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ScInteraction Digitizer Update

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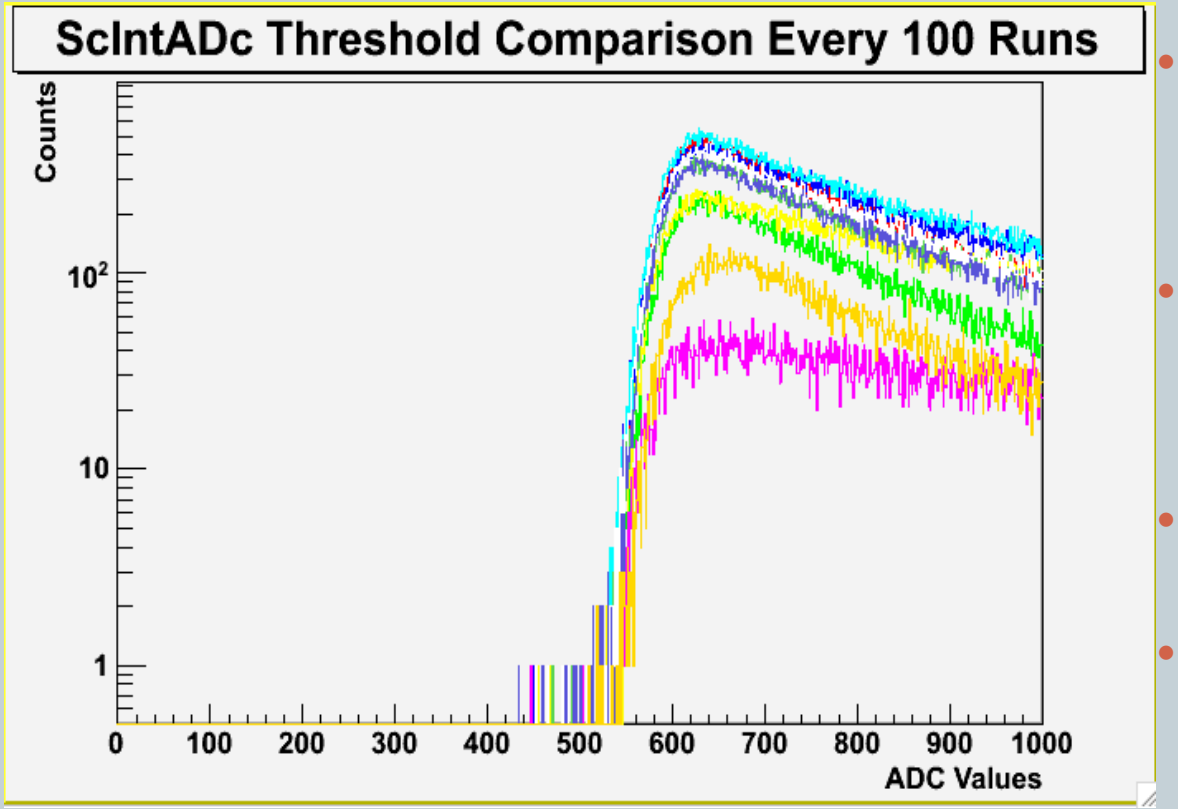
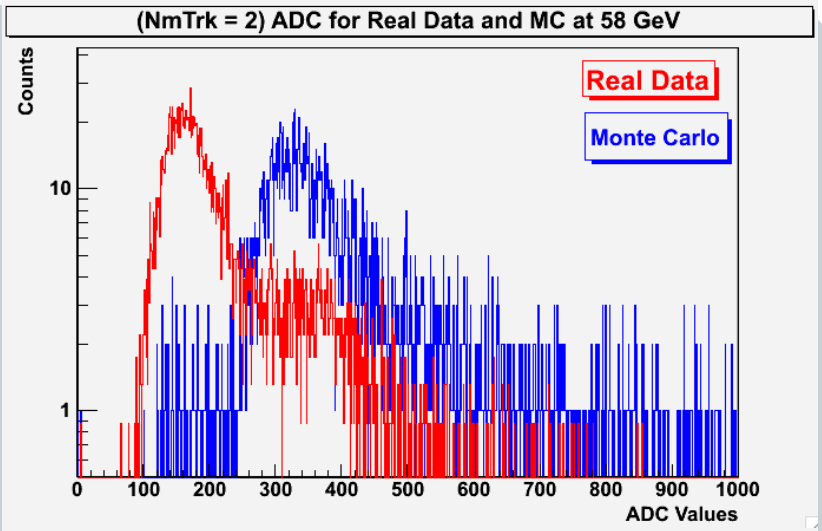
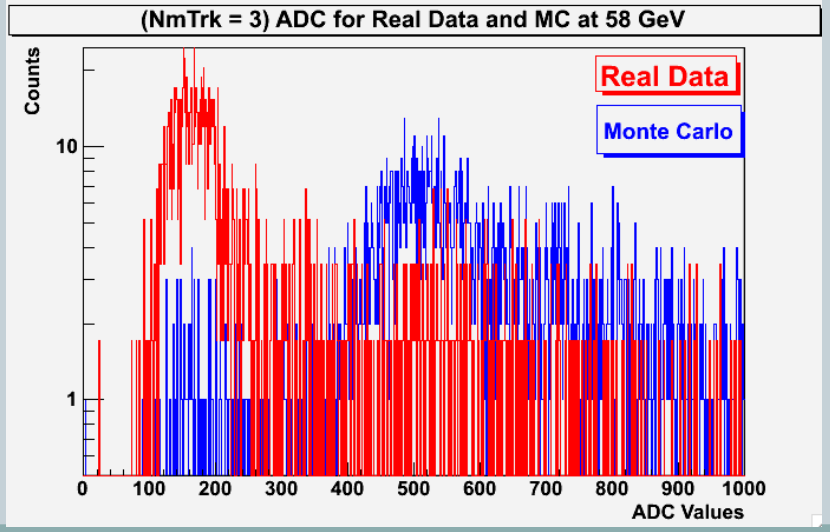
Scintillator Threshold Value



- Selected 100 runs and plotted 100 runs by 100 runs (10 of them are presented here)
- ADC threshold value of the scintillator has edge around ~575.
- Above the threshold value.
- Checking if there is a difference time to time.
  - No difference. Good.
- Appropriate fit will be applied
  - Step function convoluted with Gaussian.

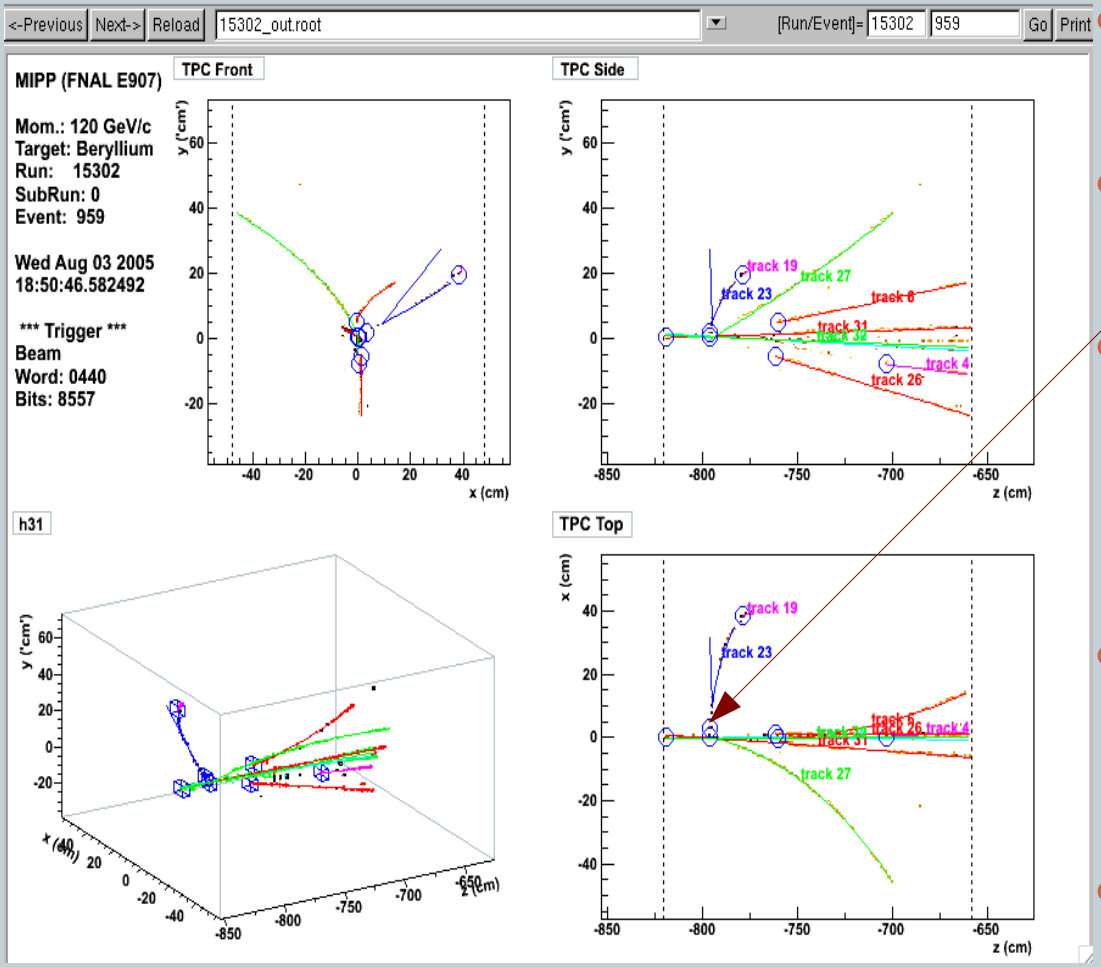
ScintDigitizer Performance





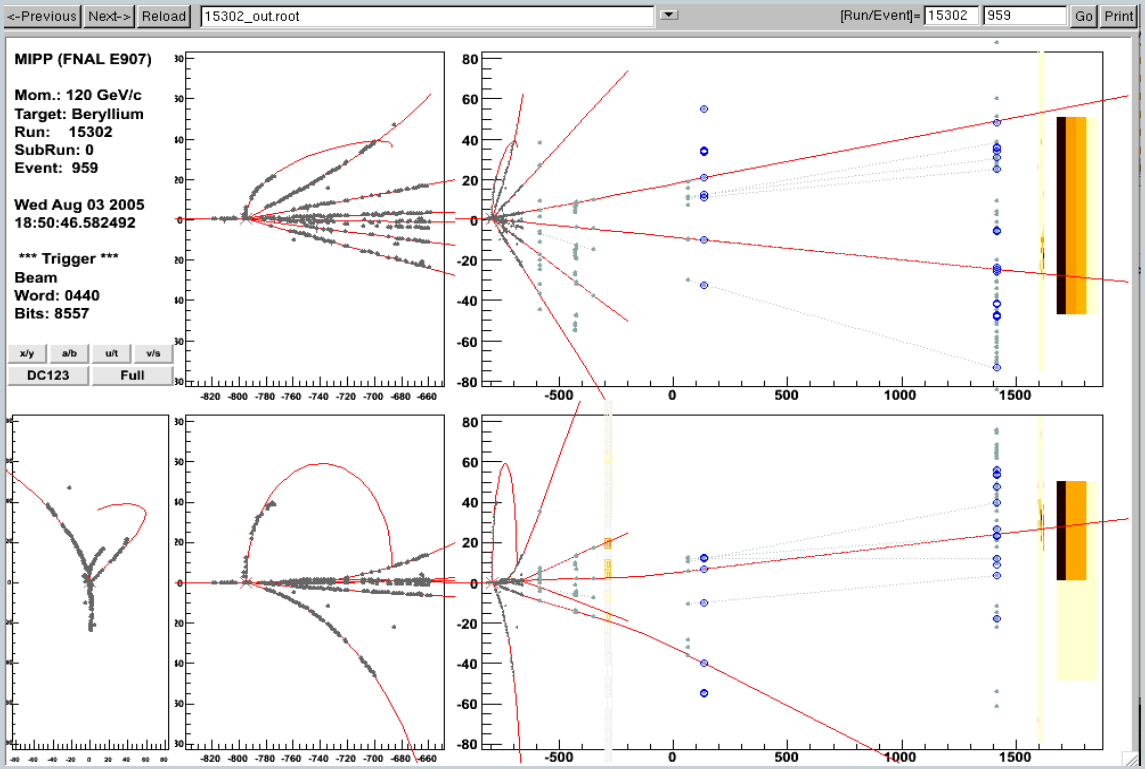
- Getting an extra peak at incorrect place for multiple tracks from data at last week.
- Catch some events whose ADC values less than 160 numbers by code
- Reviewed these events on EDV.
- One example on the next page
- The reason could be track position resolution for scintillator.

Events Display



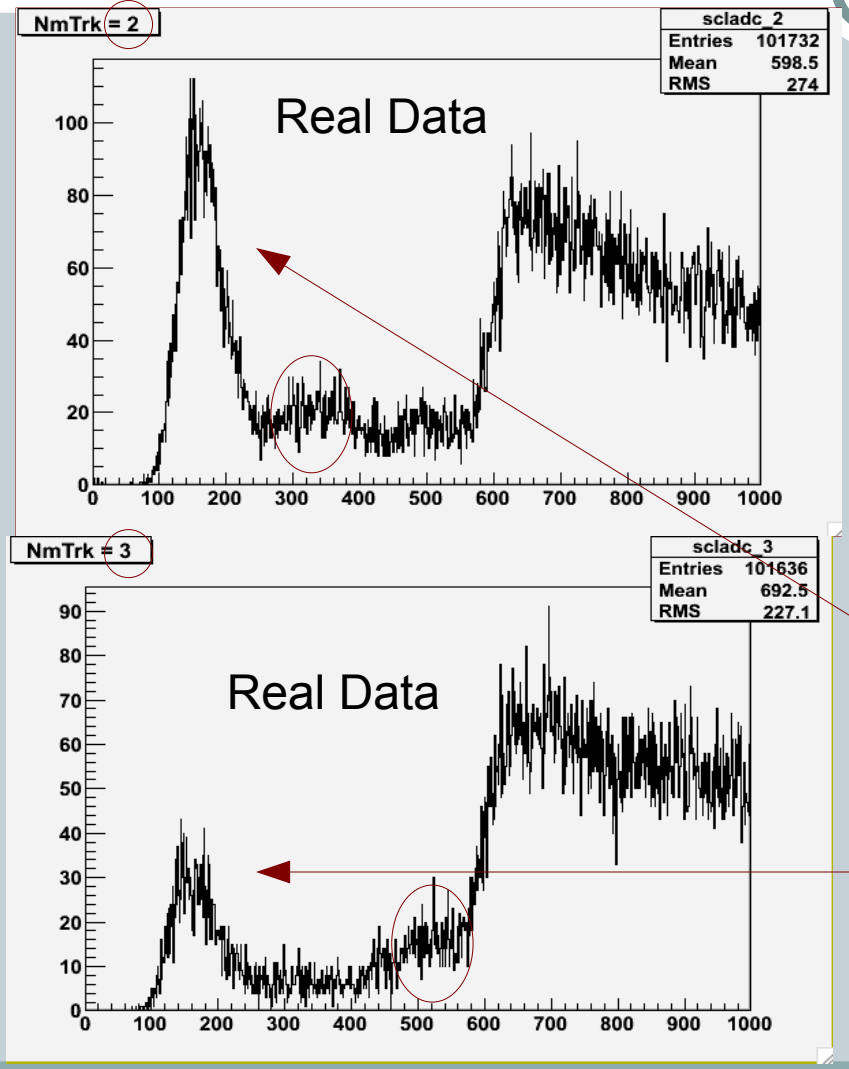
- Here is secondary vertex
- Also two tracks can be seen.
- However, we are getting ADC value at Scintillator less than two tracks required.
- Wide angel cut applied to study for improvement
- Plots are on the next page.

Tracks Display



- This global tracking display for the same run and event numbers on the previous slide.

ScintDigitizer Performance

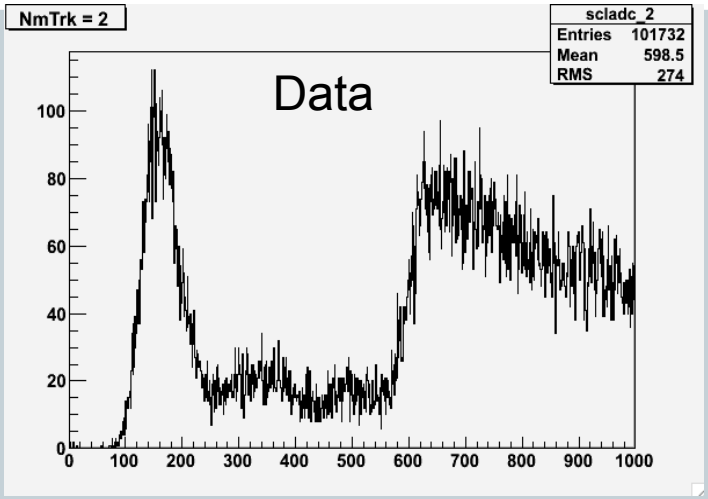


- New cut: Only count tracks at small angles.
  - Lower ExB distortions
- Still I have peak at the single track ADC value for multiple tracks
- These plots right side shows ADC threshold place.
- After this point, we can say track position resolution cause this first peak.

To do

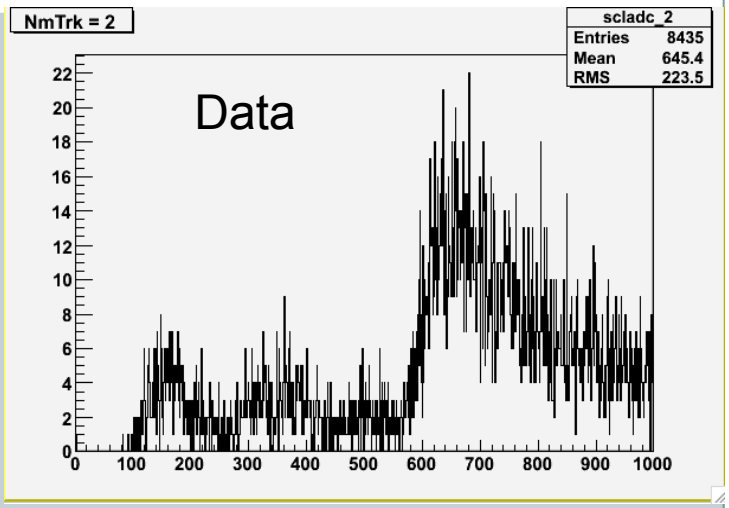
- Trigger Efficiency Study
  - Get good fit for ADC threshold value from data to simulate trigger in MC.
  - Count number of events for given number of tracks
  - Count number of events for given number of tracks with Scint ADC value which is above the threshold
  - Get the ratio of last two steps. This is Scint trigger efficiency as a function of number of tracks.

Vertex Z Position Cut

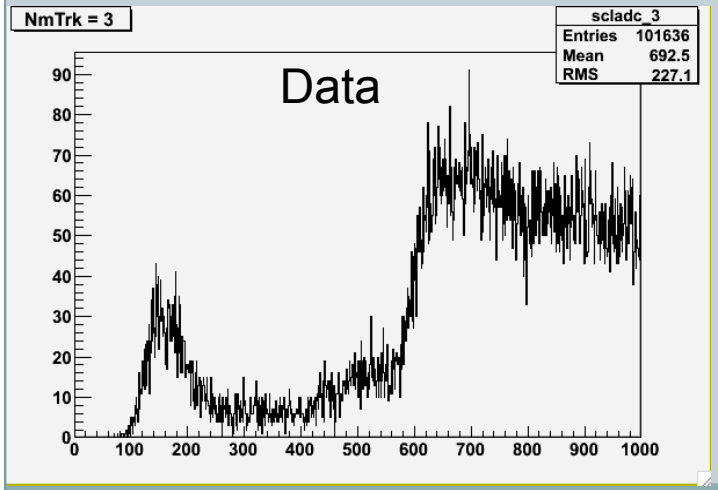


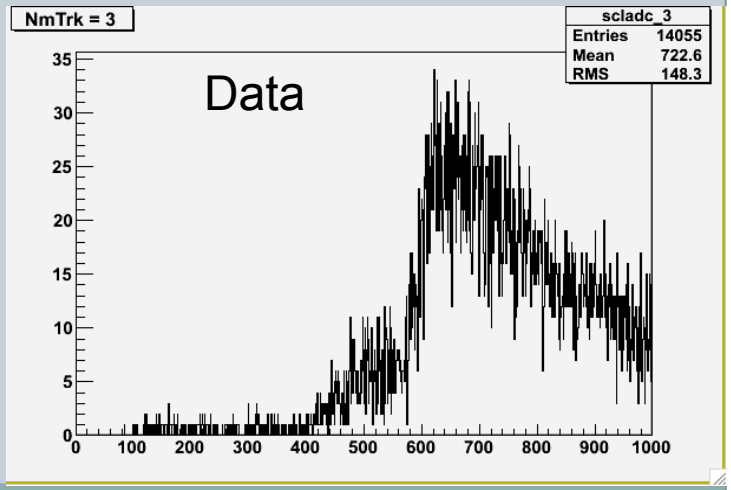
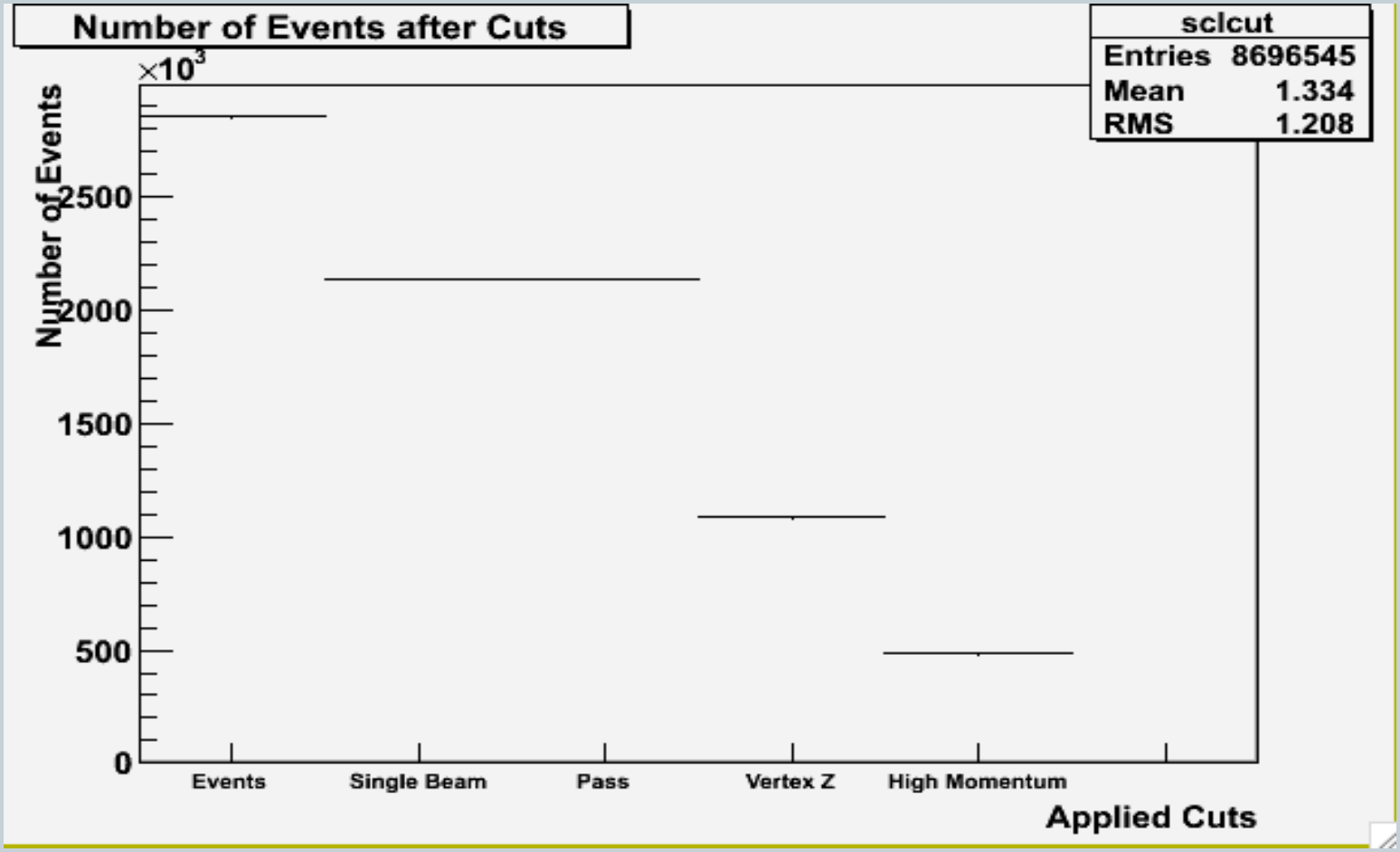
Before Cut

This cut demands primary vertex just upstream of the scintillator counter.



After Cut





Applied Cuts Plot