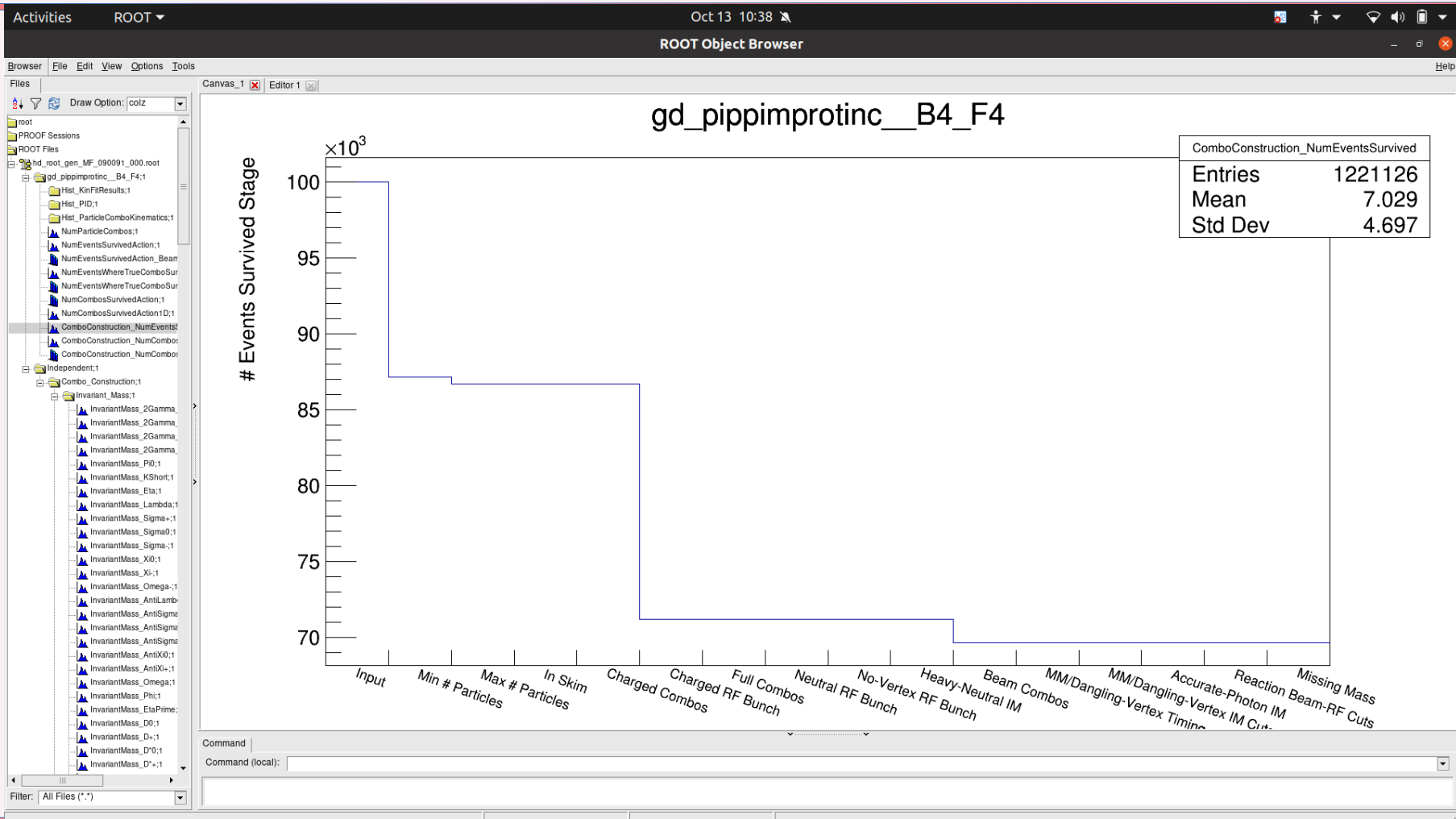
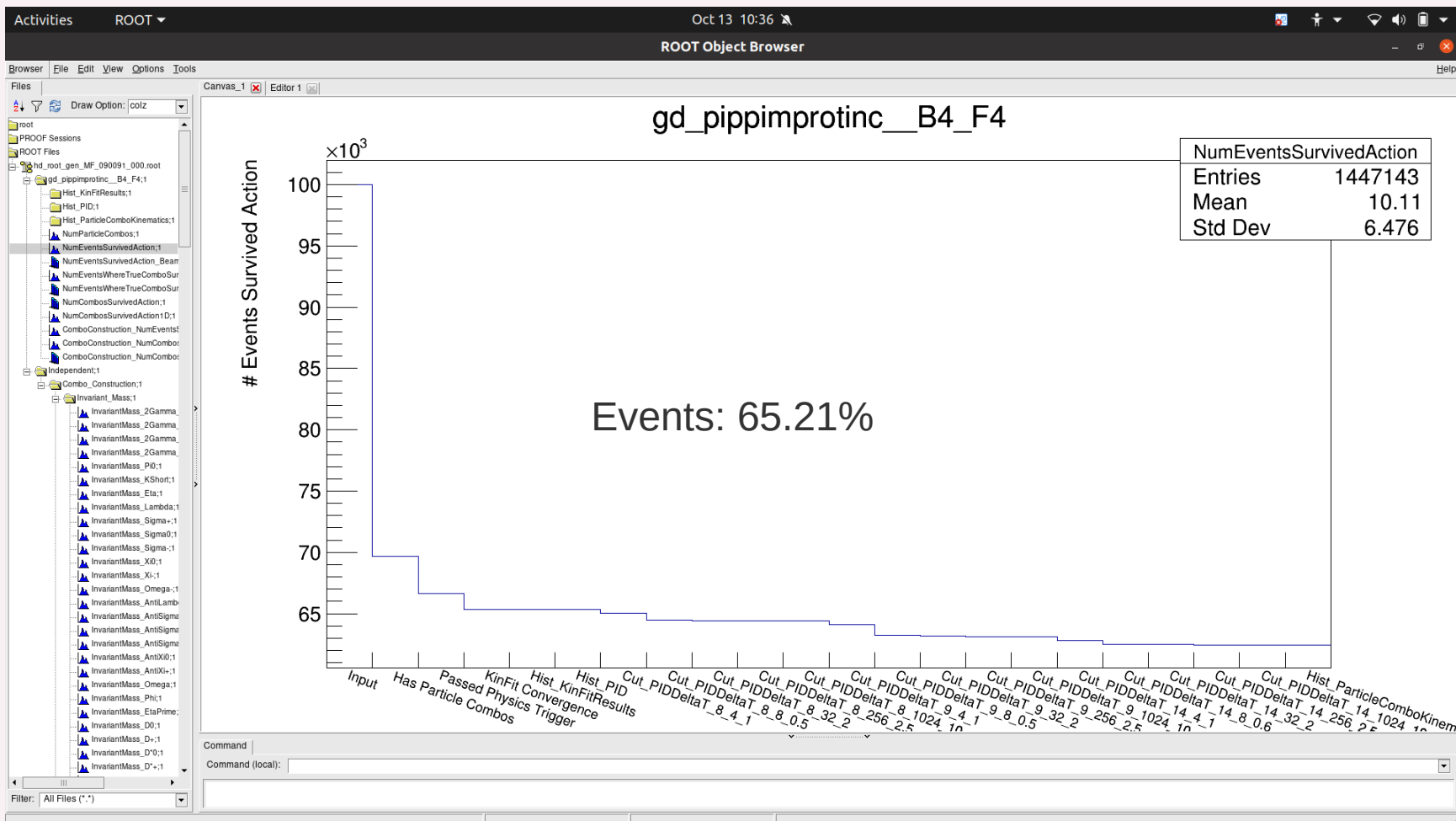


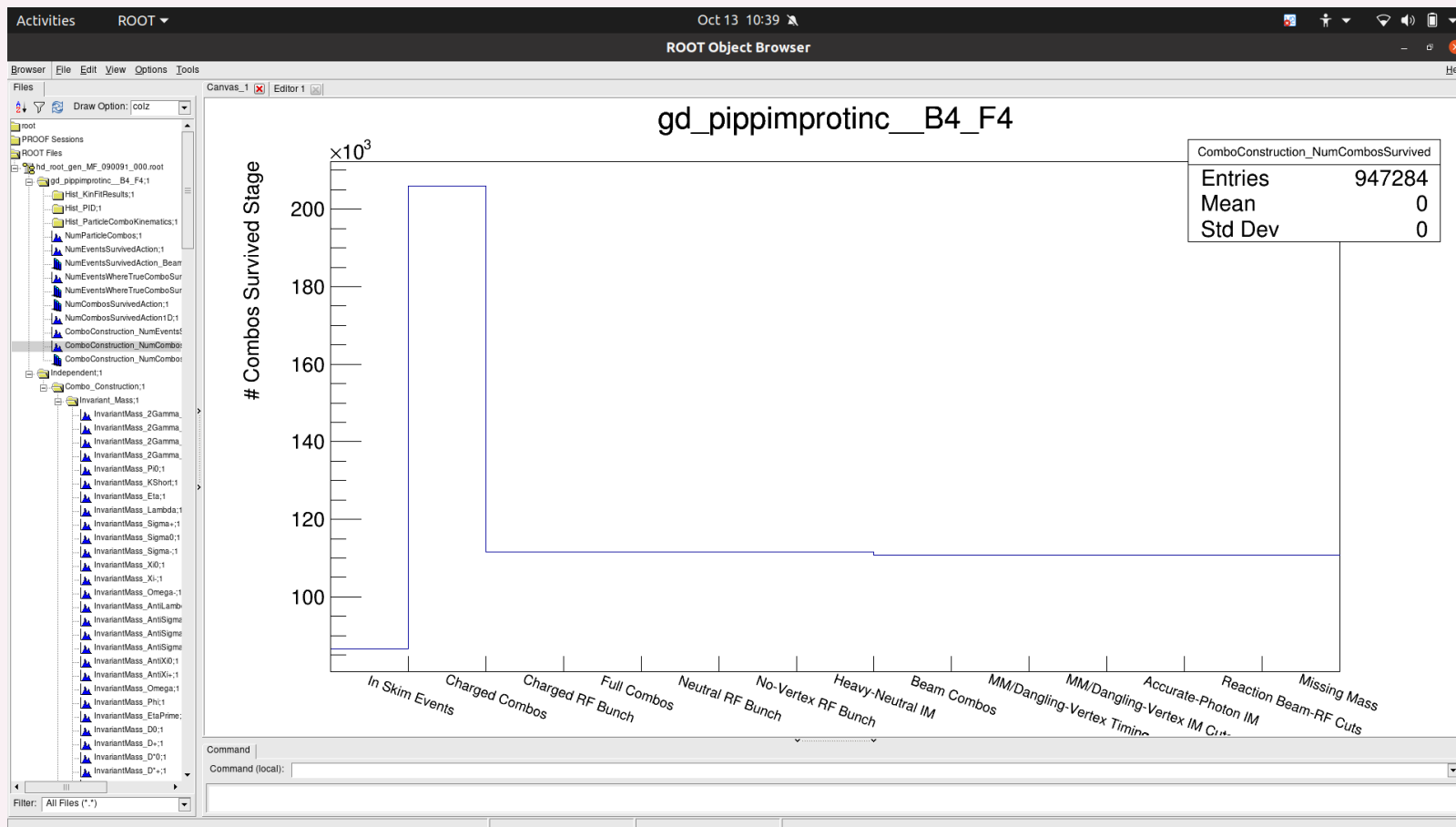
Stage I: Number of Survived Events(ReactionFilter)



Contd.. Stage I: Number of Survived Events(ReactionFilter)

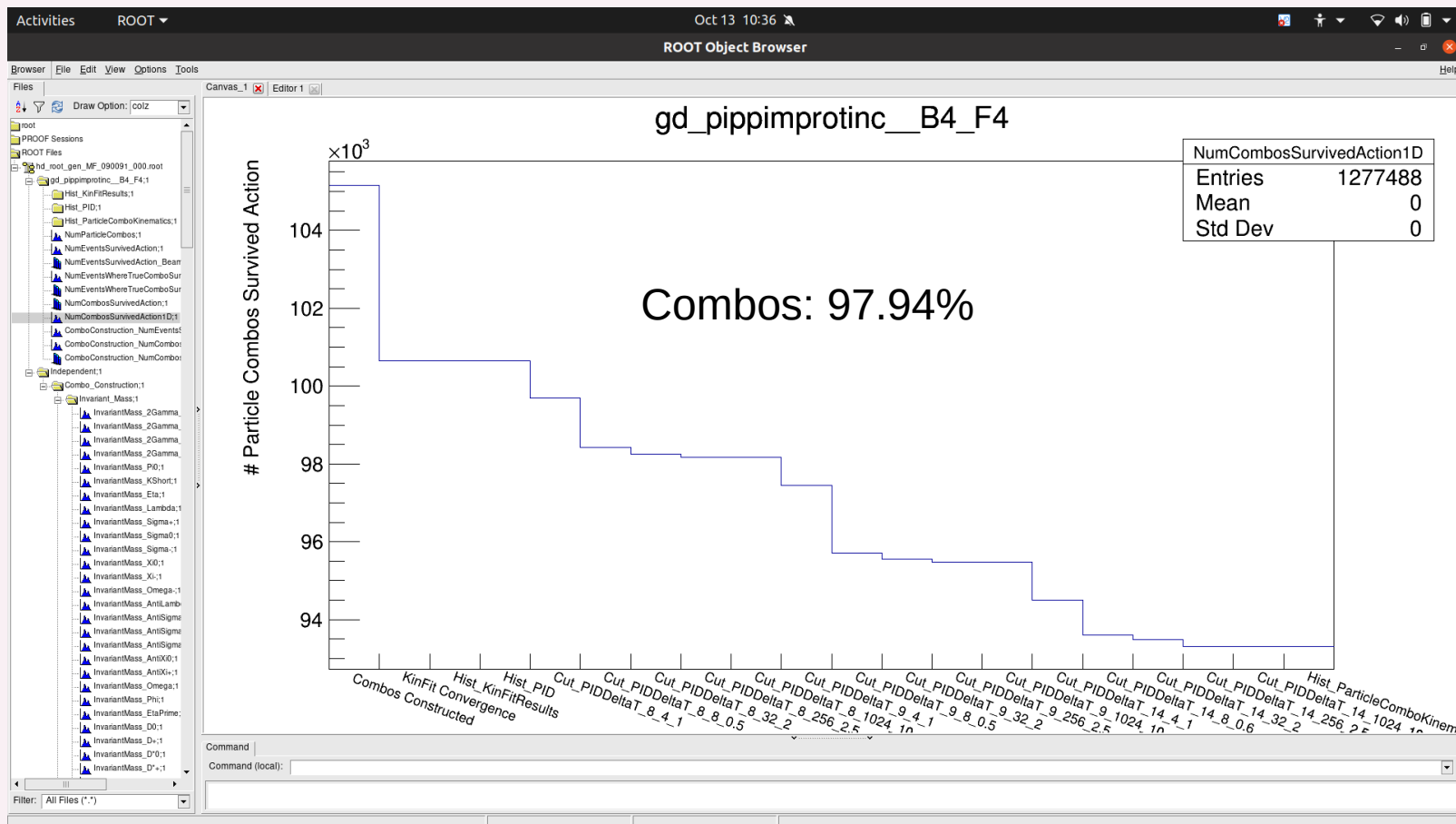


Stage I: Number of Survived combos:(ReactionFilter)

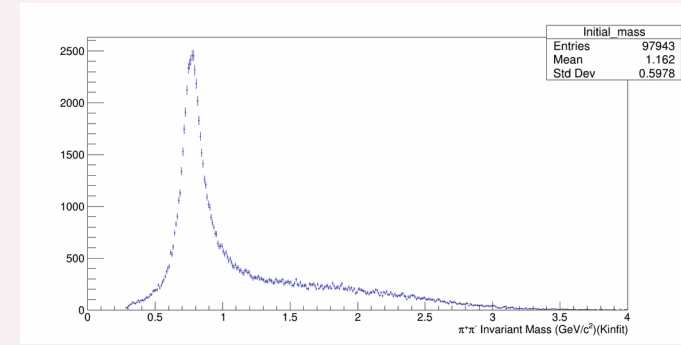
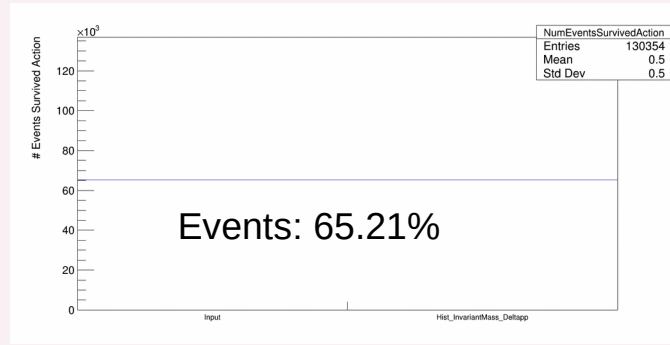
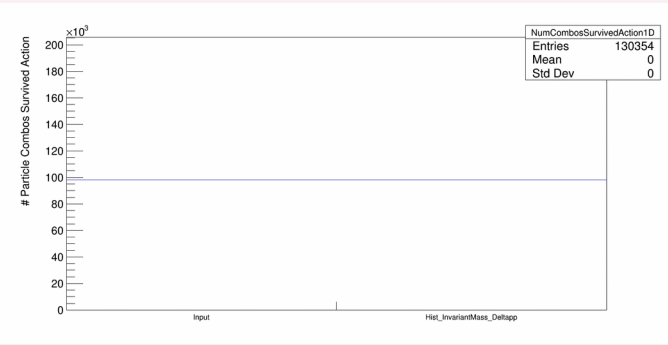


The increase in combo number is due the maximum possible combination of the final state particle and beam.

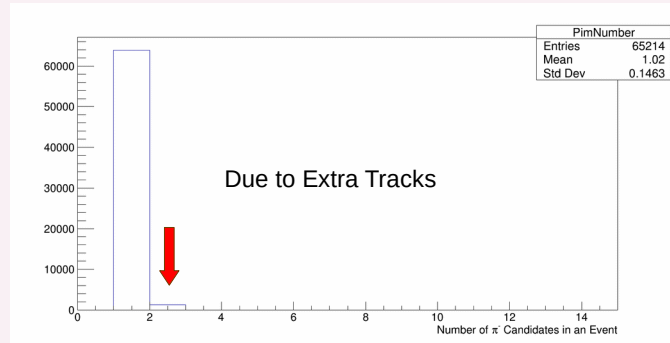
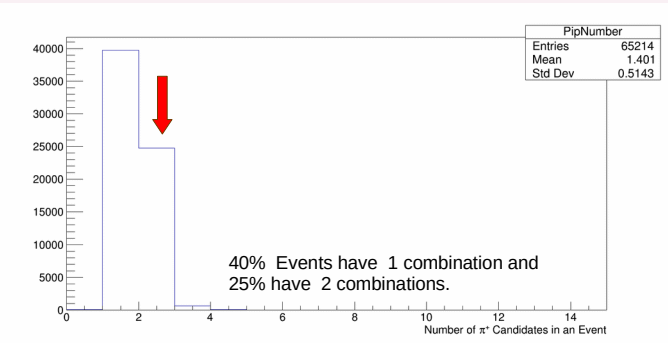
Stage I: Number of Survived Events(ReactionFilter)



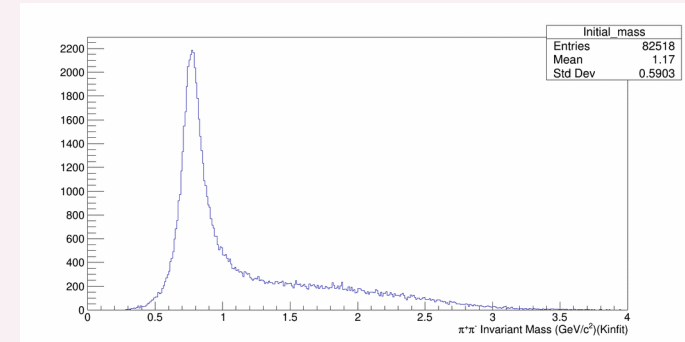
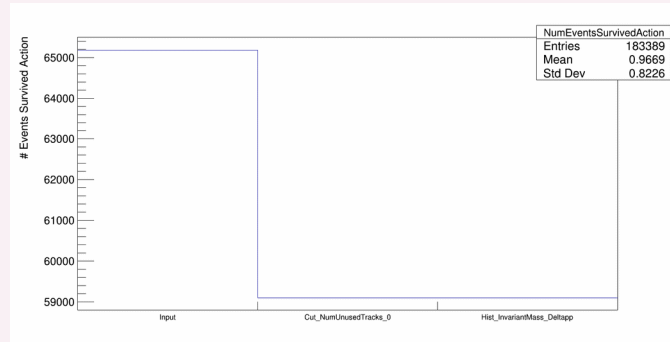
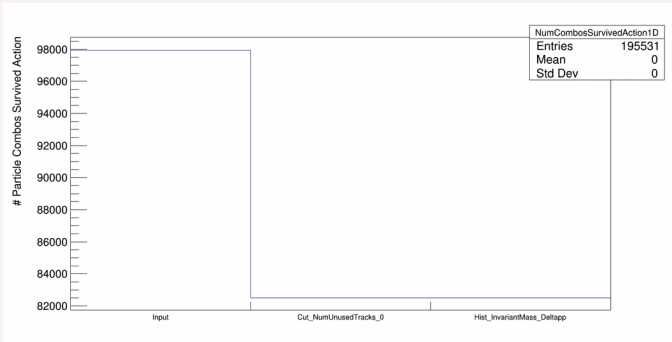
Stage II. Selection Cuts in Dselector Stage. No cuts:



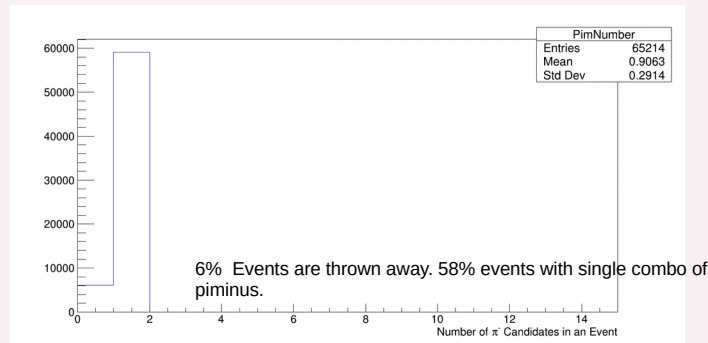
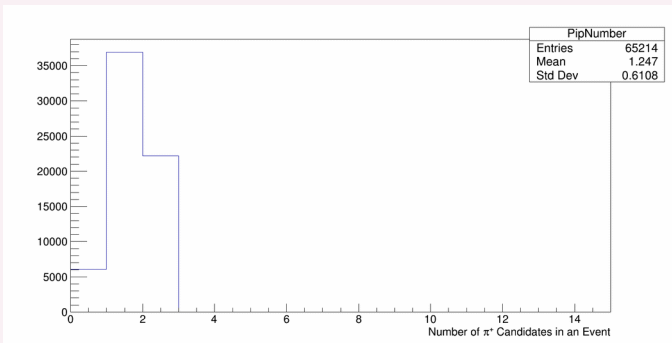
Due to Extra Tracks



gd_pippimprotmissn__B4_F4. Includes 0 Extra Tracks

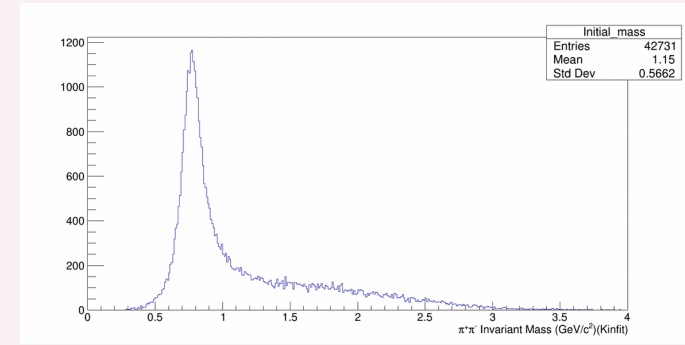
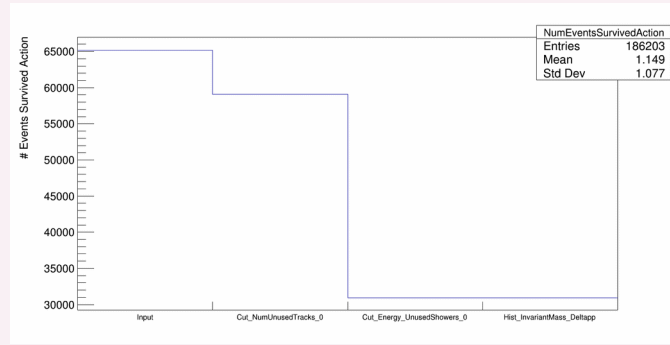
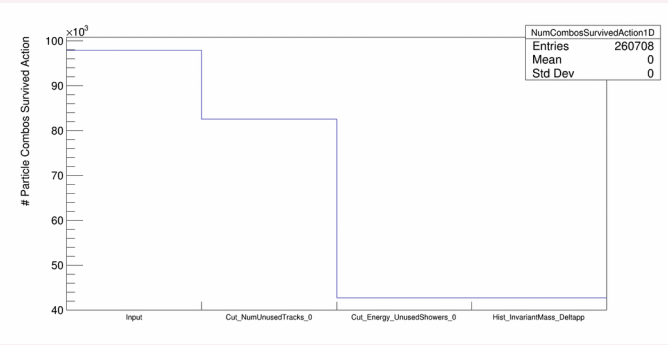


Events: 65.21% → 58%

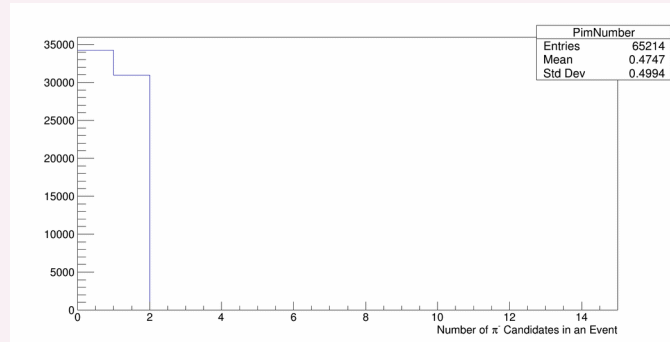
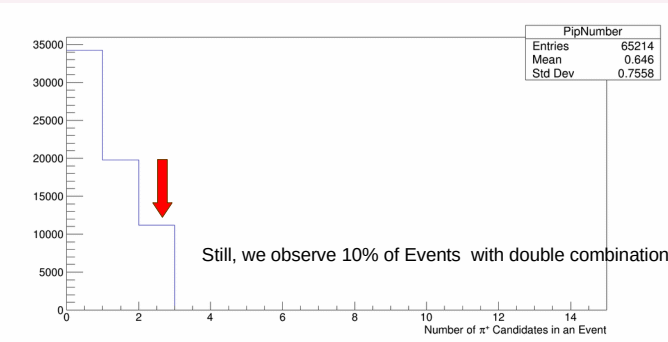


- We can safely remove extra tracks which removes the multiple combos and reduces the efficiency from 65 to 58 %

Cut on Showers also.



Events: 58% \rightarrow 30%

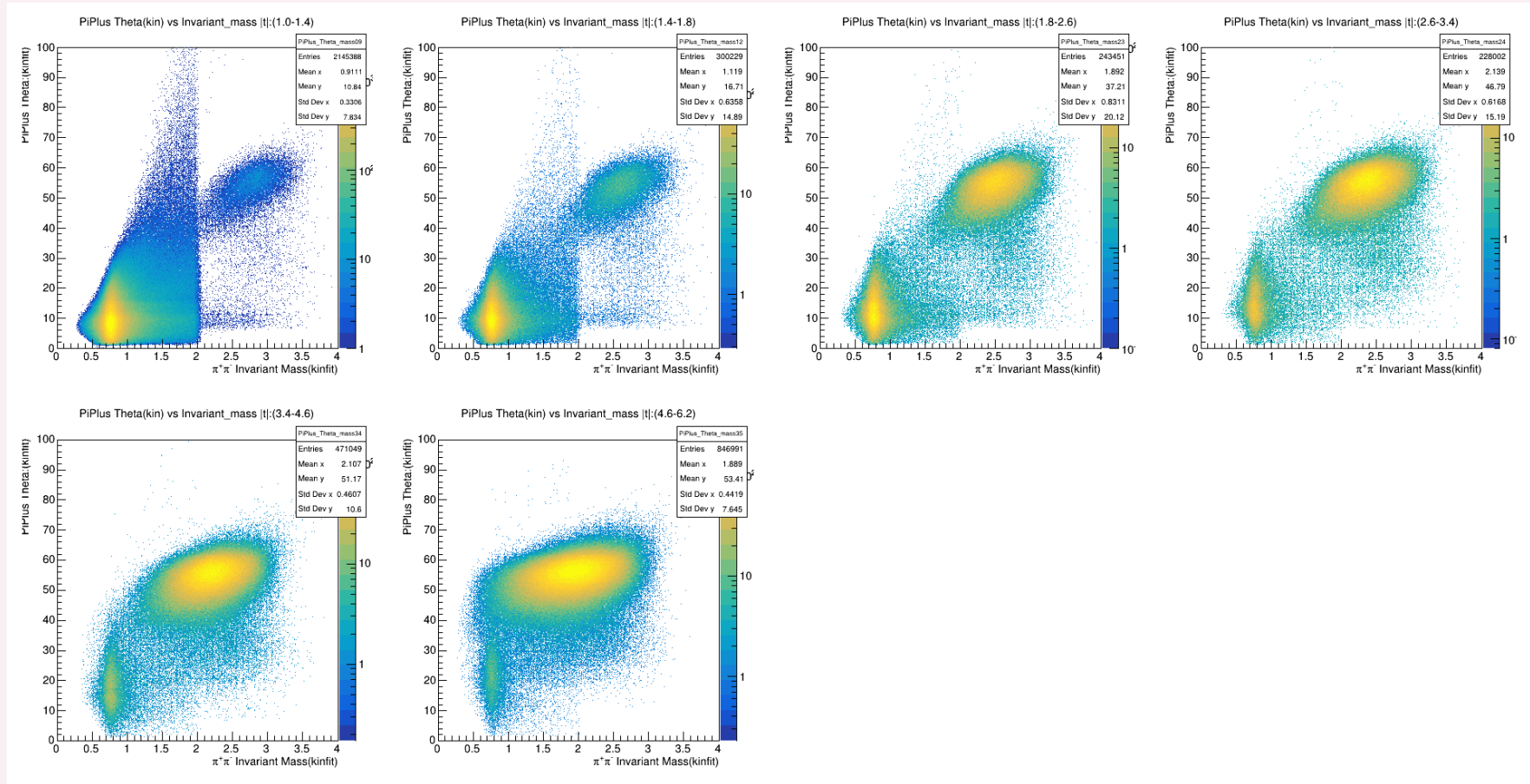


- Removing the extra showers does not impact the multiple combos and at the same time reduces the efficiency very significantly.

Remarks

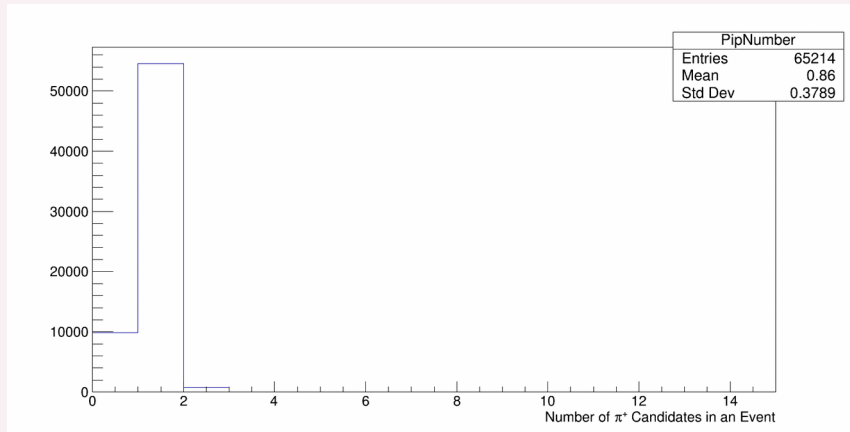
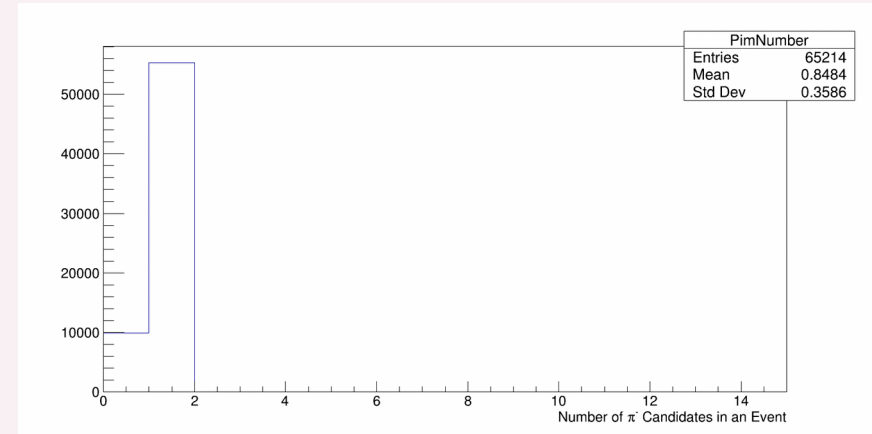
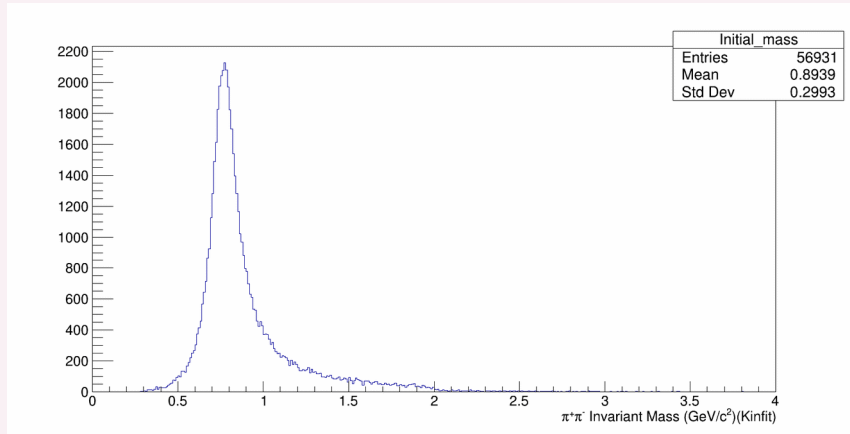
- We need to apply a cut on Tracks but for shower it needs to be understood fully.
- Those extra combination is piling up our background.
- One way of removing is to look the angle vs mass distribution.

Invariant mass vs PiPlus angular distribution



This plots was taken from previous meeting with different event numbers.

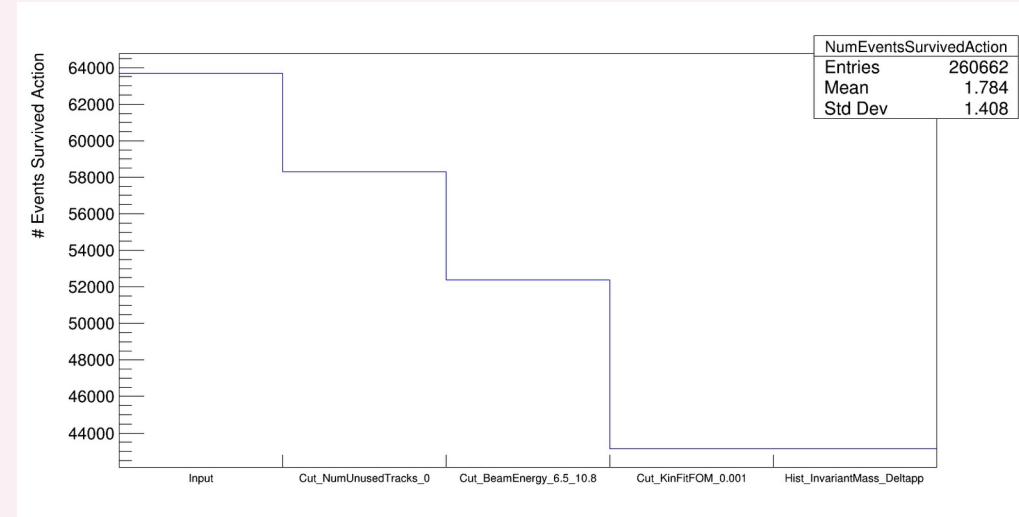
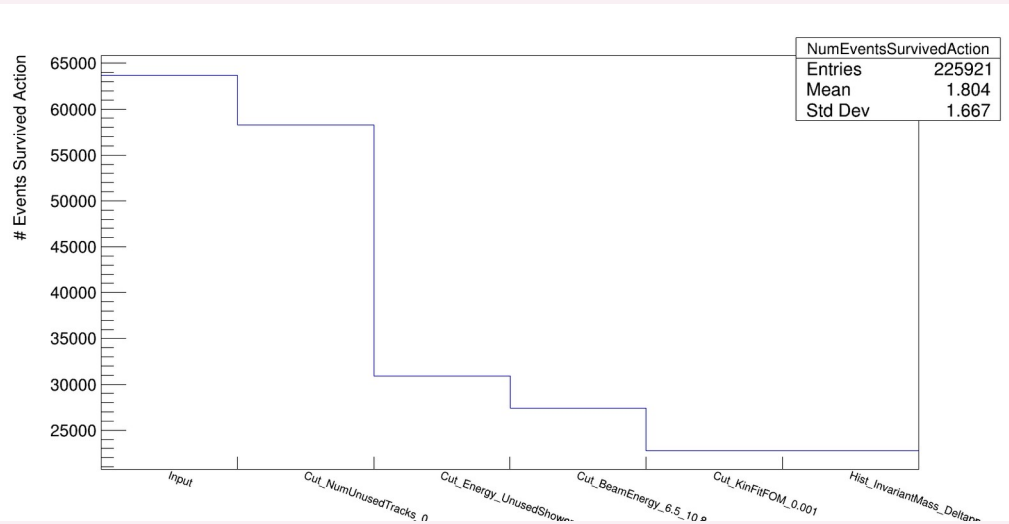
gd_pippimprotmissn__B4_F4. Includes 0 Extra tracks.



- Removed Cut on Shower.
- Applied Cut on Tracks.
- Applied angular cut on Piplus and Piminus with
- Efficiency around 54%

Efficiency With cut on shower vs without cut on shower

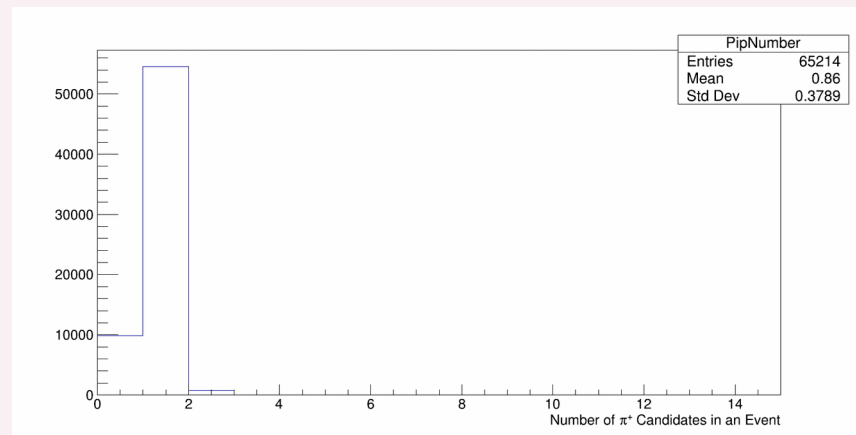
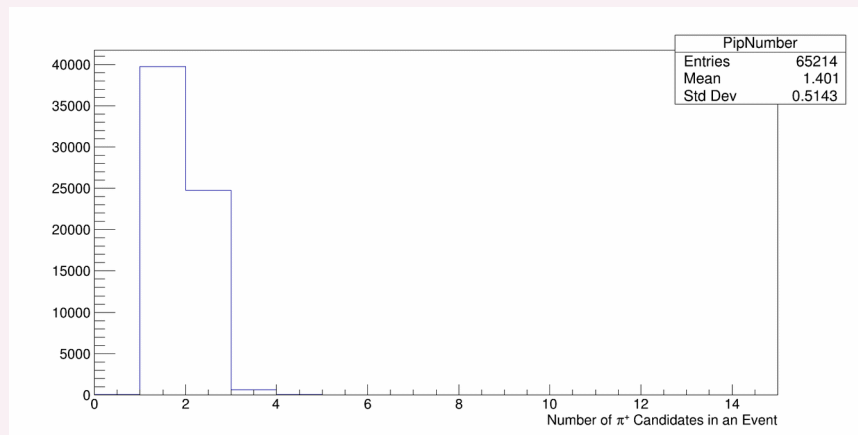
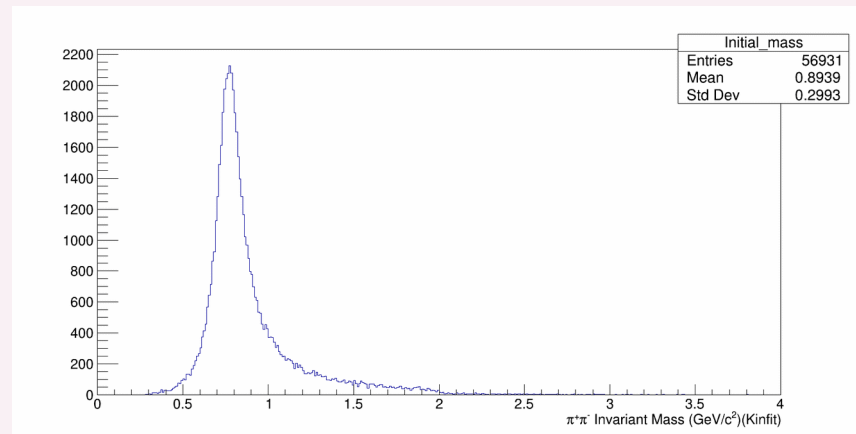
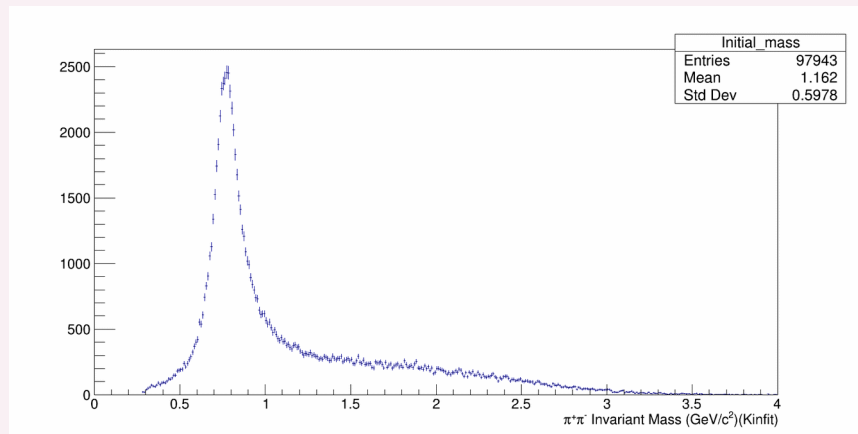
gd_pippimprotmissn__B4_F4_T2_S5



- 1) Extra Tracks >0 : [58%]
- 2) Energy_UnusedShower >0 : [31%]
- 3) Beam Energy (6.5-10.8) : [27%]
- 4) C.L > 0.001 : [22%]

- 1) Extra Tracks >0 : [58%]
- 2) Beam Energy (6.5-10.8): [52 %]
- 3) C.L > 0.001 : [42%]

Comparison: Before any cut vs after applying cuts on tracks and angle



Efficiency.

Range of t	Cut A	Cut B		Cut A + Trigger	Cut B+ Trigger
1.0-1.4	51.44	27.33		31.7	16.96
1.4-1.8	49.95	26.96		29.48	16.12
1.8-2.6	40.47	22.23		22.59	12.49
2.6-3.4	33.51	18.75		14.81	7.78
3.4-4.6	31.48	17.88		9.25	4.60
4.6-6.2	26.8	15.07		4.82	2.27

Cut A = No Extra Track , Vertex(52,78 cm), Pmiss <250, Ebeam (6.5-10.8) , CL >0.001

Cut B = Cut A + No Extra Shower.

Backup

Backup: Proton and PiPlus Candidate

