

# Comparative & New Cuts

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## On the last session

- Only 50,000 events were run.
- There was a cut in 27 of Number of Hits.
- We observe how the DCA Global evolved with the cut in the Number of Hits.

## In this session

- Comparative of Full and Low Magnetic Field.
- Make a cut on Vertex Position.
- Make a cut on DCA Global.
- Make a cut on Pseudo-Rapidity.

# Let's remember

Our system is a bismuth-bismuth collision at an energy of 9.2 GeV. With a low magnetic field of 2kG. We have now run all our information, that is, 10 million events.

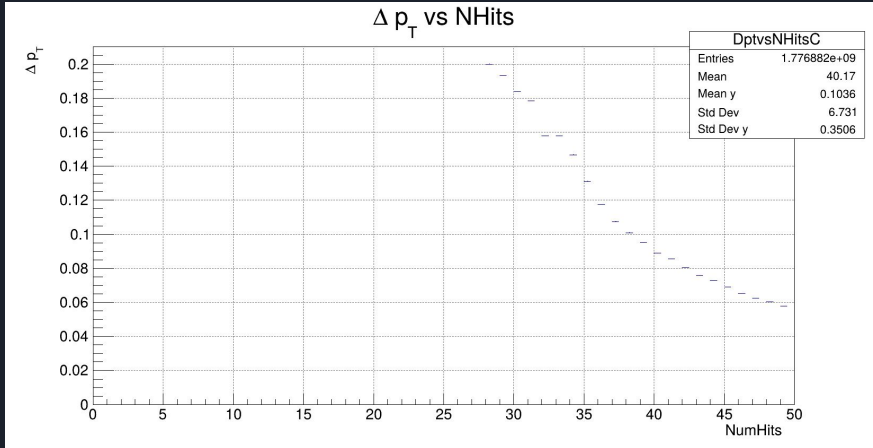
It will compare our cuts that are made for a low magnetic field. With the cuts that are already known for a system with full magnetic field.

Our information is with low magnetic field value: 2 kG. (request 28)

The information with full magnetic field value: 5 kG. (request 25)

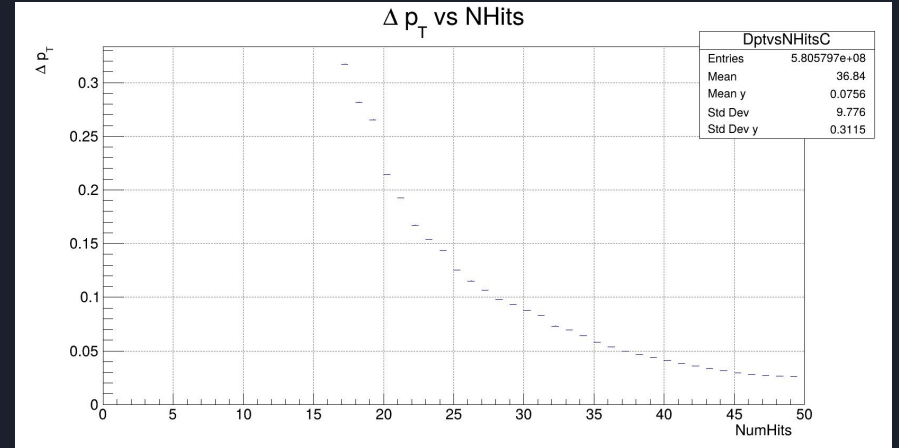
# Numbers of Hits

Low Magnetic Field



With cut NHits > 27

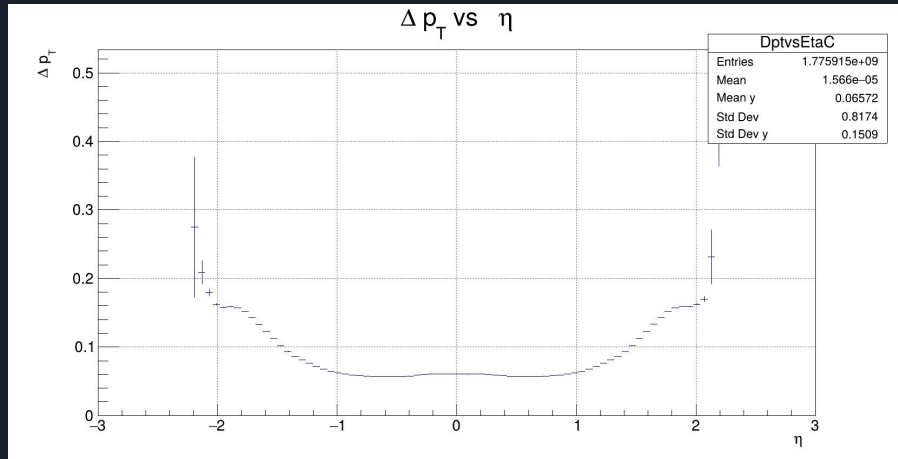
Full Magnetic Field



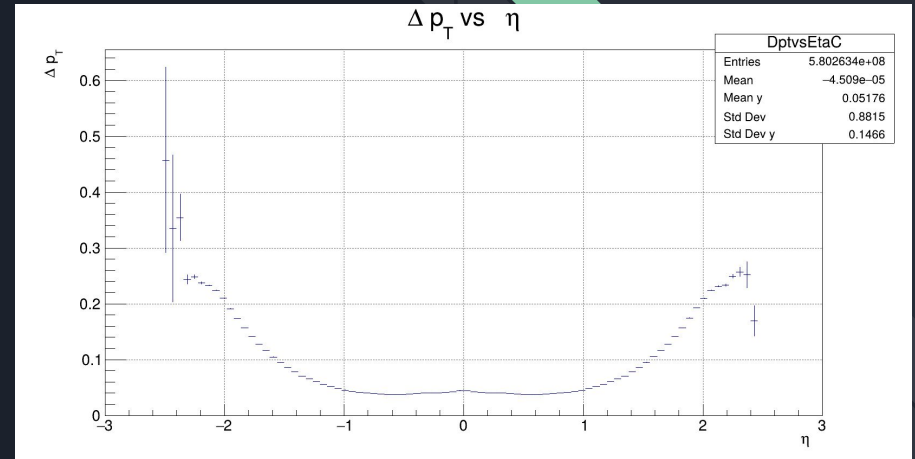
With cut NHits > 16

# PseudoRapidity

Low Magnetic Field

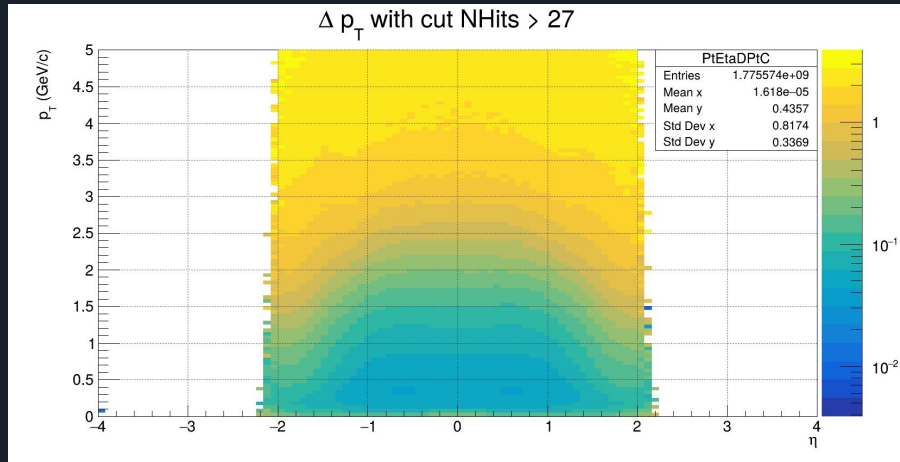


Full Magnetic Field

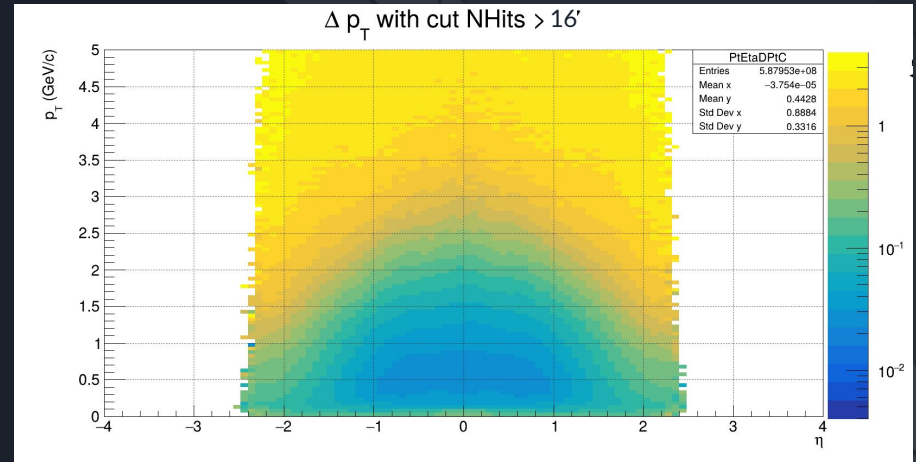


# Momentum Transverse Resolution

Low Magnetic Field



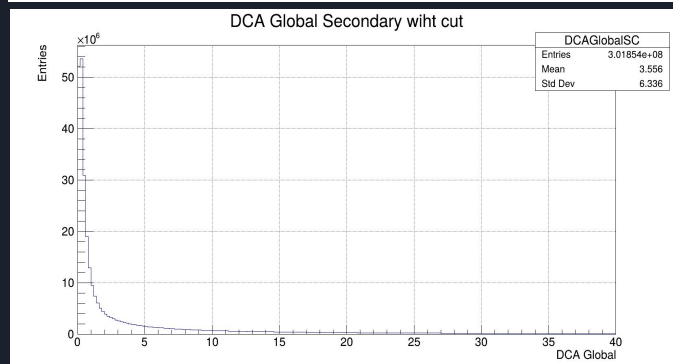
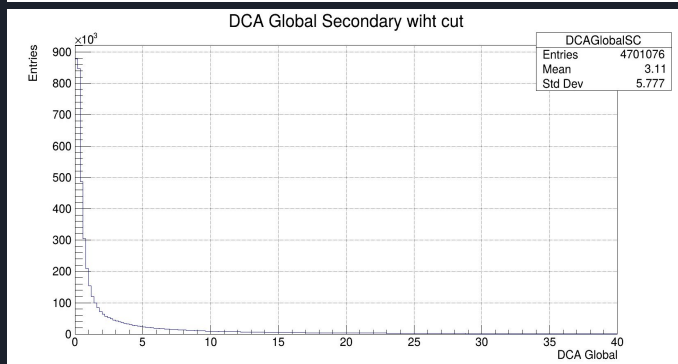
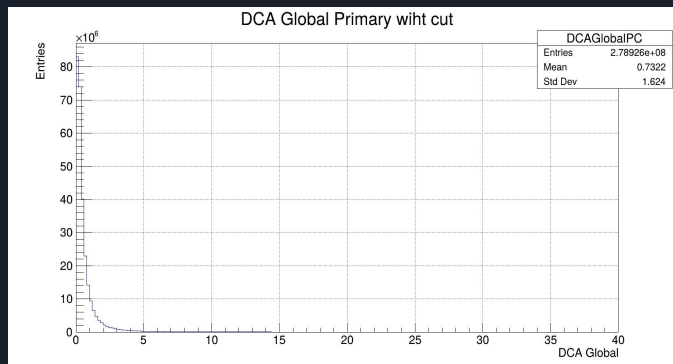
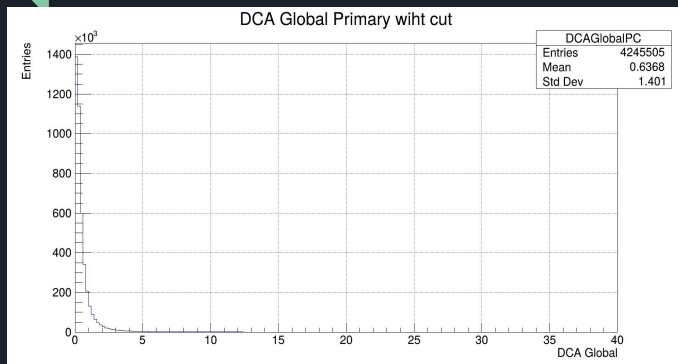
Full Magnetic Field



# DCA Global for Primary and Secondary

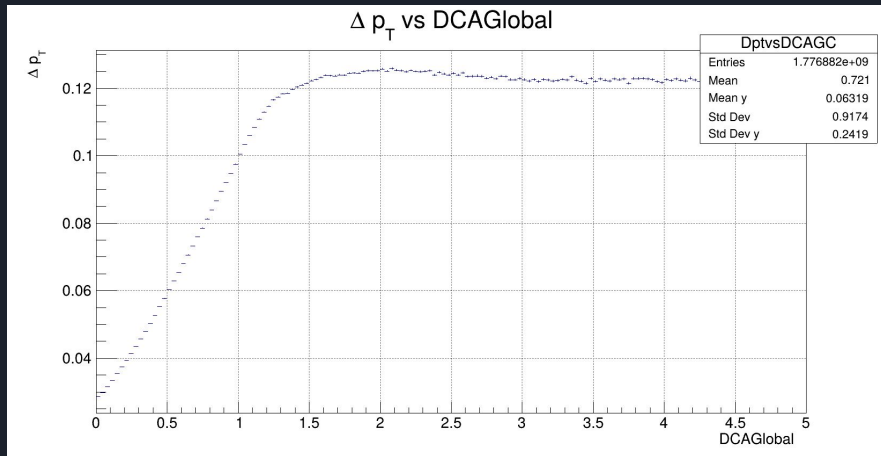
## Low Magnetic Field

## Full Magnetic Field

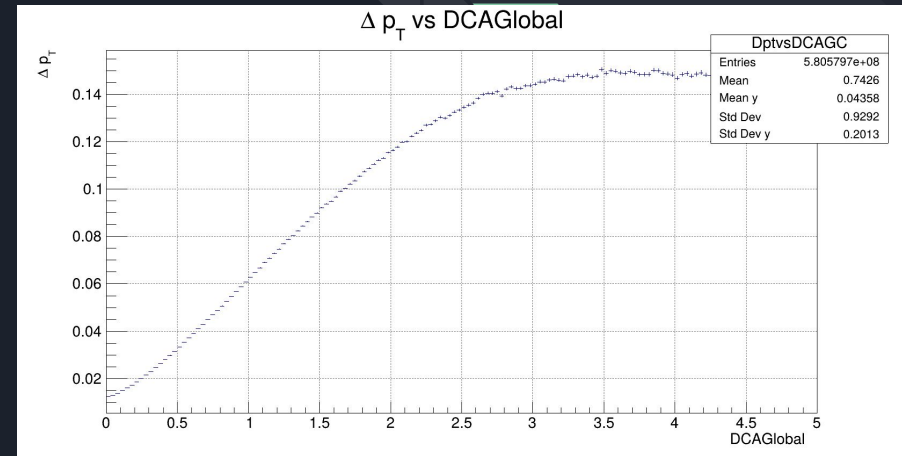


# TProfile of DCA Global All

Low Magnetic Field



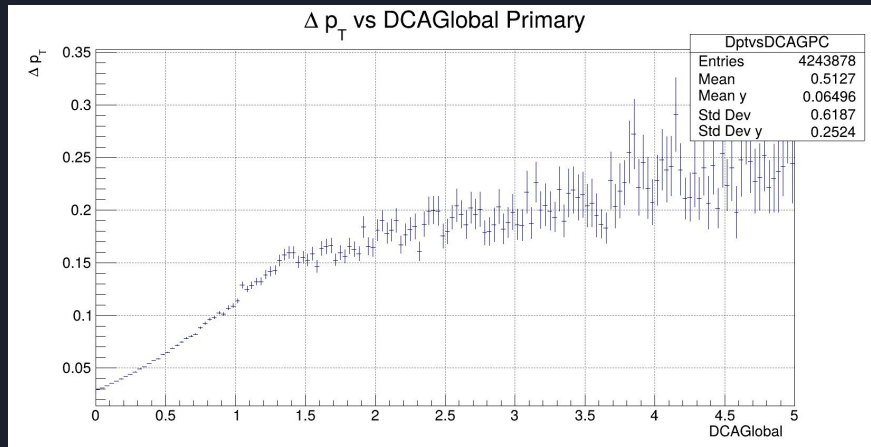
Full Magnetic Field



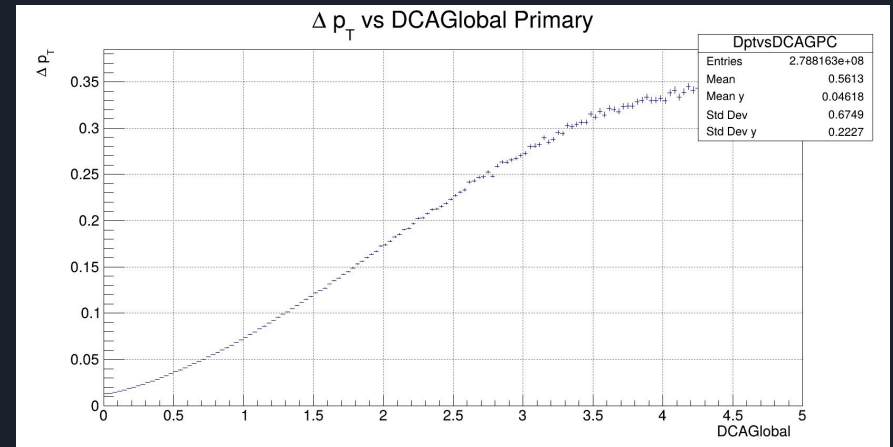


# TProfile of DCA Global for Primary

Low Magnetic Field

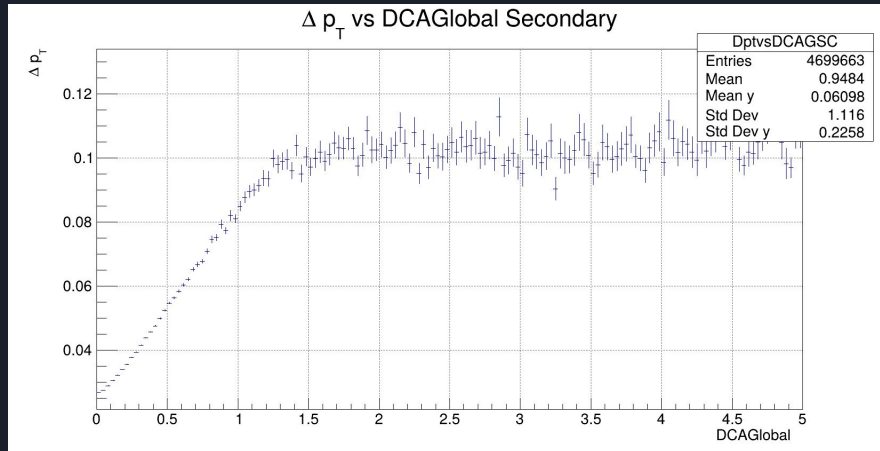


Full Magnetic Field

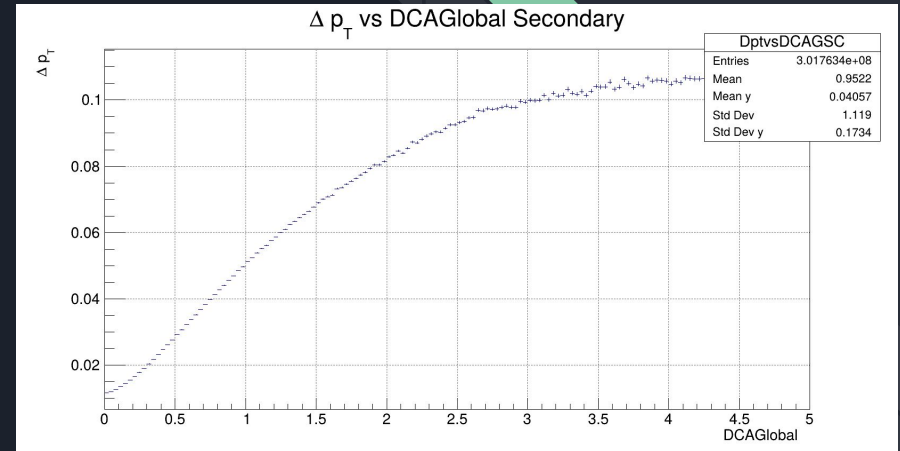


# TProfile of DCA Global for Secondary

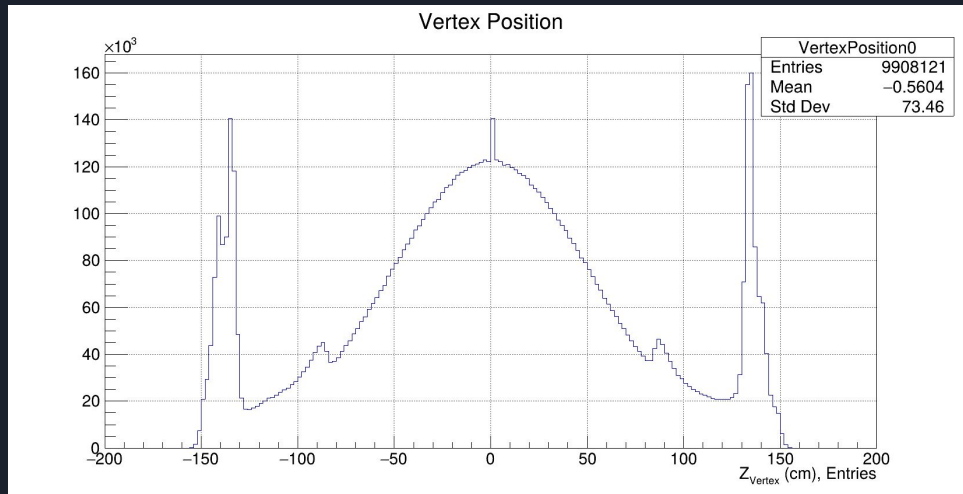
Low Magnetic Field



Full Magnetic Field



# Cut on the Vertex Position



In the last session it was mentioned that I can make a cut in the range of -130 to 130. But, only run 50 thousand events. Now we run 10 million events, we can see a better distribution of the primary vertex.

We see two peaks at -90 and 90. So to see why we have these peaks, we choose to make other histograms

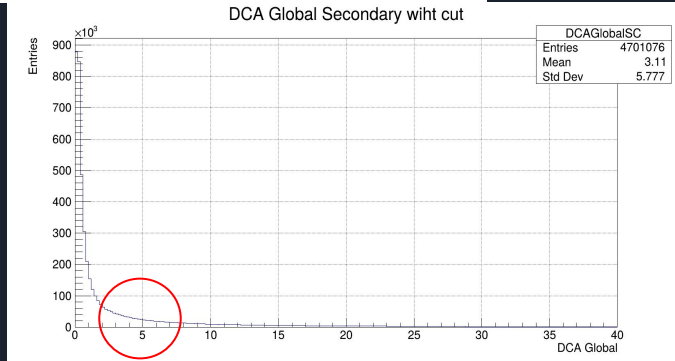
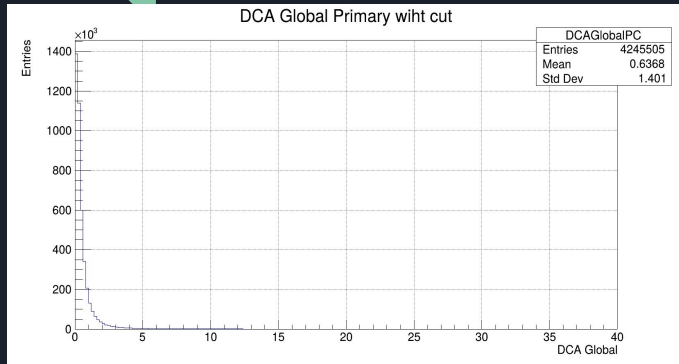
# Cut on the Vertex Position

We will plot the resolution of the primary vertex against the primary vertex on the z-axis, against the number of tracks and finally against the impact parameter.

To obtain the resolution of the primary vertex, we will use:

$$\Delta Z = \frac{|Z_{reco} - Z_{MC}|}{Z_{MC}}$$

# Cut on the DCA Global

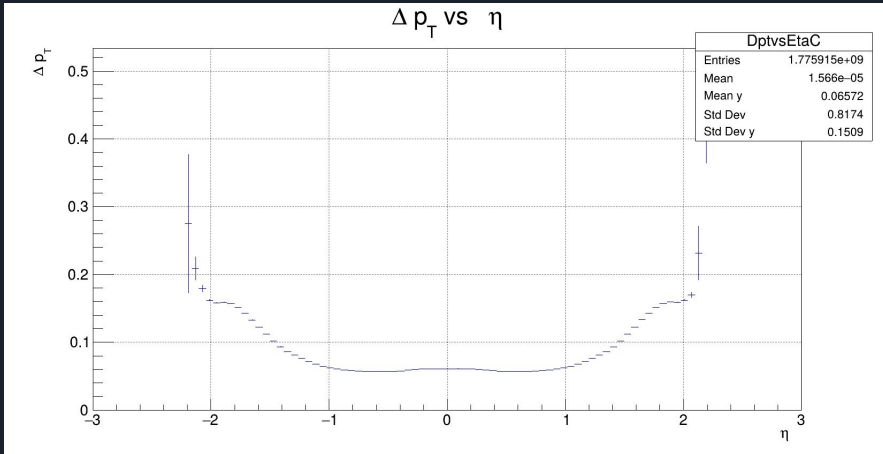


In the secondary particles we can observe a contribution in 5.

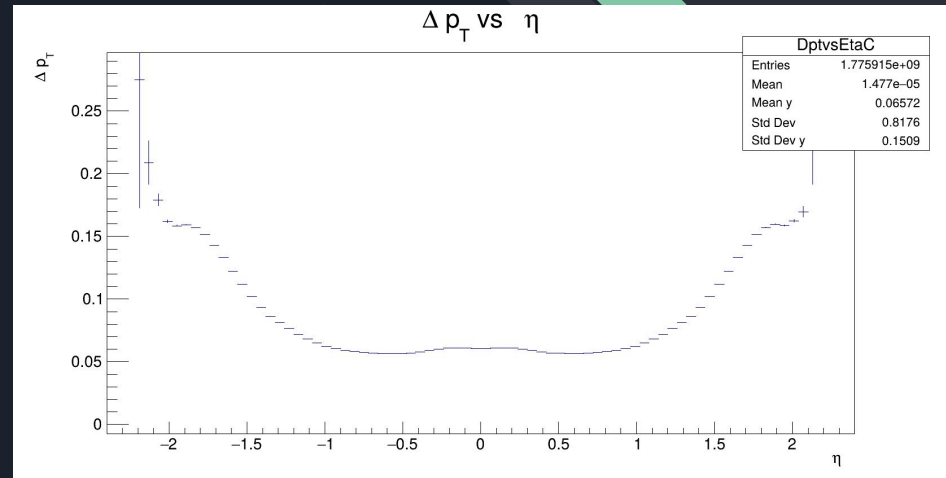
To check this, we will plot together both and we can decide where a cut can be made.

At the moment, a 2 cm or 2.5 cm cut could be proposed in DCA Global.

# Cut on the Pseudo-Rapidity



For the pseudorapidity we can make a cut in the range of -1.5 to 1.5. This way we would only have 10% error





## Summary

- I running all information. We have 10 million events.
- Comparative of Full and Low Magnetic Field.
- I mentioned where the other cuts will be made.

## The Nexts Steps

- The cuts have already been made but at the time of this presentation they are not finished.
- Comparative of the new cuts on Full and Low Magnetic Field.
- Obtain the histograms of  $dN/dPt$  vs  $Pt$  for Primary and Secondary.