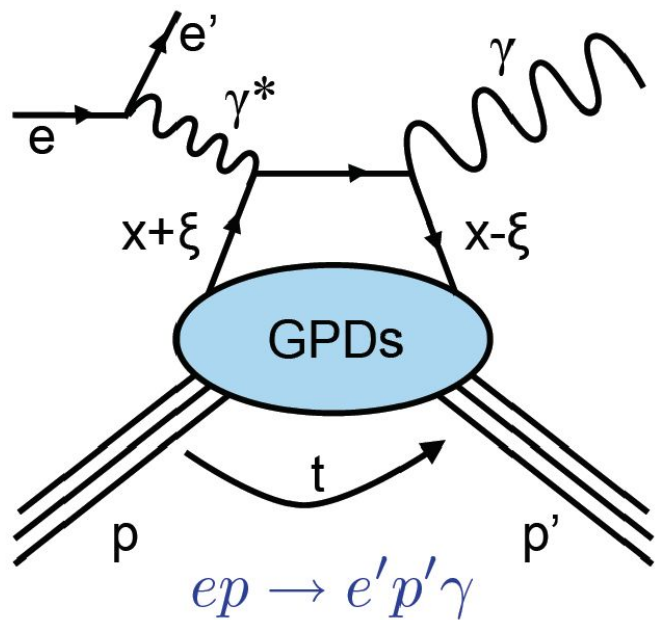




A first look into DVCS analysis with EPIC detector

Niveditha
09-May-2023

Questions

01

Event Kinematics

What is the reach of x_b , Q^2 and t ?

02

Generator Level Questions

What is the typical topology of DVCS events?

03

Detector requirements

To reconstruct scattered electron, proton and photon. What are the requirements from various detectors

04

EICRecon preparedness

What is the status of EICRecon in reconstructing the various scattered particles



Simple Goal

Step 1 : Look at DVCS events in S3 Folder to answer questions mentioned in previous slides

Step 2: Start from hepmpc files in DVCS events, run it through the simulation and eicreon and repeat step 1

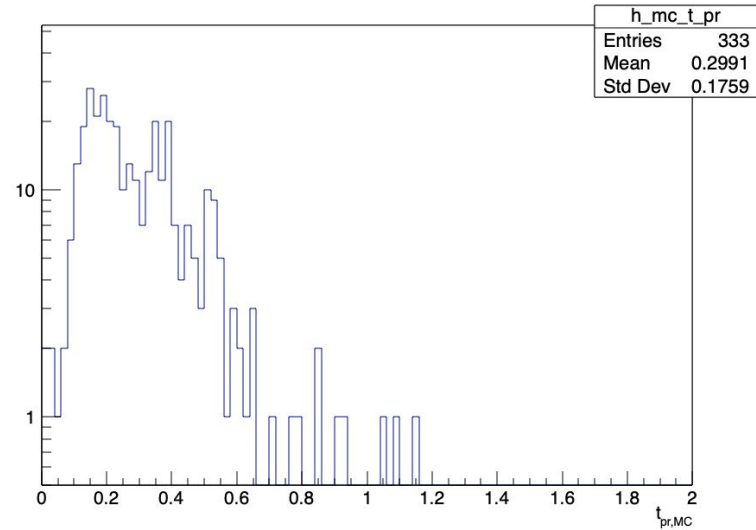
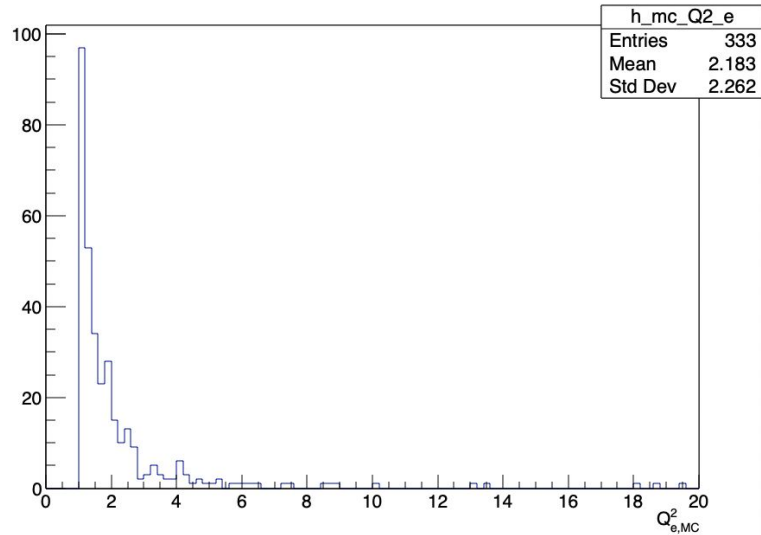
Step 3: Generate hepmpc file using EPIC generator and repeat step 2.



Step 1: DVCS files in S3 folder

Location :

s3/eictest/EPIC/RECO/22.11.3/epic_arches/EXCLUSIVE/DVCS_ABCONV/18x275



Q2, t- MC



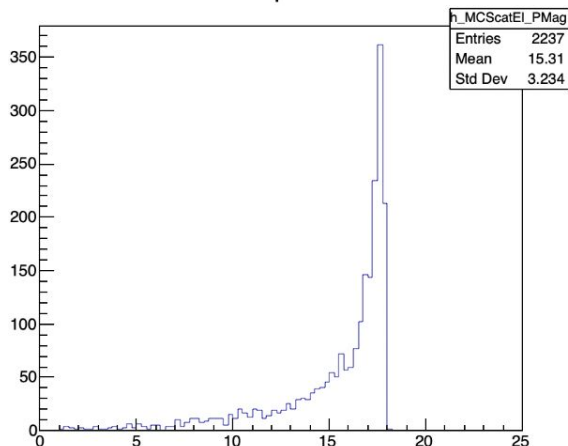
Step 1: DVCS files in S3 folder

last 10 days, traditional
EICRecon has some
segfaults or does not
perform any of the
reconstruction. Because
of this, I am unable to
show any reconstructed
histograms at this point

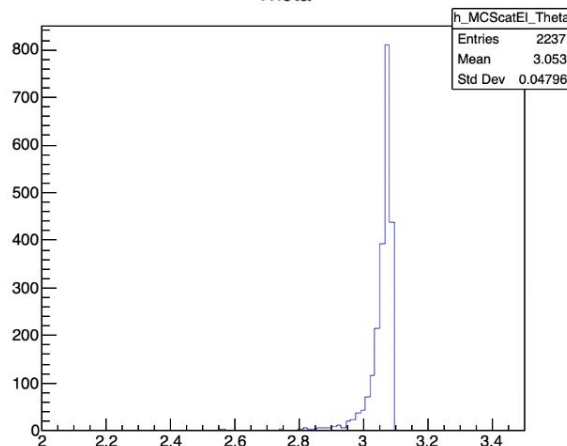
Location :

s3/eictest/EPIC/RECO/22.11.3/epic_arches/EXCLUSIVE/DVCS_ABCONV/18x275

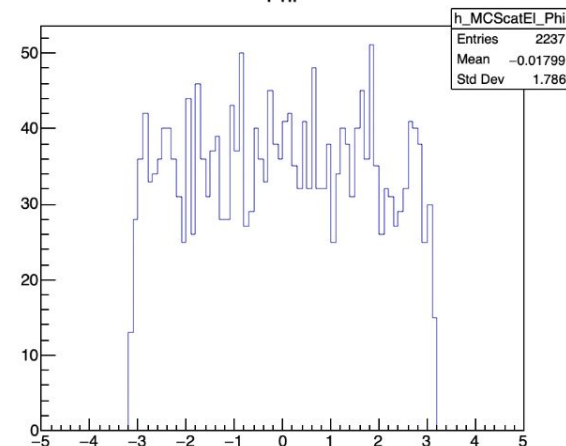
P



Theta



Phi



ELECTRON - MC

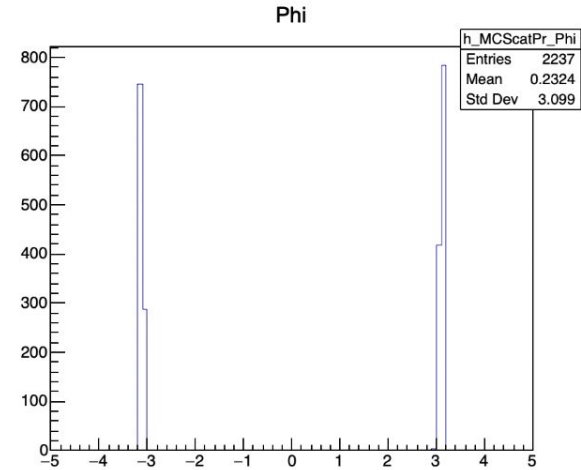
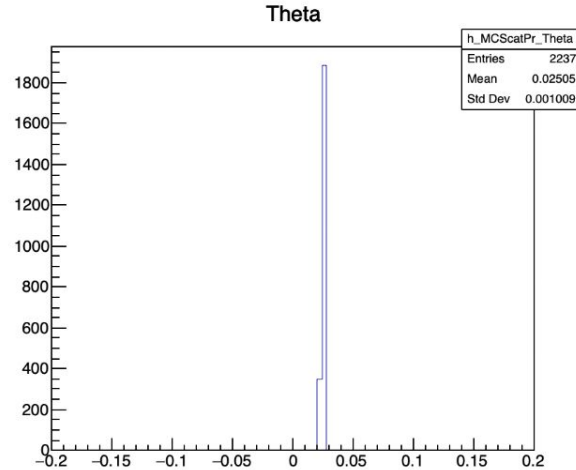
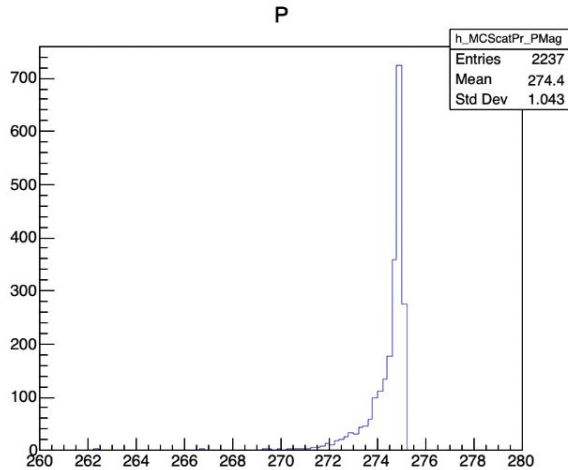
Electron reconstruction using
"ReconstructedChargedParticle" works* but in the



Step 1: DVCS files in S₃ folder

Location :

s3/eictest/EPIC/RECO/22.11.3/epic_arches/EXCLUSIVE/DVCS_ABCONV/18x275



PROTON - MC

No reconstructed data exists as
of this simulation campaign

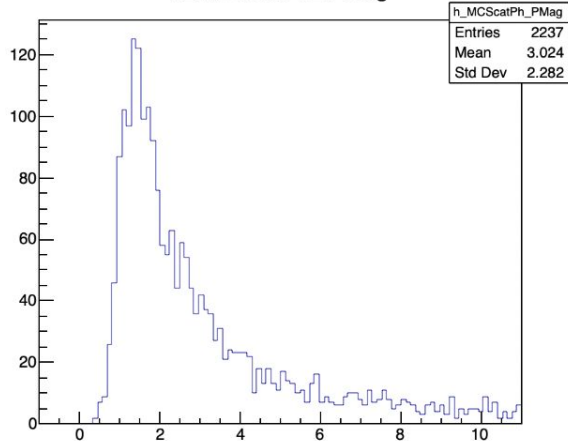


Step 1: DVCS files in S3 folder

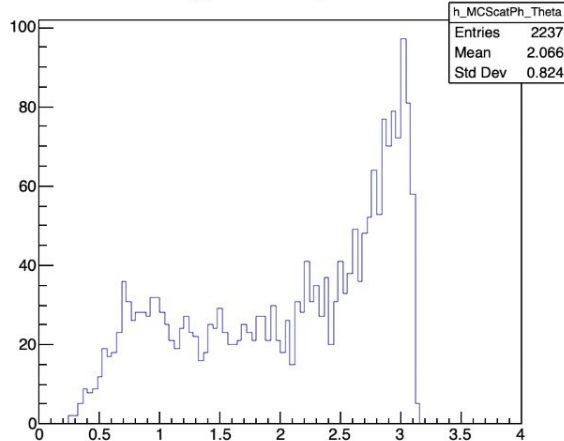
Location :

s3/eictest/EPIC/RECO/22.11.3/epic_arches/EXCLUSIVE/DVCS_ABCONV/18x275

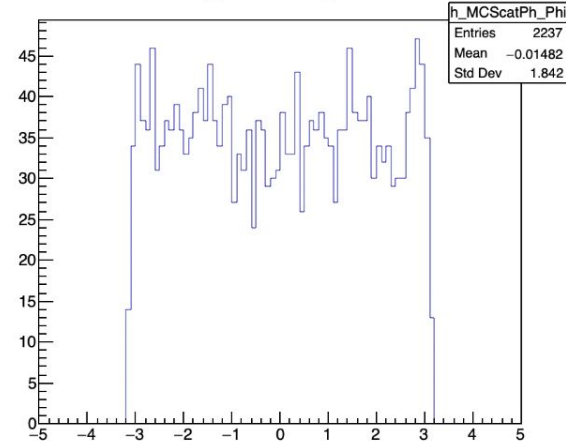
h_MCScatPh_PMag



h_MCScatPh_Theta



h_MCScatPh_Phi



PHOTON - MC

No reconstructed data exists of this simulation campaign

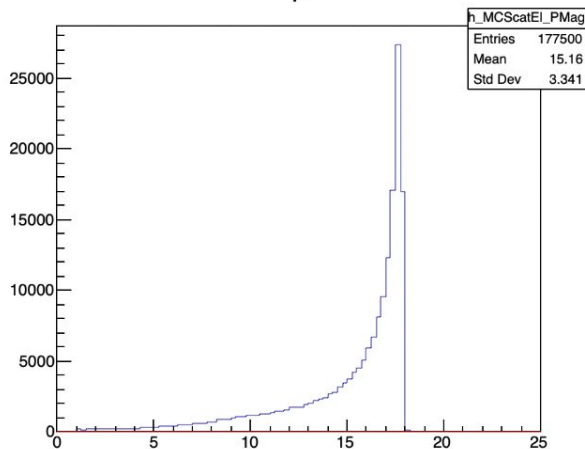


Step 2:

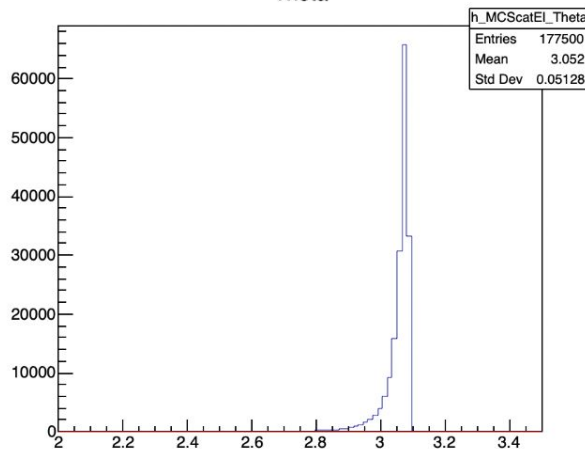
hempc DVCS files in S3 folder →
Simulation → eicreon

Location : s3/eicest/EPIC/EVGEN/EXCLUSIVE/DVCS_ABCONV/18x275

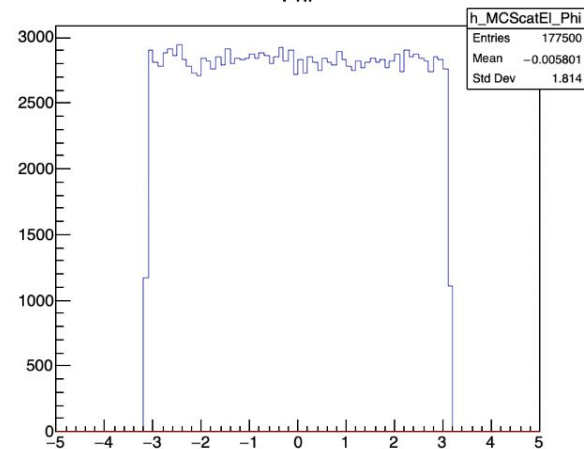
P



Theta



Phi



ELECTRON - MC

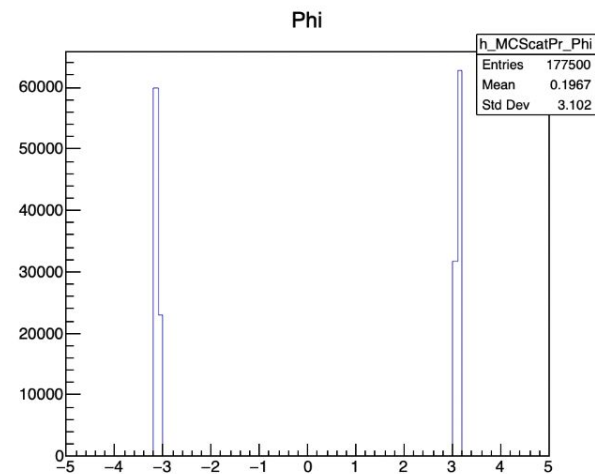
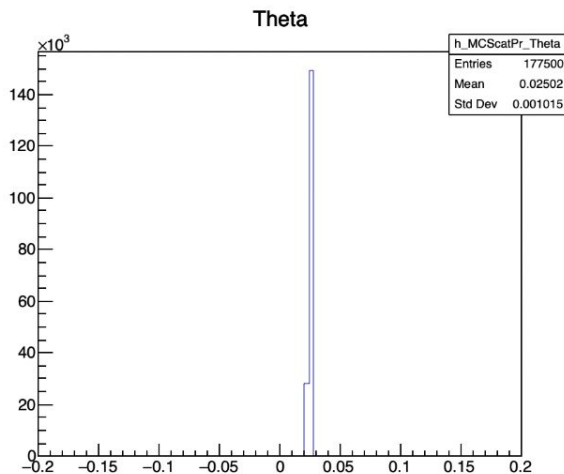
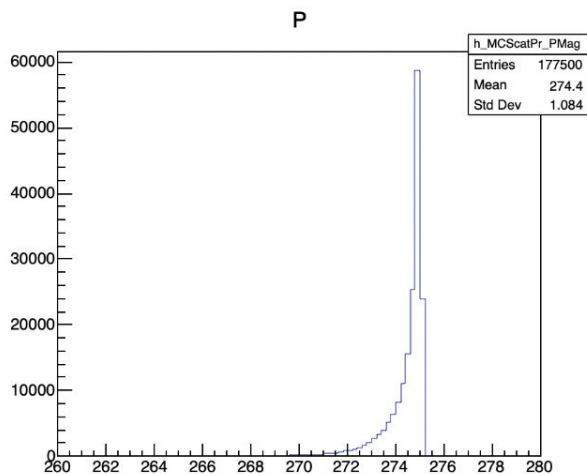
Electron reconstruction using
"ReconstructedChargedParticle
" works*



Step 2:

hempc DVCS files in S3 folder →
Simulation → eicreon

Location : s3/eicest/EPIC/EVGEN/EXCLUSIVE/DVCS_ABCONV/18x275



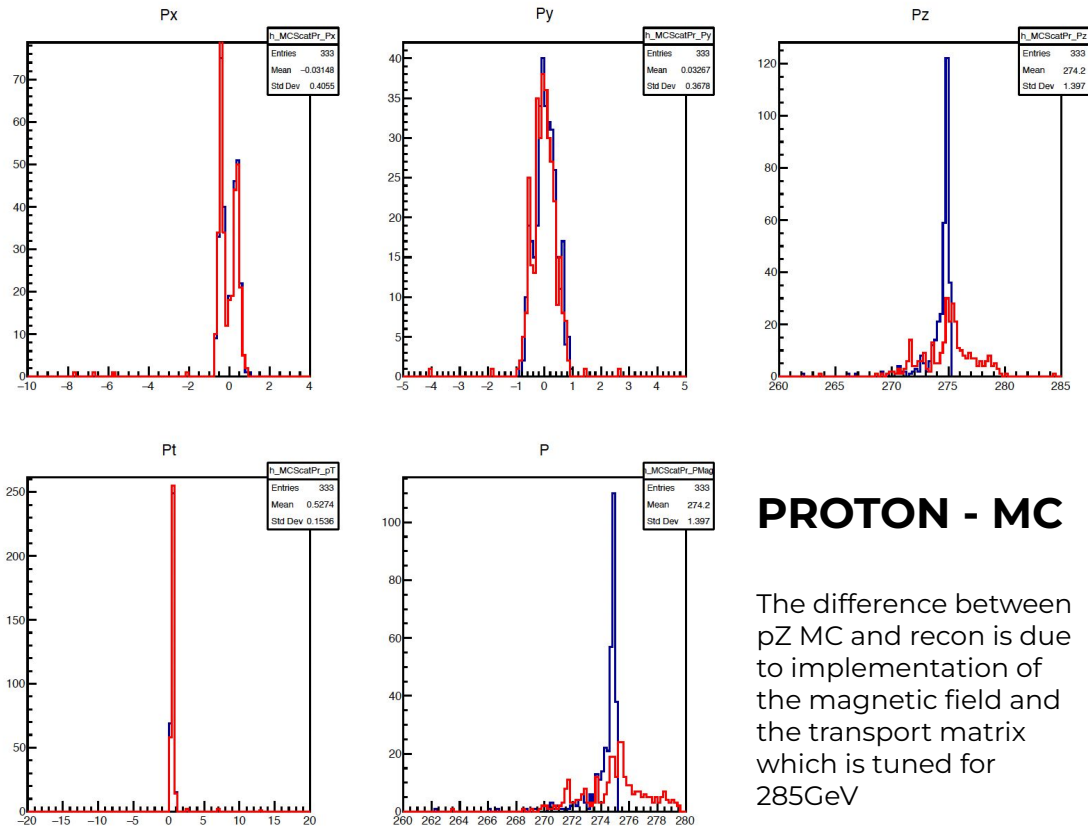
PROTON - MC



Step 2:

hempc DVCS files in S3 folder →
Simulation → eicreon

Location : s3/eicetest/EPIC/EVGEN/EXCLUSIVE/DVCS_ABCONV/18x275



PROTON - MC

The difference between pZ MC and recon is due to implementation of the magnetic field and the transport matrix which is tuned for 285GeV

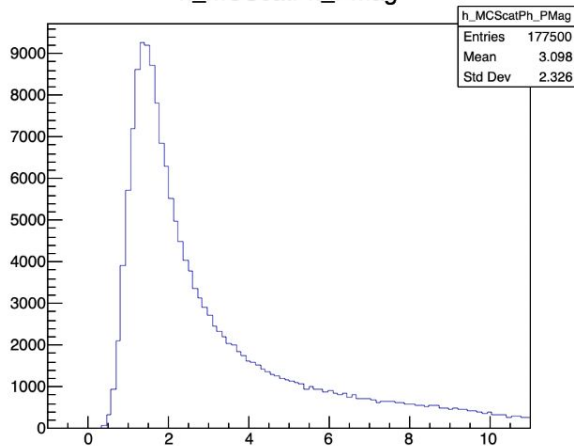


Step 2:

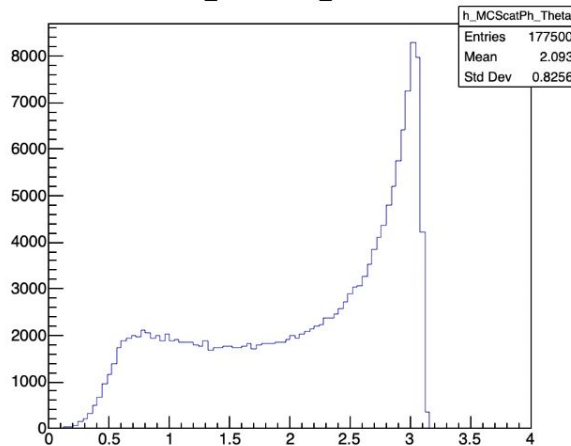
hempc DVCS files in S3 folder →
Simulation → eicrean

Location : s3/eicest/EPIC/EVGEN/EXCLUSIVE/DVCS_ABCONV/18x275

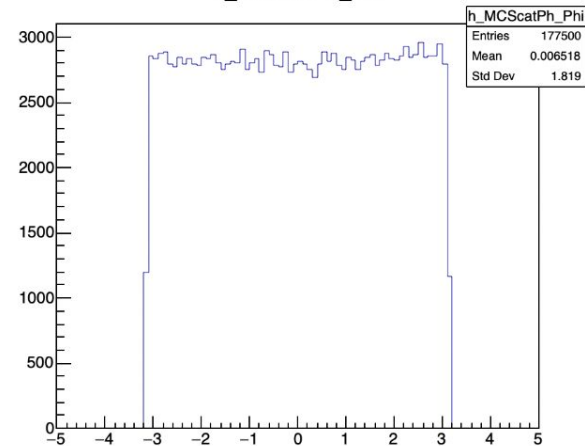
h_MCScatPh_PMag



h_MCScatPh_Theta



h_MCScatPh_Phi



PHOTON - MC



Simple Goal (progress so far)

Step 1 : Look at DVCS events in S3 Folder to answer questions mentioned in previous slides

Step 2: Start from hepmpc files in DVCS events, run it through the simulation and eicreon and repeat step 1

Step 3: Generate hepmpc file using EPIC generator and repeat step 2.

