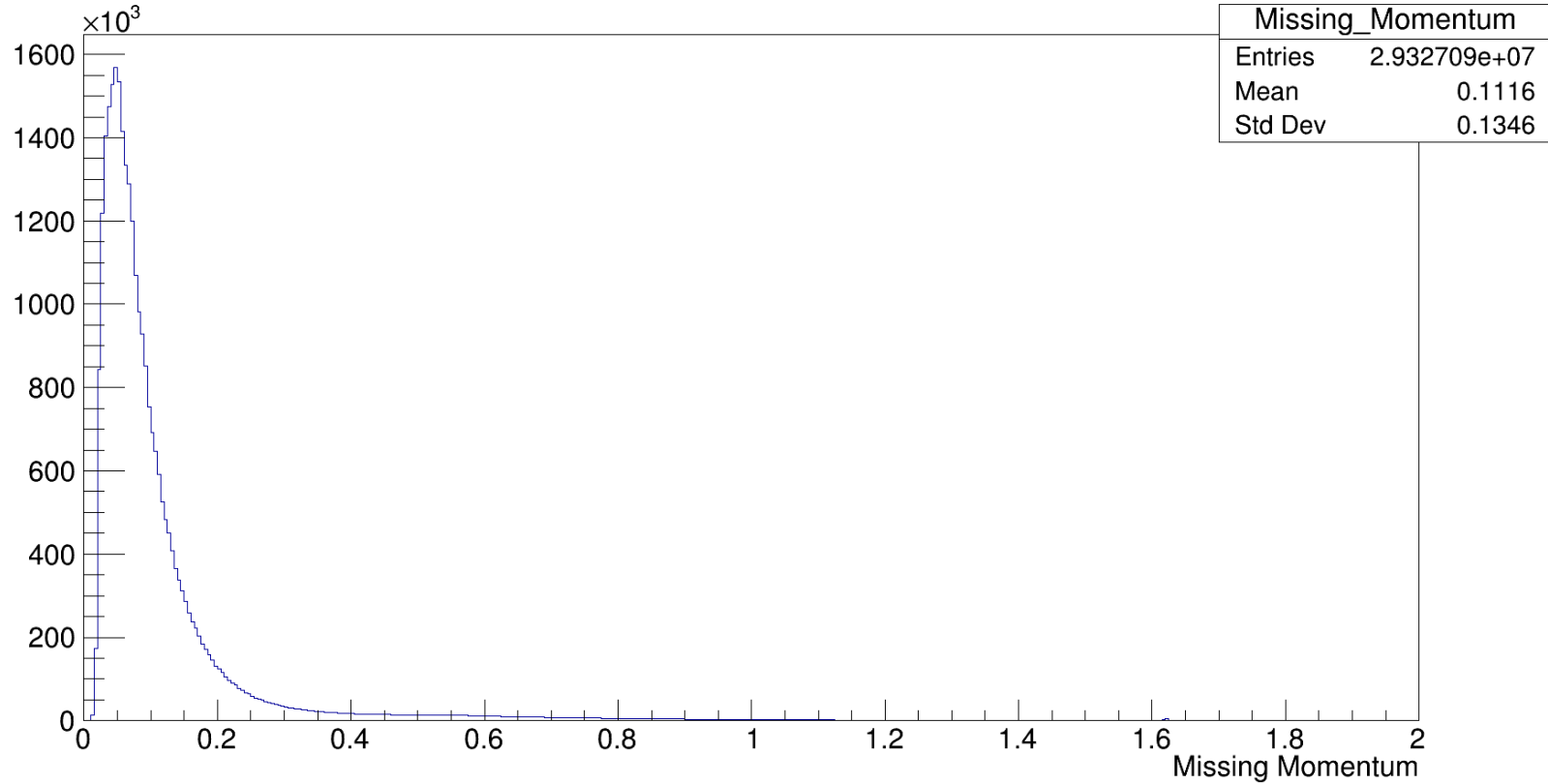
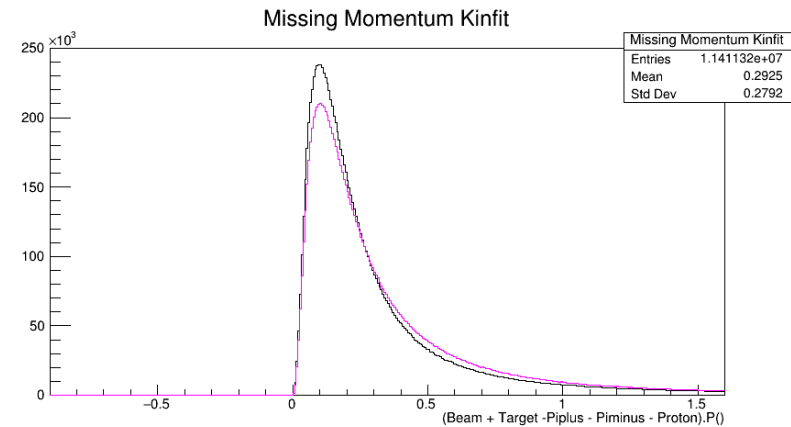
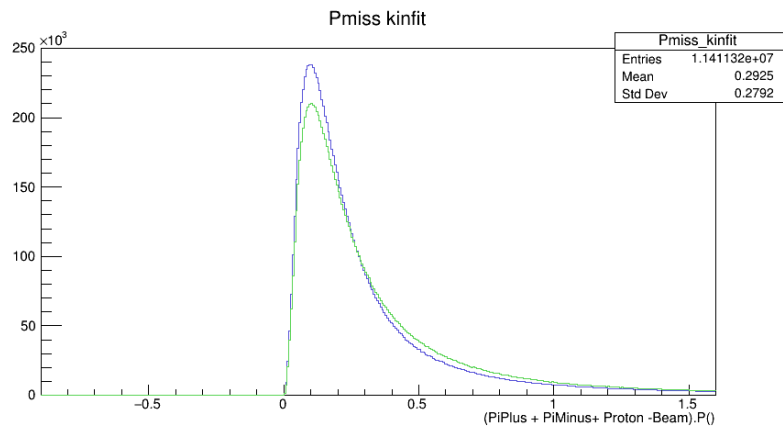
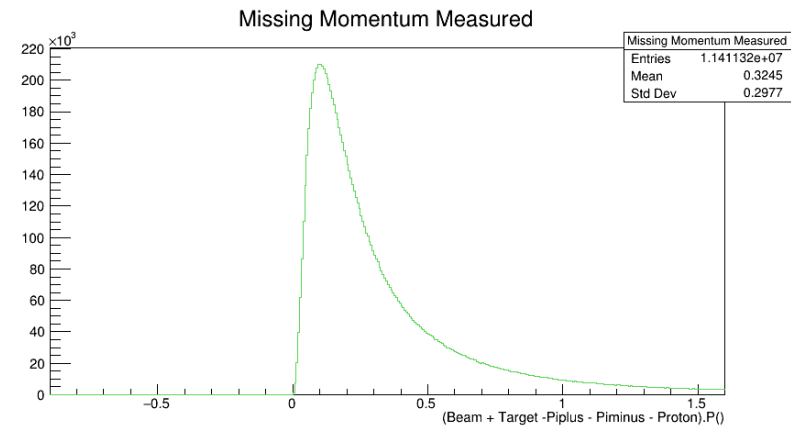
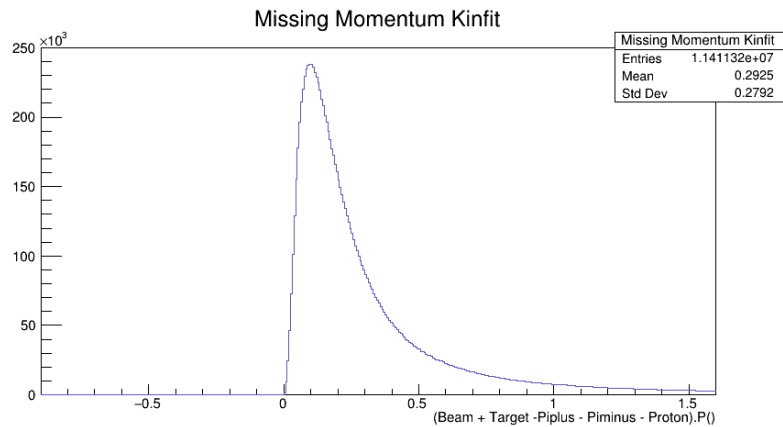

"Analyzing Efficiency Variations Across Different Selection Criteria for Deuterium"

- List of Cut:
- Vertex (a) (52,78)
- Missing Momentum: (b) < 400, (c) < 300, (d) < 250
- Confidence Level (e) No cut (f) > 0.001
- Cut on Trigger.

Missing Momentum of Thrown



Missing Momentum of Reconstructed Simulation



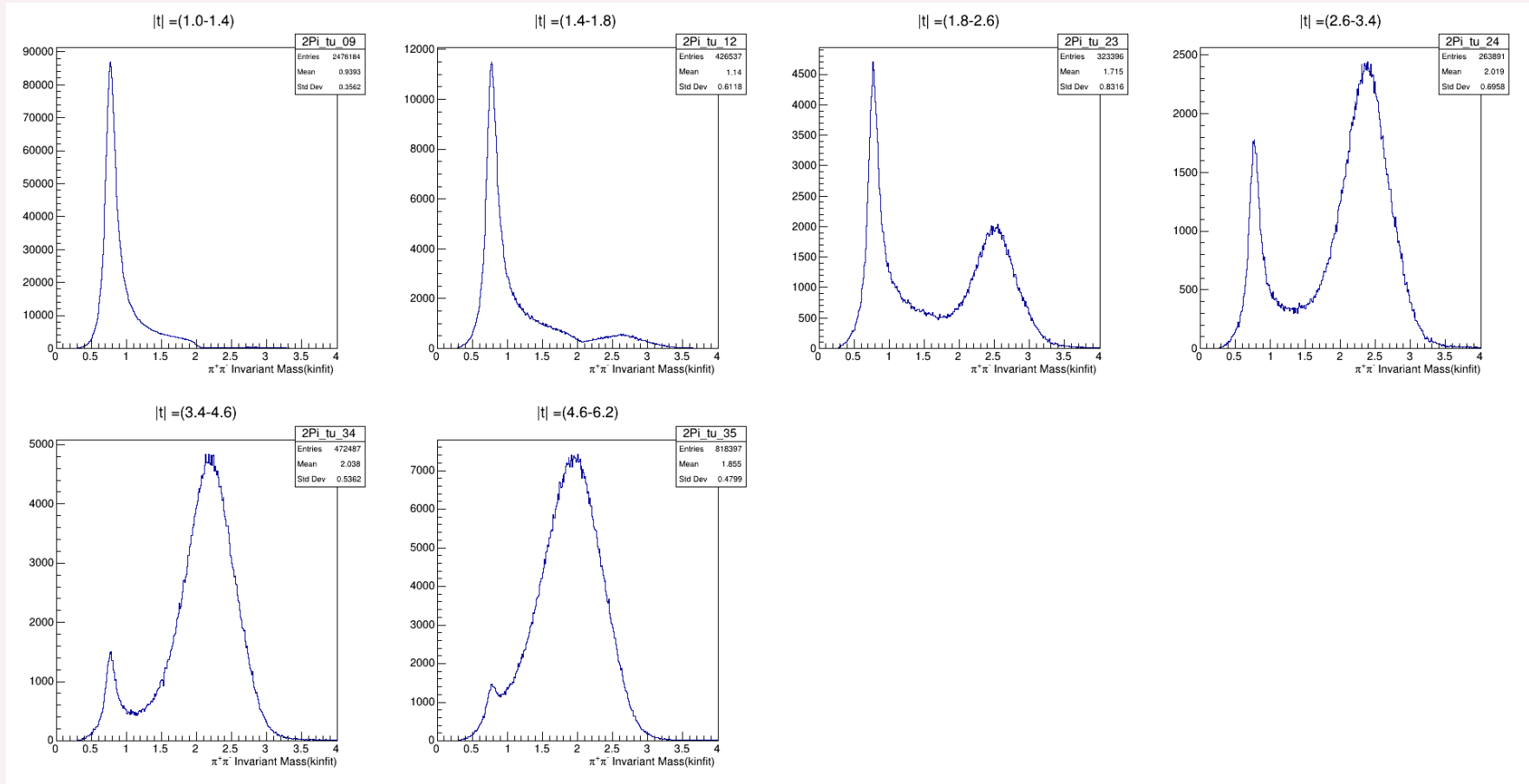
Study of Efficiency

- Gamma + Deuterium → PiPlus + PiMinus + Proton + (X)
 - Flag: B4F4T2S5
 - T2 = Two Extra Tracks
 - S5 = 5 extra shower.
-
- Cut on Extra Tracks and Showers have been implemented in DSelector Stage.

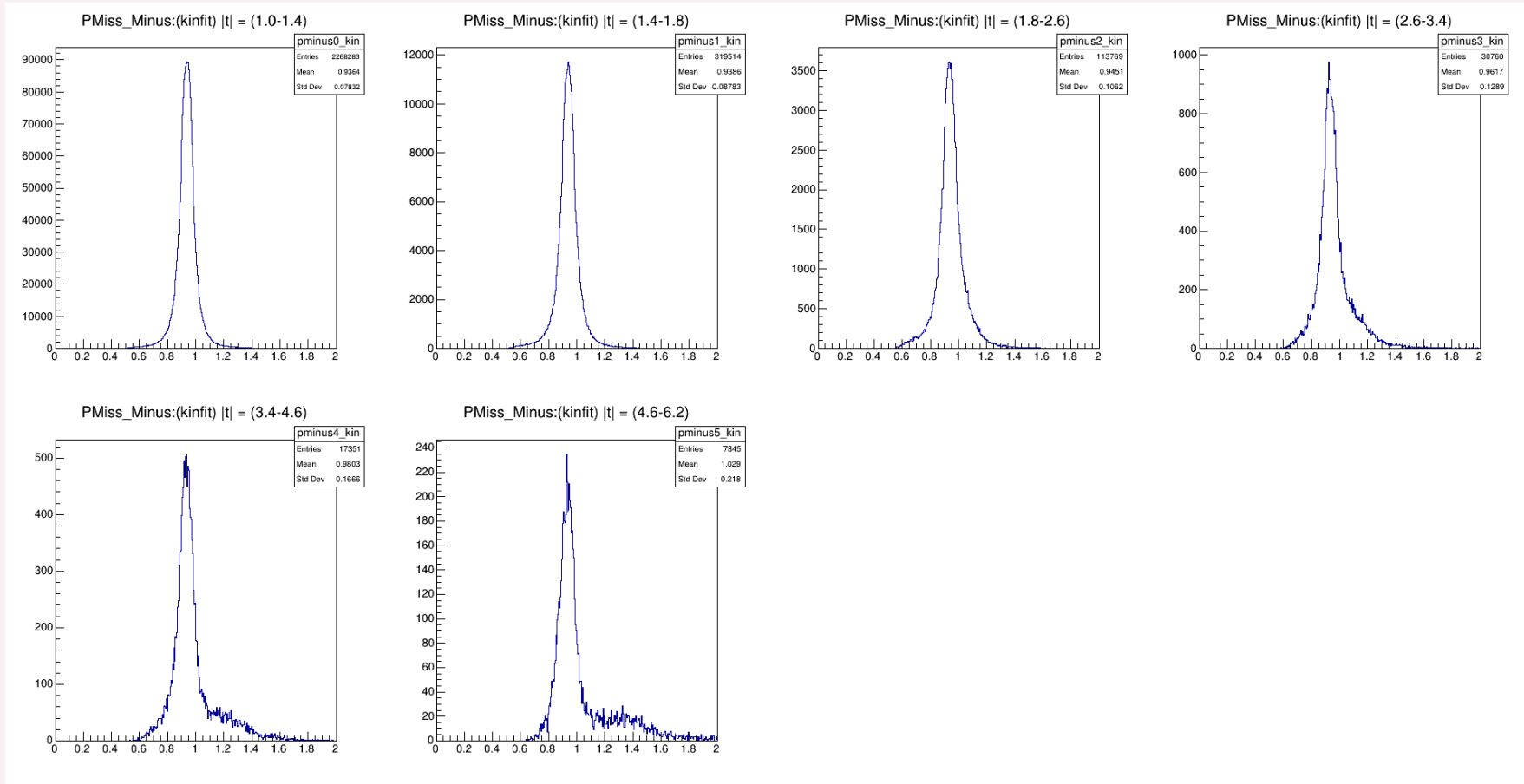
```
double locUnusedTracks = dComboWrapper->Get_NumUnusedTracks  
double extraE = dComboWrapper->Get_Energy_UnusedShowers();
```

```
extraE > 0.0 && locUnusedTracks > 0.0
```

Applying Cut of Extra Tracks and Shower



Apply Cut on Angle to suppress background.



(A) Selection Cuts

- At this stage, I have applied angular cuts based on the background level.
- I have selected events with no extra tracks and showers.

Range	1.0-1.4	1.4-1.8	1.8-2.6	2.6-3.4	3.4-4.6	4.6-6.2
Efficiency	27.33	26.96	22.23	18.75	17.88	15.06

Efficiency

	No Cut	Vertex Cut	Pmiss <400	Pmiss < 300	Pmiss < 250	C.L >0.001	After Applying Trigger	
1.0-1.4	27.33	27.29	22.30	20.01	18.17		16.94	16.96
1.4-1.8	26.96	26.92	21.78	19.63	17.83		16.39	16.12
1.8-2.6	22.23	22.19	18.45	16.76	15.27		14.04	12.49
2.6-3.4	18.75	18.74	15.93	14.54	13.20		12.12	7.78
3.4-4.6	17.88	17.84	15.19	13.90	12.71		11.72	4.60
4.6-6.2	15.06	15.03	12.67	11.66	10.73		9.81	2.27

Note: All cuts have been applied on Reconstructed Simulation.

Cut on Vertex & Missing Momentum have been implemented on Thrown Simulation

Back up

S.N	Flag	B4_F4_T0_S0	B4_F4_T2_S5	B4_F4_T2_S5		
			Removed Extra shower and tracks	Keep Extra Track & Shower		
1	1.0-1.4	16.25	16.94	33.95		
2	1.4-1.8	15.46	16.39	32.26		
3	1.8-2.6	12.68	14.04	27.27		
4	2.6-3.4	10.71	12.12	23.43		
5	3.4-4.6	10.10	11.72	21.93		
6	4.6-6.2	8.30	9.81	18.35		

C.L > 0.001 ; Vertex (51,78) ; PMiss < 250 MeV;
Angular Cuts for Separation: Trigger cut