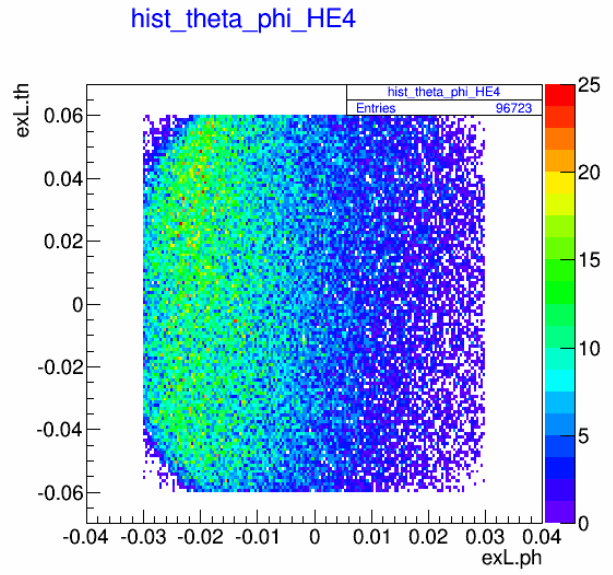
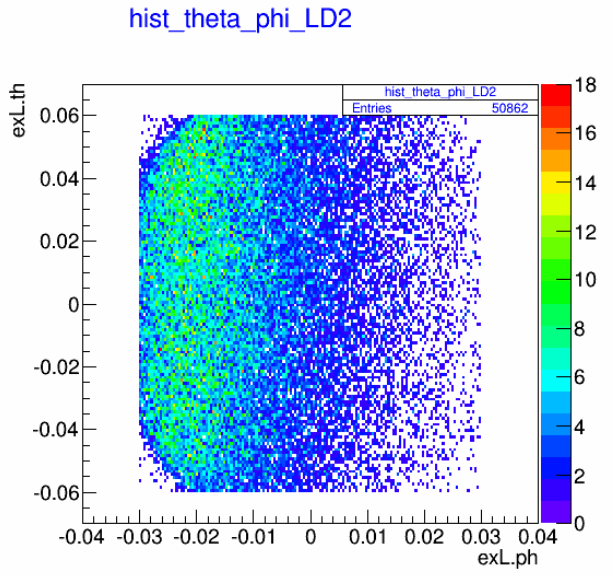
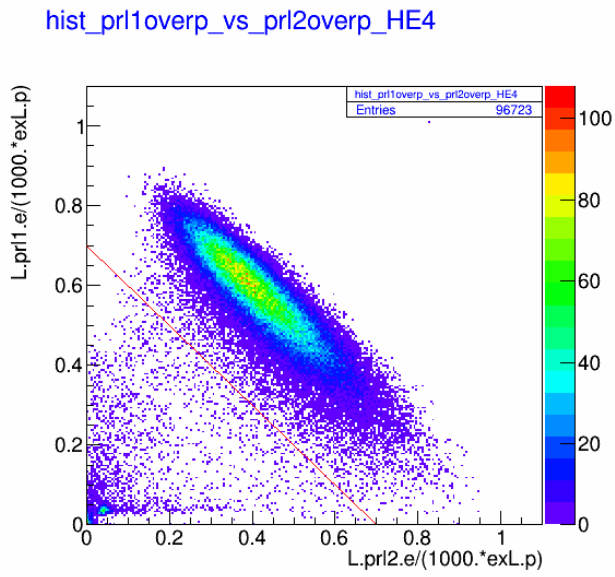
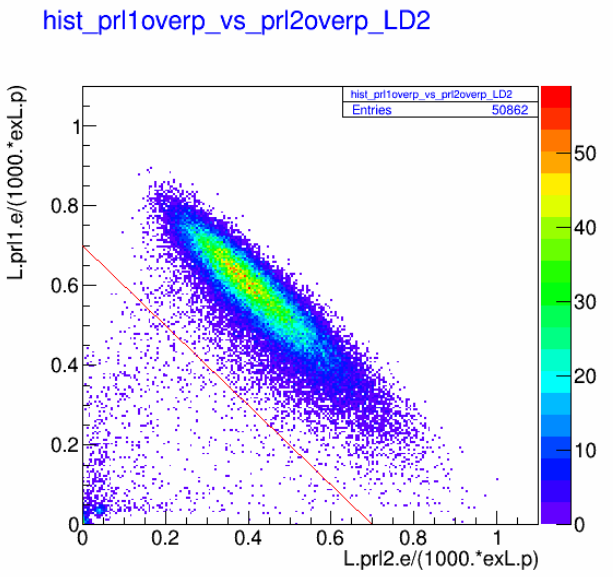
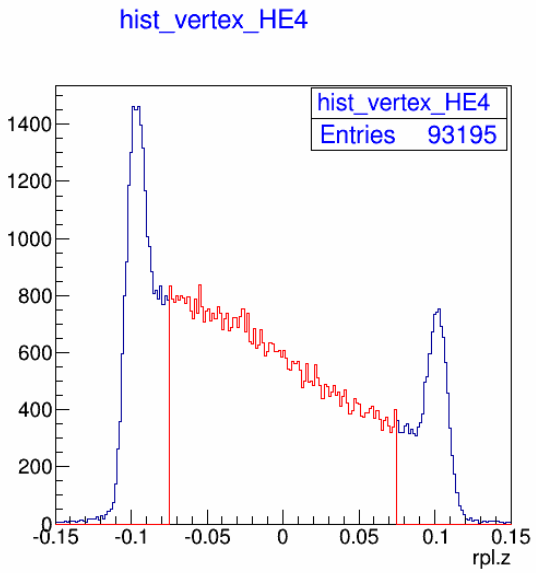
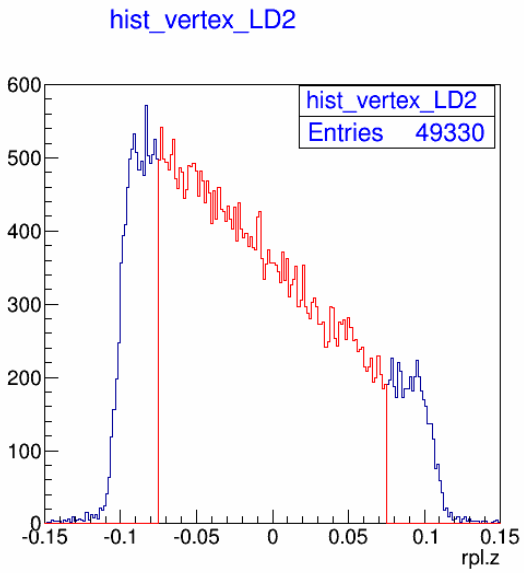
Compare data

with T3, no edtm, |theta|<0.06, |phi|<0.03

HE4 data	LD2 data
	
Theta vs phi cut	
	
Electron ID	

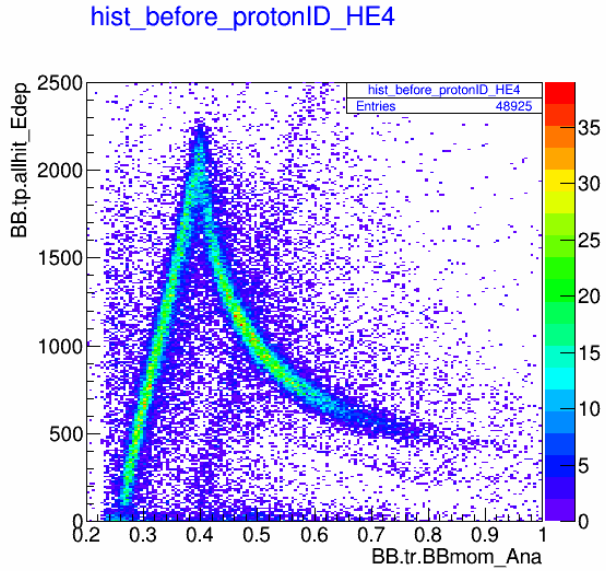
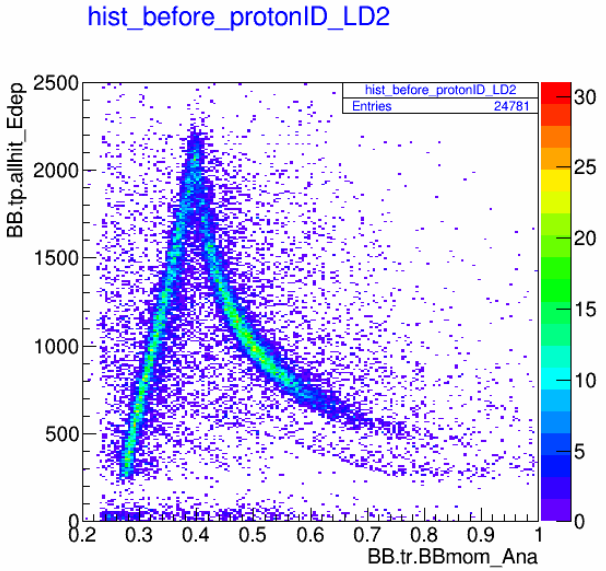
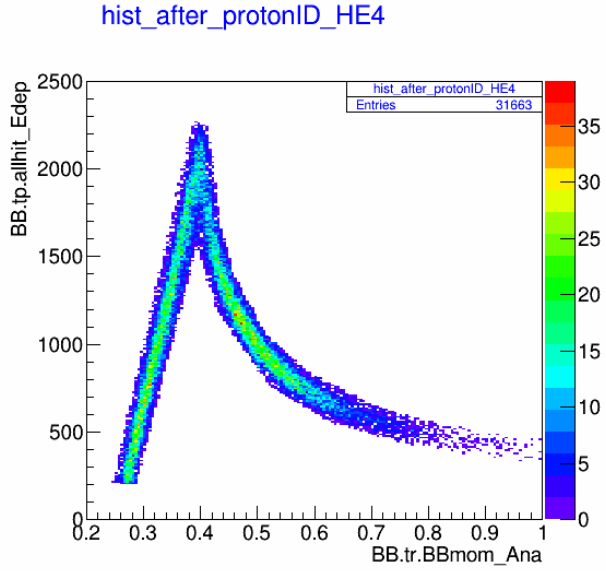
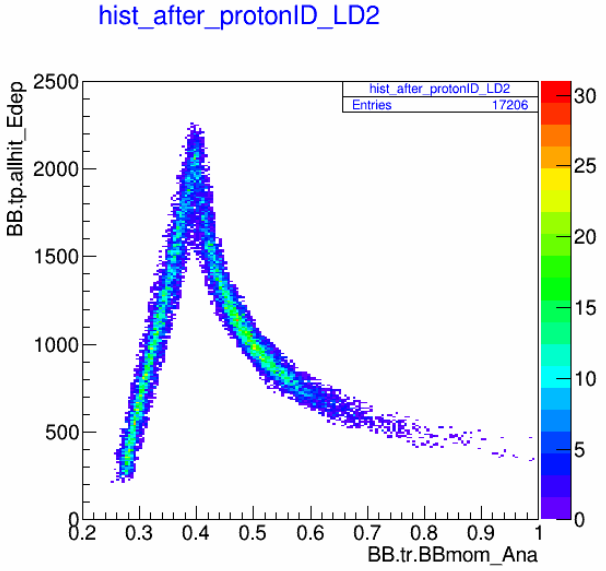
and electron selection at prl_sum_E/p>0.7

(red) |rpl.z|<=0.075 m

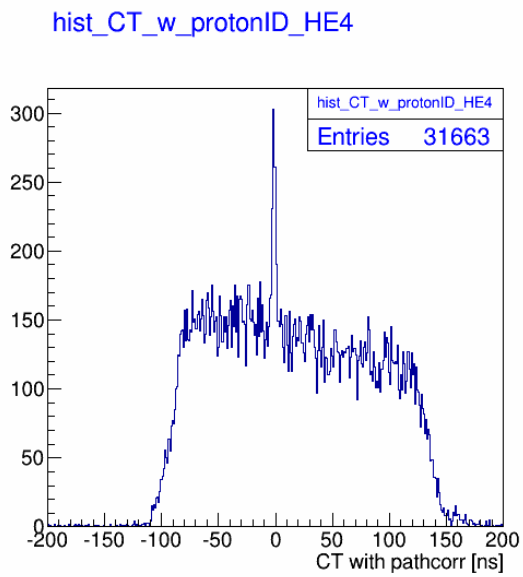
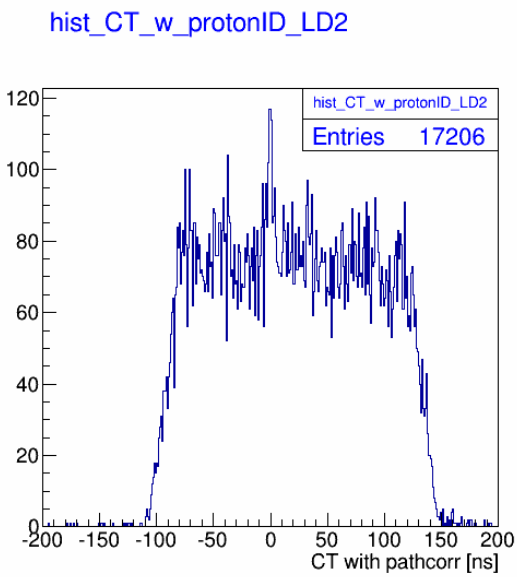
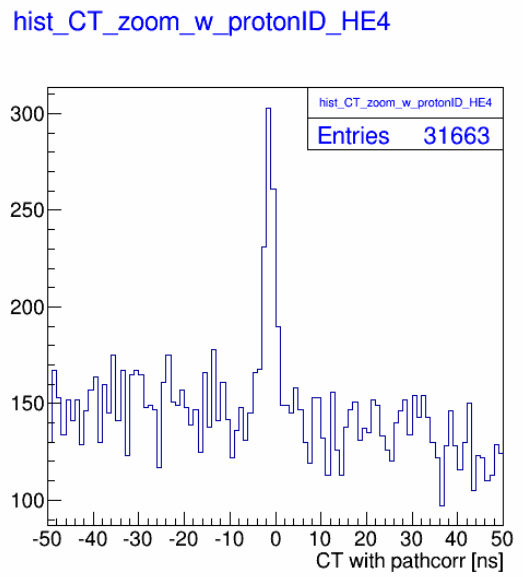
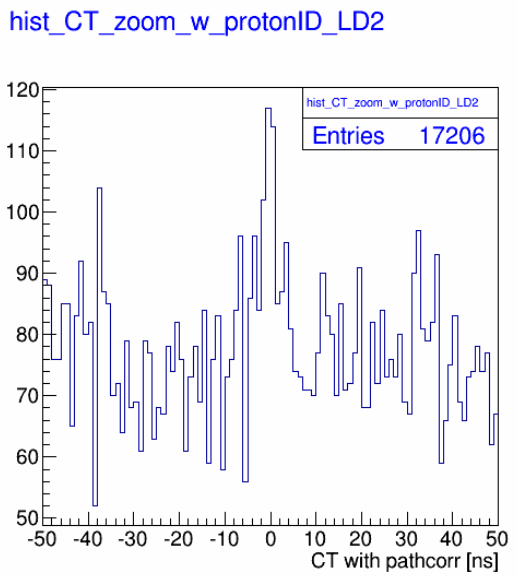
HE4 data	LD2 data
	
Vertex	Vertex

This show the difference in the density between the He4 and LD2 production. LD2 is denser. Making the cut at the same as the one in He4 target. At |rpl.z|<=0.075 m

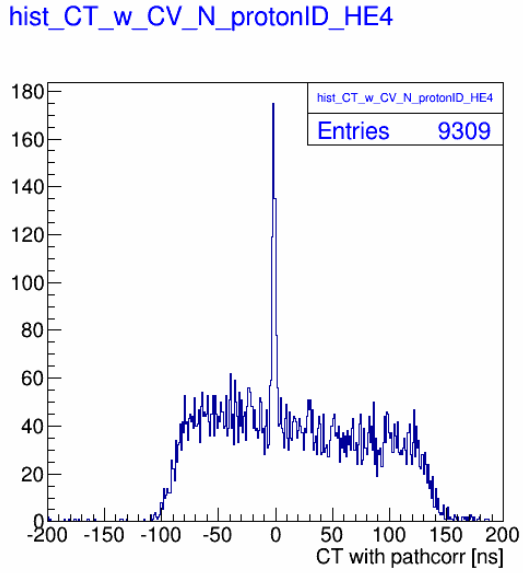
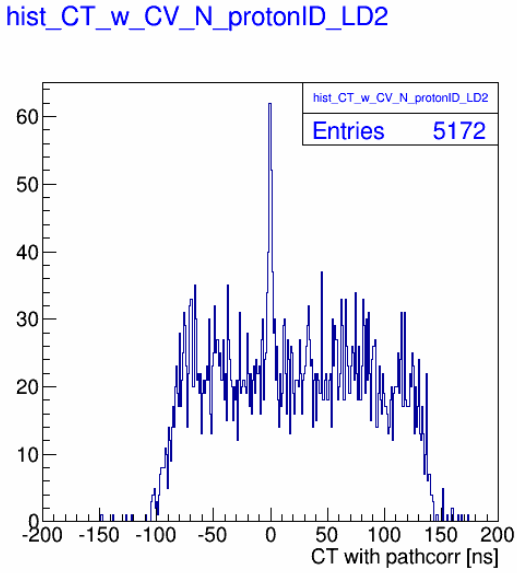
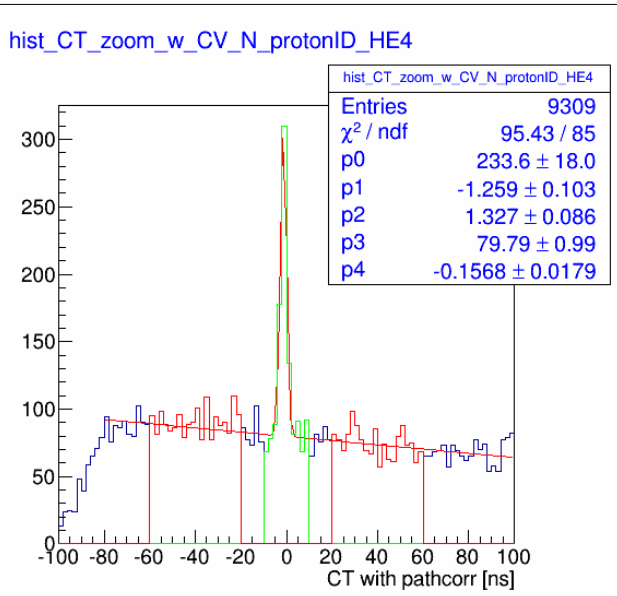
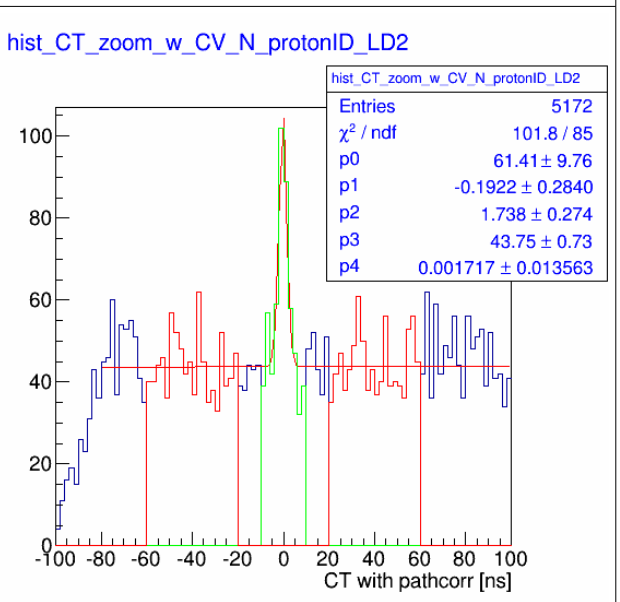
With abs(rpl.z)<=0.075 &&(BB.fh_id==1 ||(BB.Eph_id==1 &&
BB.tp.allhit_Edep>=1000.-1000*BB.tr.BBmom_Ana))

HE4 data	LD2 data
	
Has track & hit before proton ID this show the deuteron in the background staring at 0.4 GeV/c	Has track & hit before proton ID
	
After proton PID	After proton PID

With proton PID (graphic cut E vs p)

HE4 data	LD2 data
	
	

Add coincidence vertex: abs(rpl.z-BB.tr.tg_y*1.12+0.007)<=0.04 m

HE4 data	LD2 data
	
	

mean=p1, simga = p2

Add coincidence time cut at large coverage at +/- 10 ns

Now look at the result
All cuts:

1.with T3, no edtm, |theta|<0.06, |phi|<0.03

2. electron selection at prl_sum_E/p>0.7

3. |rpl.z|<=0.075 m

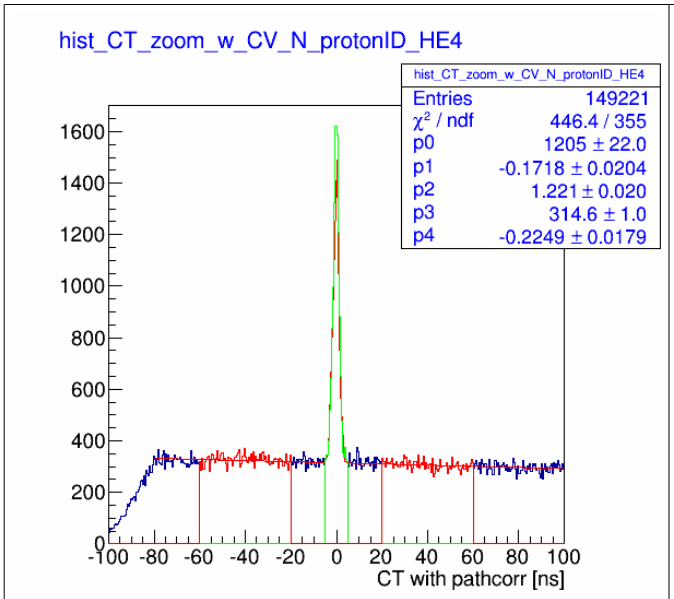
4. (BB.fh_id==1 ||(BB.Eph_id==1 && BB.tp.allhit_Edep>=1000.-1000*BB.tr.Bbmom_Ana))

5. With proton PID (graphic cut E vs p)

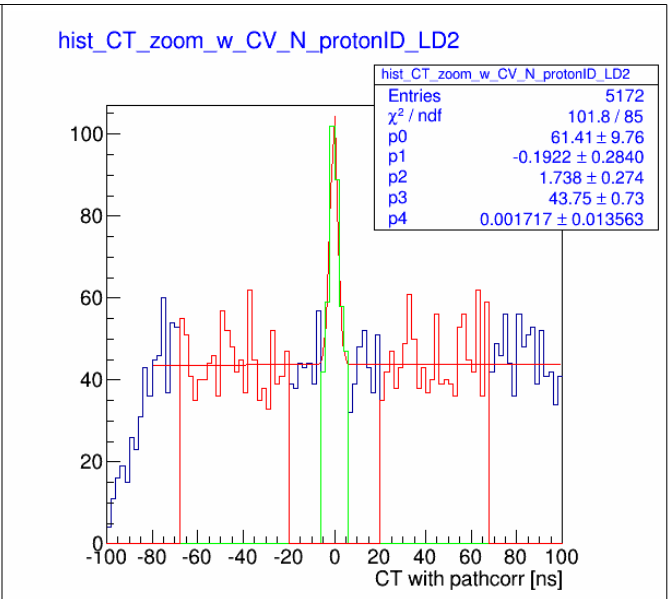
6. Add coincidence vertex: abs(rpl.z-BB.tr.tg_y*1.12+0.007)<=0.04 m

7. Add coincidence time cut at large coverage at +/- 10 ns

change data set for He4 for larger set of data.

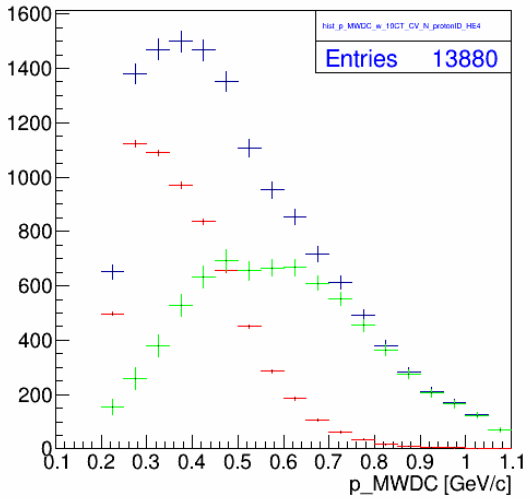
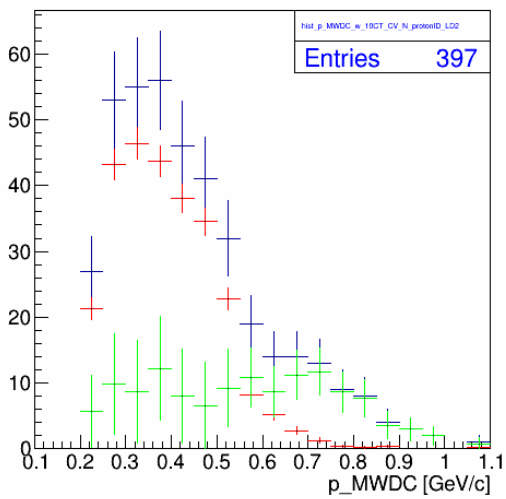
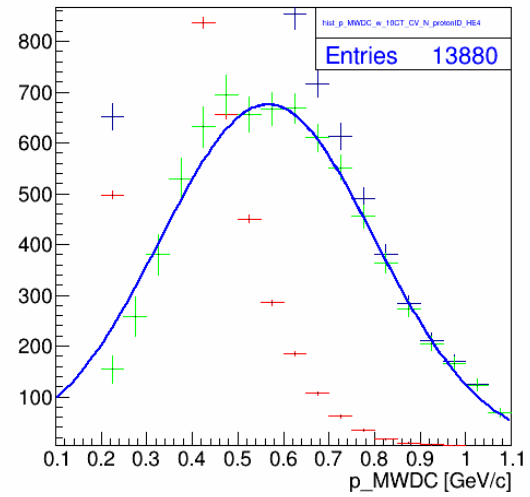
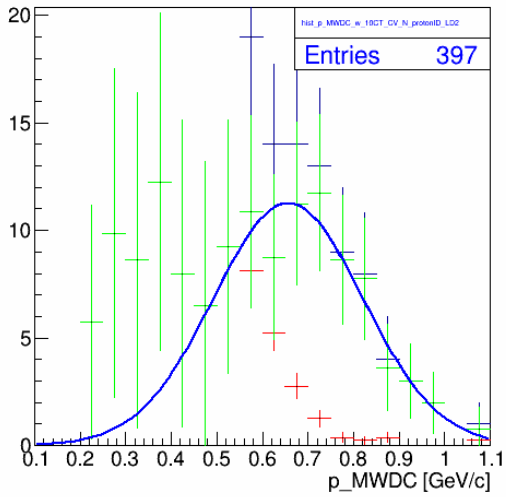


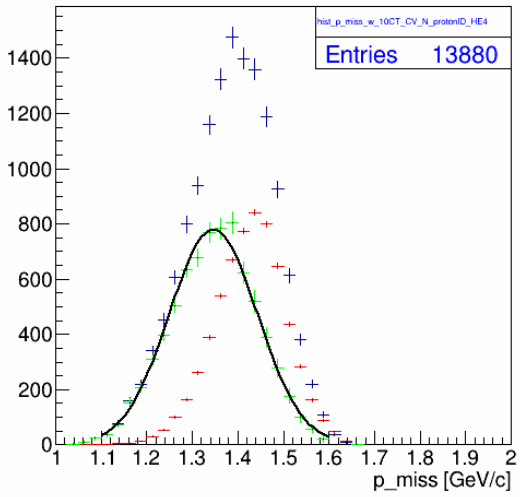
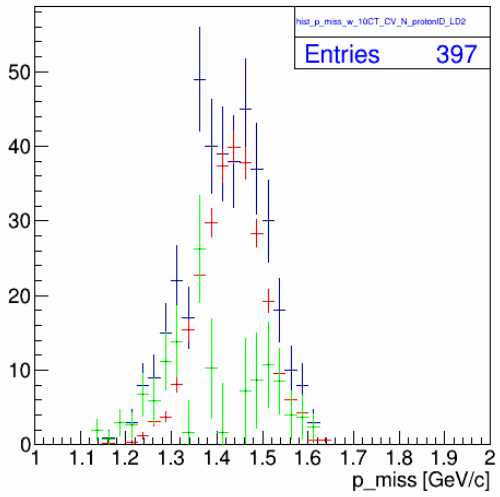
CT pathcorr
peak: 0 +/-5 ns
bg: |CT|<60 &|CT|>20 (8 times the width)



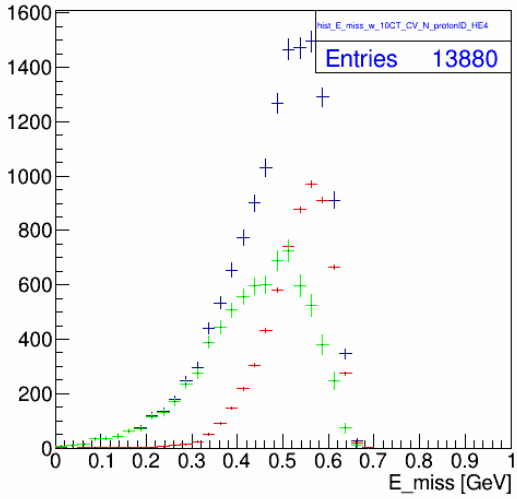
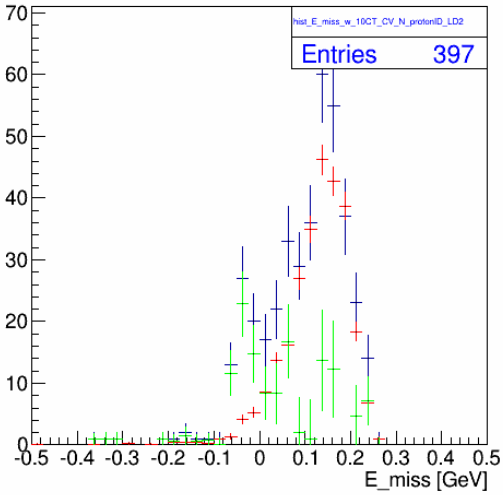
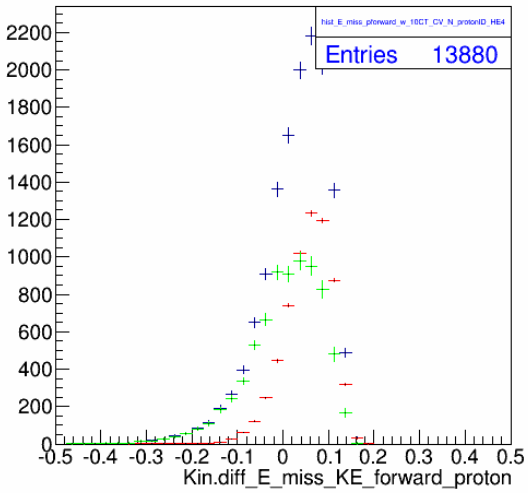
CTpathcorr
peak: 0 +/-6 ns
bg: |CT|<68 &|CT|>20 (8 times the width)

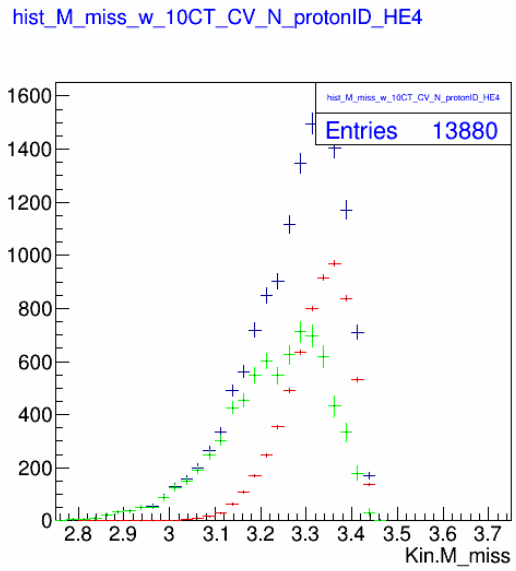
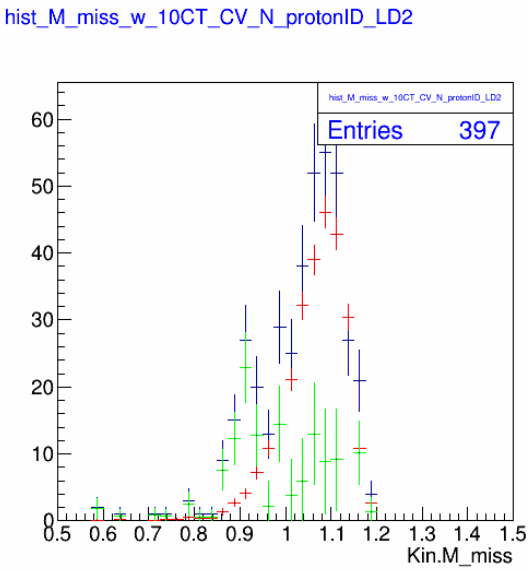
(note the higher entries of HE4 data)

HE4 data	LD2 data
hist_p_MWDC_w_10CT_CV_N_protonID_HE4  (50 MeV/bin)	hist_p_MWDC_w_10CT_CV_N_protonID_LD2 
hist_p_MWDC_w_10CT_CV_N_protonID_HE4  Momentum at the MWDC	hist_p_MWDC_w_10CT_CV_N_protonID_LD2  Momentum at the MWDC Need to check the minimum momentum that reach the wire chamber for the LD2 dense target

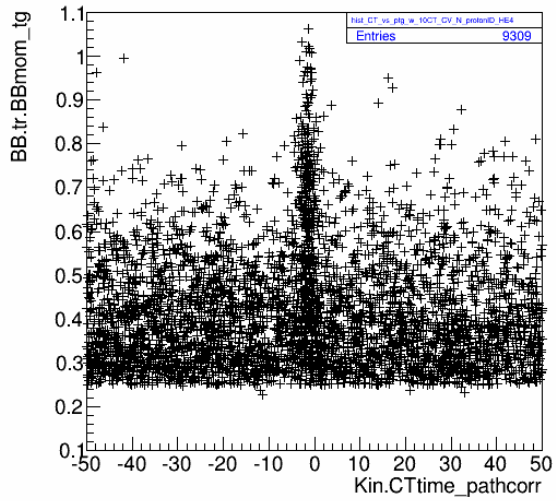
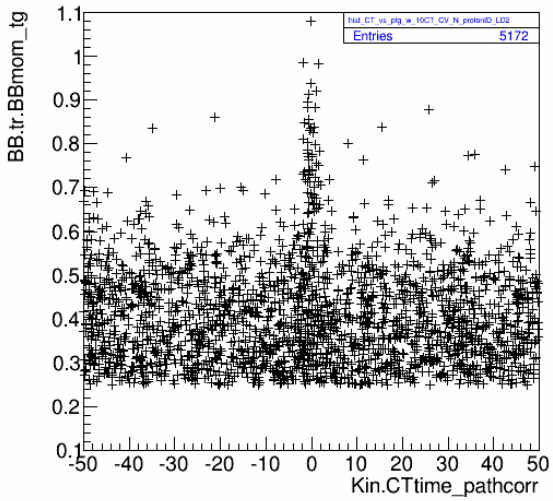
HE4 data	LD2 data
p_miss = sqrt(sum(q_i - p_tg_i)^2)	
hist_p_miss_w_10CT_CV_N_protonID_HE4  Mean: 1.5 GeV/c 25 MeV/bin	hist_p_miss_w_10CT_CV_N_protonID_LD2 

*** using the background maybe we left and right of the CT peak might have the difference shape of momentum distribution.

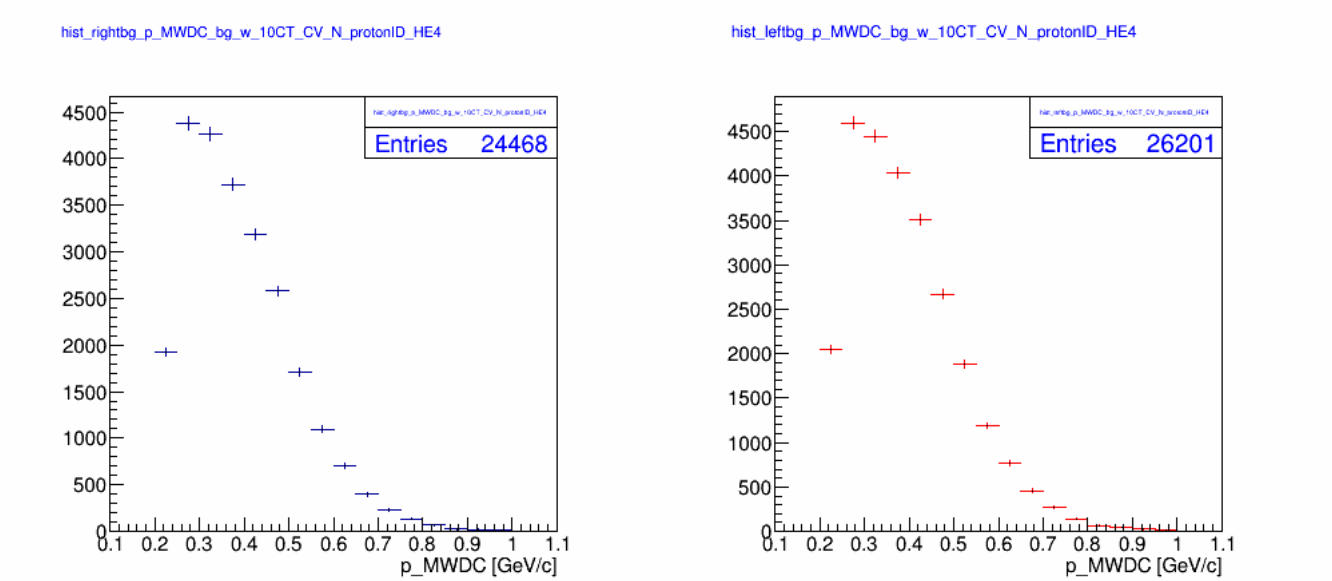
HE4 data	LD2 data
hist_E_miss_w_10CT_CV_N_protonID_HE4  E_miss = omega – KE_proton-KE_recoil	hist_E_miss_w_10CT_CV_N_protonID_LD2 
hist_E_miss_pforward_w_10CT_CV_N_protonID_HE4  E_miss with assumption that the forward proton carried all p_miss	

HE4 data	LD2 data
	
M_miss = sqrt(E_recoil^2-p_Miss^2) where E_recoil = He4_mass+omega-proton_E	

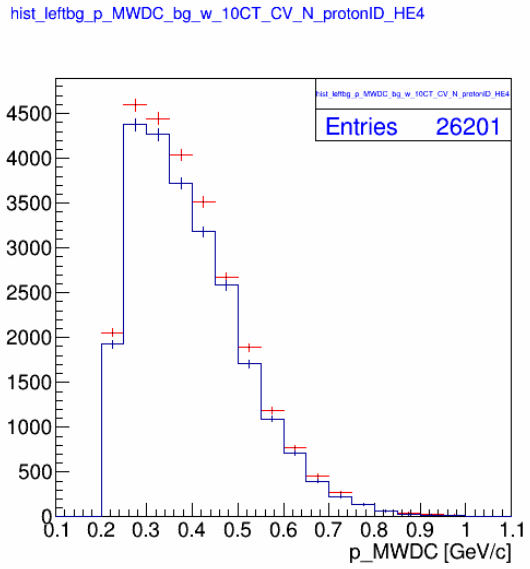
** calculate the missing mass of the He4**

HE4 data	LD2 data
hist_CT_vs_ptg_w_10CT_CV_N_protonID_HE4 	hist_CT_vs_ptg_w_10CT_CV_N_protonID_LD2 

Concerning with the background subtraction. i.e. the difference of the momentum distribution to the Left/Right of the CT peak.



The momentum distribution for background to the right/left of the CT peak.
They show the same distribution (different in number) which can be seen in the overlap figure below.



The overlap of the background from right/left of the CT peak.