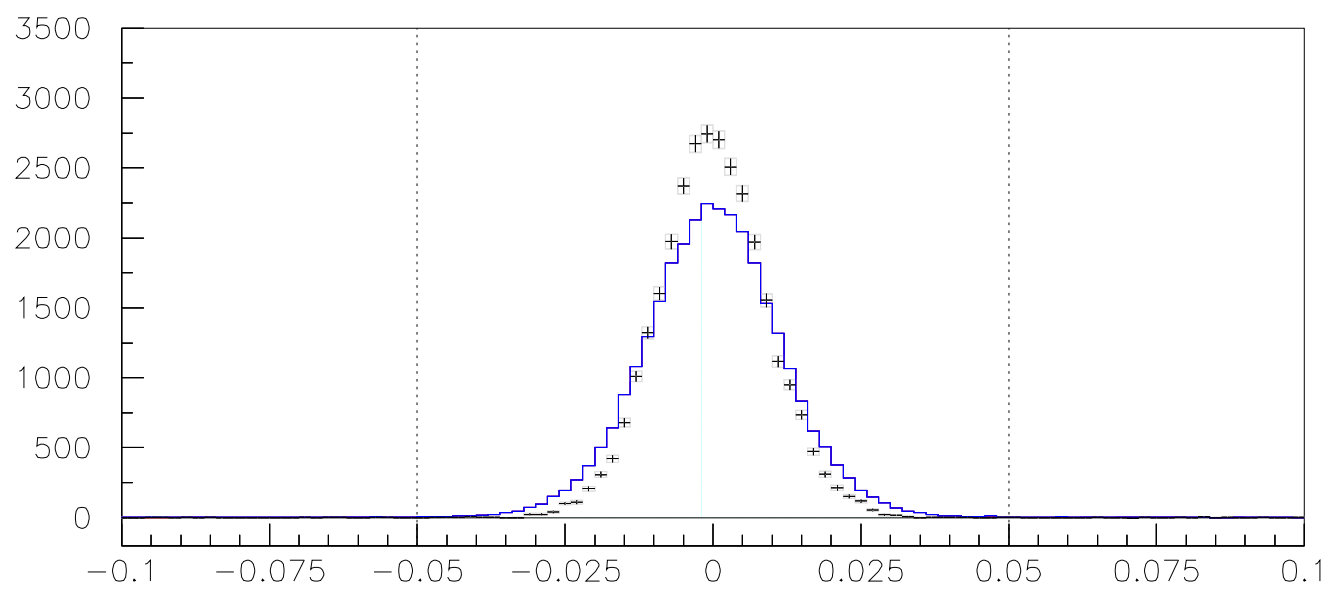


Total CC energy

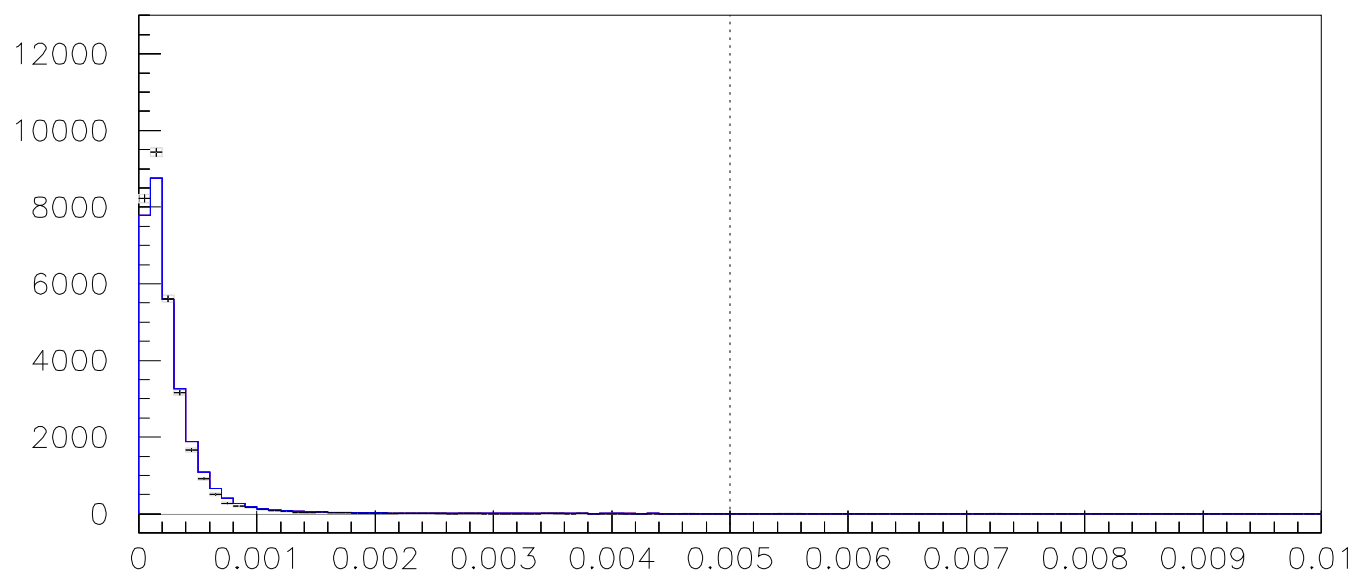


Biggest CC shower



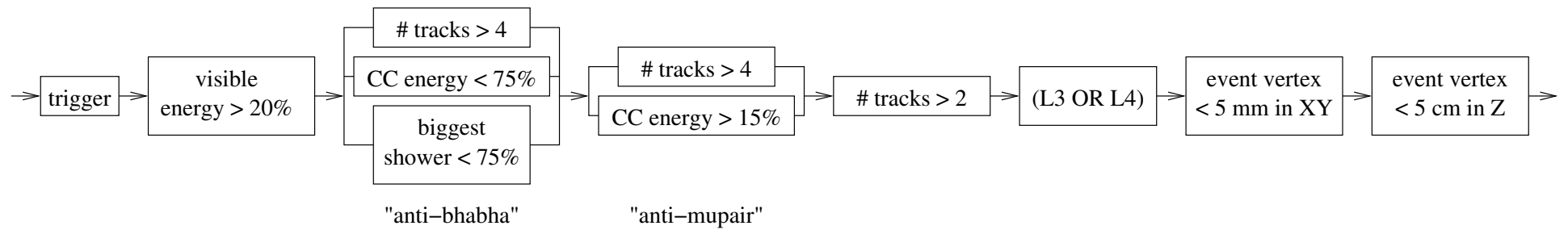


Event Z

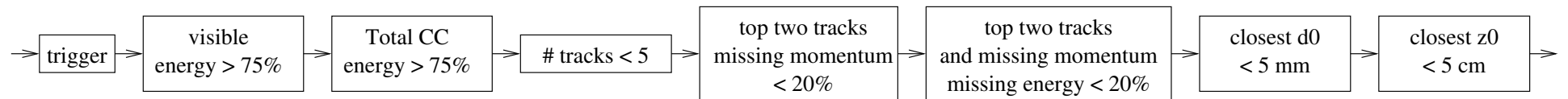


Event RPHI

## Analysis Cuts



## Bhabha Cuts



# RAW SAMPLES

Cuts applied	peak	continuum	$e^-$ -beam	$e^-$ BG	$e^+$ -beam	$e^+$ BG	Cosmic Rays
trigger	151819	215914	150565	86354.5	31047	20102	161256
AND visible energy $> 20\%$	105377	126010	14879	9769.83	2415	1544.12	12831
AND anti-bhabha	58964	47371	14760	9678.7	2404	1537.87	12761
AND anti-mupair	53790	38101	579	495.778	159	144.814	209
AND $\#$ tracks $\geq 3$	39438	14626	176	174.805	66	65.7964	3
AND level 3, 4	39435	14619	170	168.805	65	64.7964	3
AND event Z $< 5$ cm	39029	13972	52	52	19	19	0
AND RPHI $< 5$ mm (all cuts)	38823	13759	24	24	12	12	0

$$\#Y^a_n = \left( \begin{array}{c} \text{peak} \\ \text{passing} \\ \text{analysis} \end{array} \right) - \left( \begin{array}{c} \text{cont} \\ \text{passing} \\ \text{analysis} \end{array} \right) \underbrace{\left( \frac{\left( \begin{array}{c} \text{peak} \\ \text{passing} \\ \text{bhabha} \end{array} \right) - \#Y^a_{n-1} \left( \frac{\epsilon \mathcal{B}_{\ell\ell}}{\text{naïve efficiency}} \right)}{\left( \begin{array}{c} \text{cont} \\ \text{passing} \\ \text{bhabha} \end{array} \right)} \right)}_{\text{ptoc}_n}$$

$$\epsilon \mathcal{B}_{\ell\ell} = \frac{\text{MC passing bhabha}}{\text{MC total}} \pm 20\% \quad a_n = X + Y a_{n-1} \text{ and } a_0 = 0$$

$$\text{naïve efficiency} = \frac{\text{MC passing analysis}}{\text{MC total}} \Rightarrow a_n = \left( \frac{Y^n - 1}{Y - 1} \right) X$$

p = peak, c = continuum, m = Monte Carlo; a = analysis, b = bhabha cuts

{p,c,m} passing {a,b} = data -  $e^-$ bg scale ( $e^-$ beam - cosmoics) -  $e^+$ bg scale ( $e^+$ beam - cosmoics) - cosmoics scale (no-beam)

$$\text{pa} = 38823 - 0.488 * (24 - 0.39819 * 0) - 1.25 * (12 - 0.0678733 * 0) - 0.0723982 * 0 = 38796.3$$

$$\text{pb} = 32958 - 0.488 * (0 - 0.39819 * 0) - 1.25 * (0 - 0.0678733 * 0) - 0.0723982 * 0 = 32958$$

$$\text{ca} = 13759 - 0.96 * (24 - 0.39819 * 0) - 2.03846 * (12 - 0.0678733 * 0) - 0.158371 * 0 = 13711.5$$

$$\text{cb} = 55345 - 0.96 * (0 - 0.39819 * 0) - 2.03846 * (0 - 0.0678733 * 0) - 0.158371 * 0 = 55345$$

$$\text{ma} = 92963$$

$$\text{mb} = 1727$$

$$\text{m2a} = 23792$$

$$\text{ptoc} = (38796.3 * 1.0 * 1727/92963 - 32958)/(13711.5 * 1.0 * 1727/92963 - 55345) = 0.585172$$

$$\text{ptocup} = (38796.3 * 1.2 * 1727/92963 - 32958)/(13711.5 * 1.2 * 1727/92963 - 55345) = 0.583094$$

$$\text{ptocdo} = (38796.3 * 0.8 * 1727/92963 - 32958)/(13711.5 * 0.8 * 1727/92963 - 55345) = 0.587245$$

$$\text{ptomc} = (38796.3 - 32958 * 13711.5/55345)/(92963 - 1727 * 13711.5/55345) = 0.331021$$

$$\text{ptomc2} = (38796.3 - 32958 * 13711.5/55345)/(1. - (13711.5/55345) * (1727/92963))/23792 = 1.29341$$

# RESONANCE EVENTS ONLY

Cuts applied	MCl $\ell$	MCo $\ell$ her	data	lumi+1 $\sigma$	lumi-1 $\sigma$
none	5477	98493			
trigger	3784	97651	25472.1	25920.8	25024.5
AND visible energy > 20%	3661	97515	31639.5	31901.4	31378.3
AND anti-bhabha	1558	96589	31243.9	31342.2	31145.6
AND anti-mupair	124	96313	31494.3	31573.5	31415.4
AND # tracks $\geq 3$	3	93848	30879.3	30909.7	30848.9
AND level 3, 4	3	93841	30880.4	30910.8	30850.1
AND event Z < 5 cm	3	93258	30853	30882	30824
AND RPHI < 5 mm (all cuts)	2	92961	30771.6	30800.2	30743.1

# SAMPLES SCALED TO DATA

Cuts applied	MCl $\ell$	MCo $\ell$ her	data	$e^-$ BG	$e^+$ BG	Cosmic Rays
none	1812.97	32603.3				
trigger	1252.6	32324.5	25472.1	-6369.92	1148.83	841.332
AND visible energy > 20%	1211.83	32279.5	31639.5	-720.669	88.2464	66.9441
AND anti-bhabha	515.801	31973	31243.9	-713.947	87.8894	66.5789
AND anti-mupair	41	31881.6	31494.3	-36.571	8.27616	1.09043
AND # tracks $\geq 3$	1	31065.6	30879.3	-12.8945	3.76027	0.0156521
AND level 3, 4	1	31063.3	30880.4	-12.4519	3.70311	0.0156521
AND event Z < 5 cm	0.929687	30870.4	30853	-3.83577	1.08585	0
AND RPHI < 5 mm (all cuts)	0.699219	30772	30771.6	-1.77036	0.685801	0
(last line constraint)	A	+ B	= C	- D	- E	- F