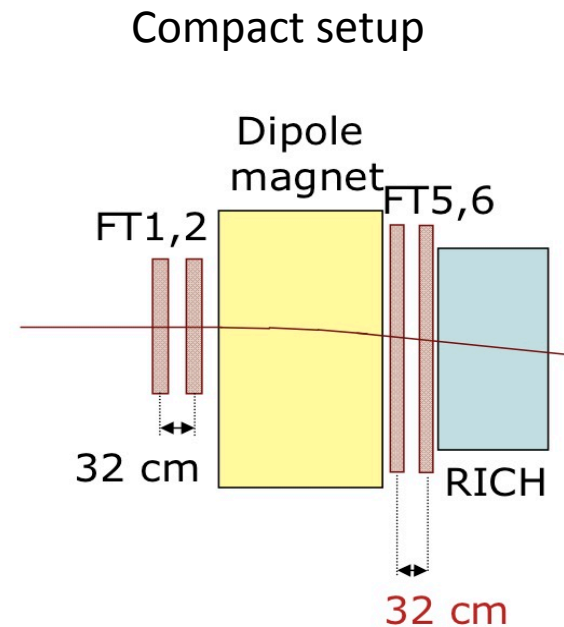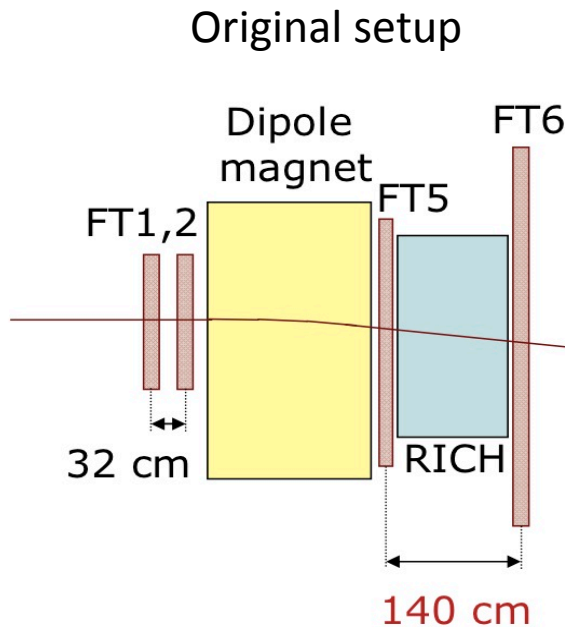# FTS : Momentum study

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Motivation

➢ Plan is to compare momentum got by fitting track from hits with Monte-Carlo and reconstructed momentum

➢ We will get two tracks before and after dipole and angle bet them gives momentum of particle

➢ Idea is to find momentum Resolution for following two conditions

Original setup

Compact setup

Deflection Angle due to Dipole Field

Figs. shows Theta between linearly fitted tracks from points in simulation of first two stations (1 & 2) and last two stations (5 & 6)

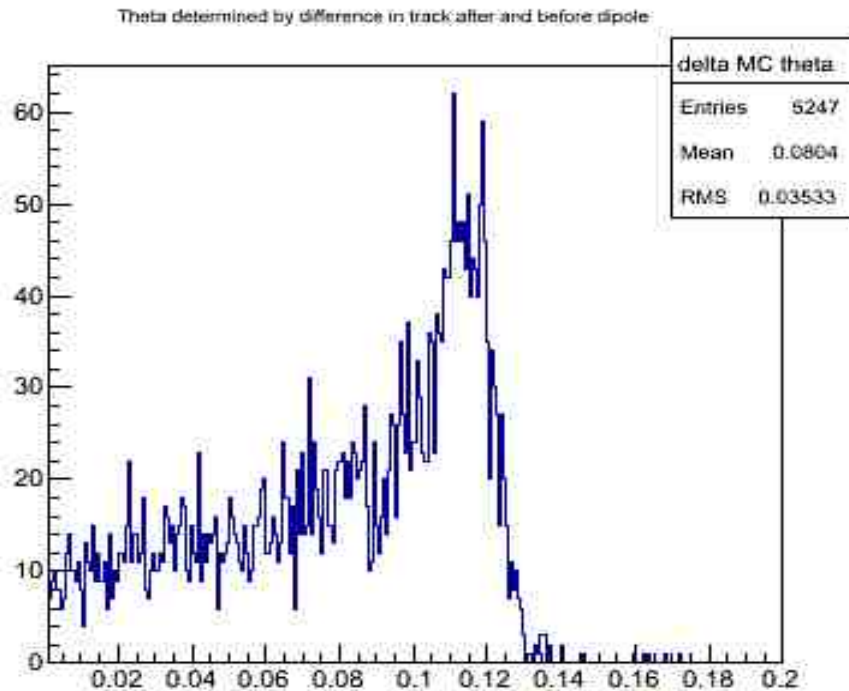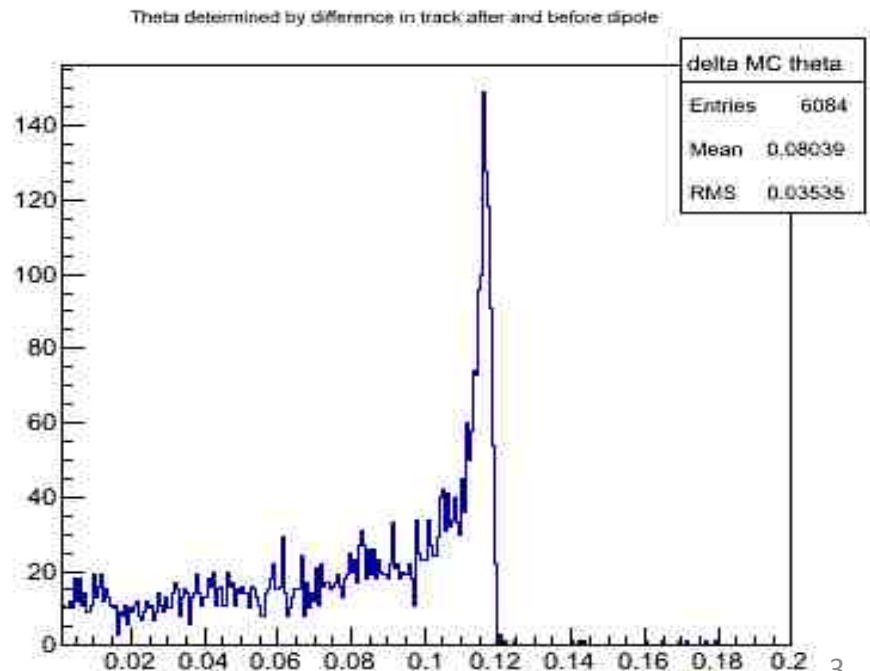Fig. 1) RICH is placed in between 5th and 6th Station of FT

Theta determined by difference in track after and before dipole

delta MC theta	
Entries	5247
Mean	0.0804
RMS	0.03533

Fig. 2) RICH is placed in after 6th Station of FT

Theta determined by difference in track after and before dipole

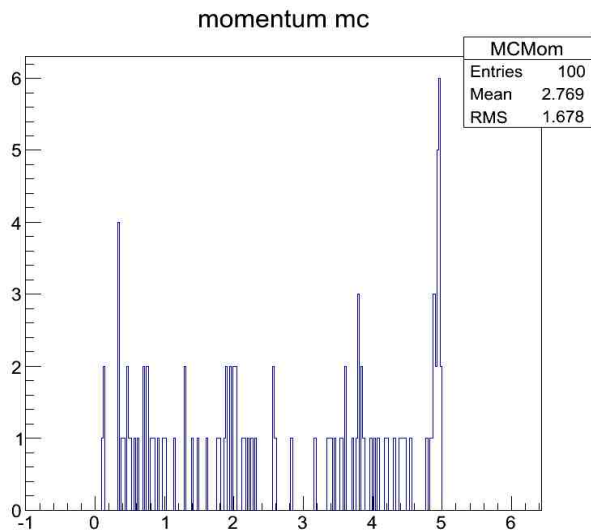| delta MC theta	
Entries	6084
Mean	0.08039
RMS	0.03535

X axis: dTheta (radians)

3

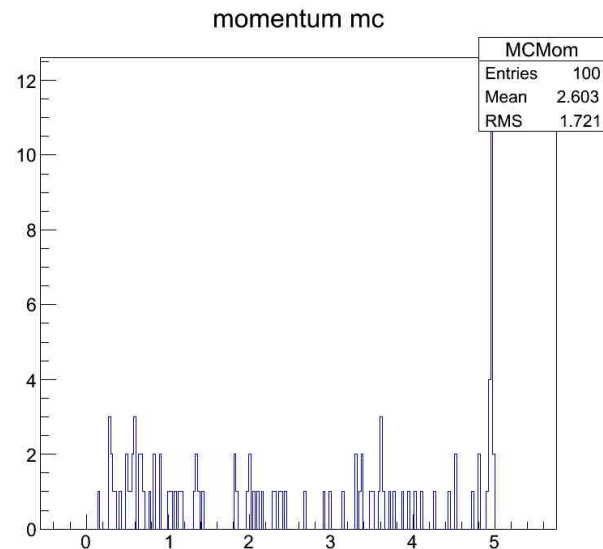# MC and Reco Momentum

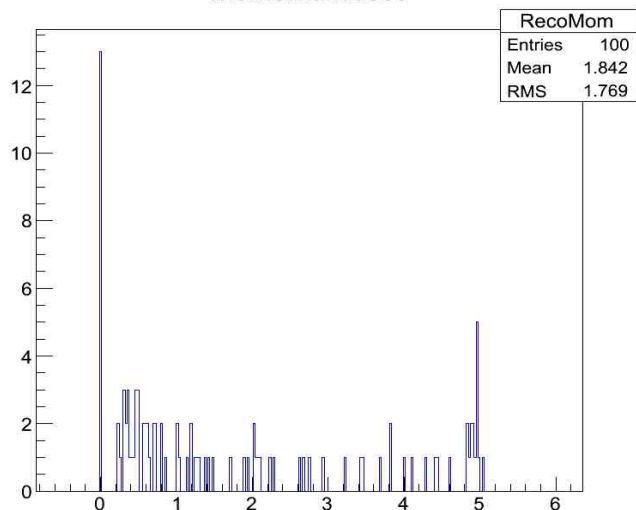Simulation macro: PID; Momentum set in simulation: 5 GeV/c; Evt Generator: DPM
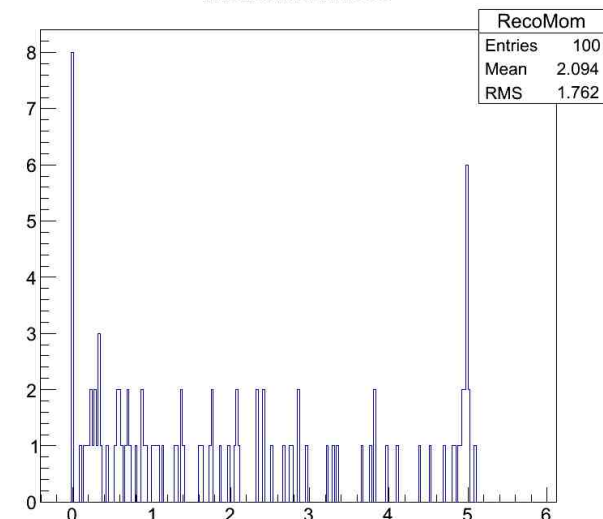
Original Geometry of FTS
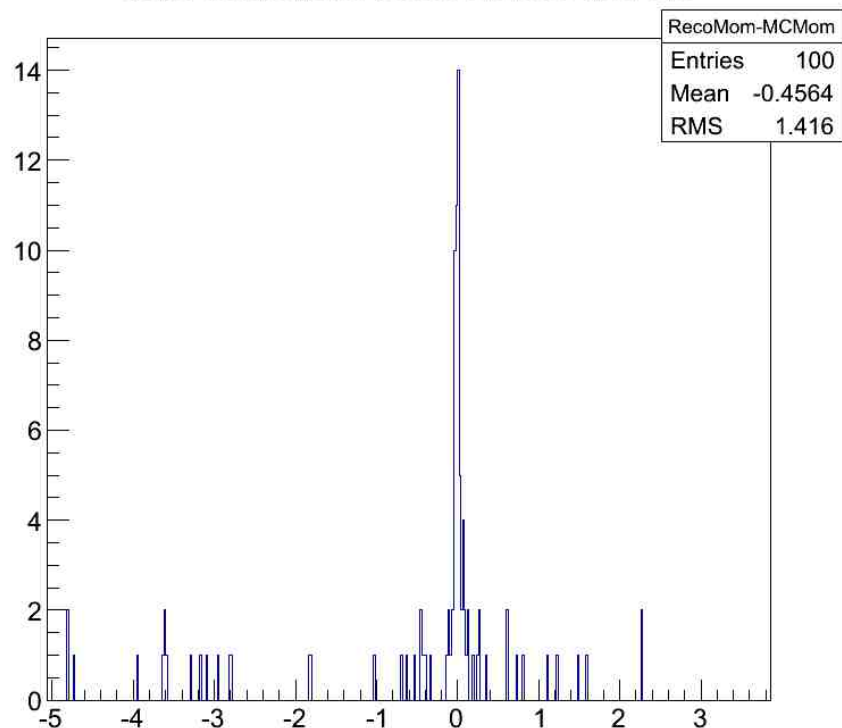
Compact Geometry of FTS

X axis: Momentum (GeV/c)

4

Difference between Reco Momentum and MC Momentum calculated using macro track_check.C
Simulation macros are used from pid macro
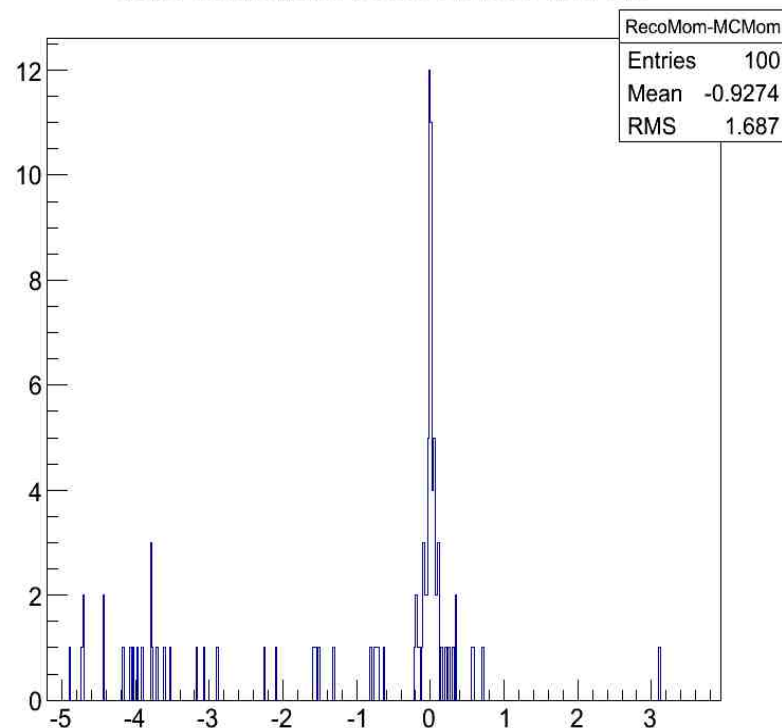Momentum is 5 Gev
Event Generator: DPM

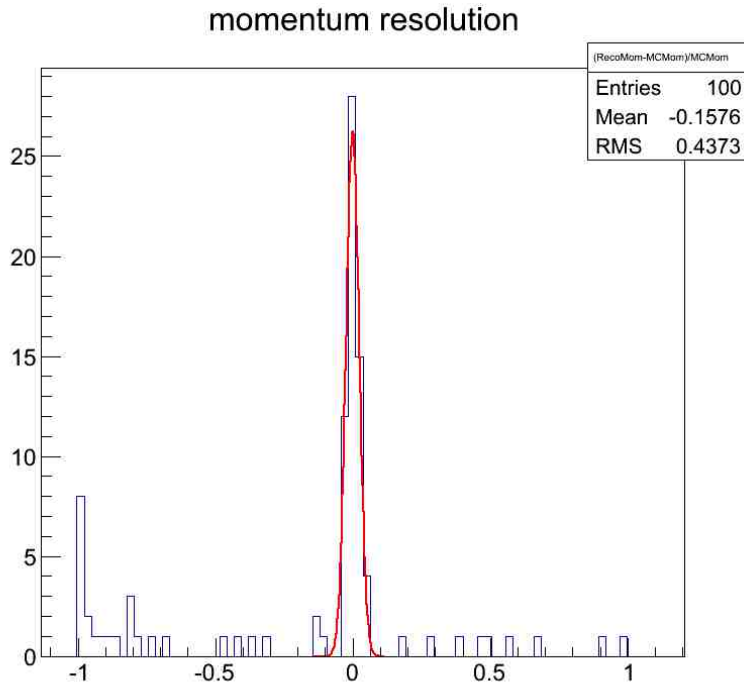Original Geometry for FT   Compact Geometry for FT

delta momentum between reco and MC

RecoMom-MCMom	
Entries	100
Mean	-0.4564
RMS	1.416

delta momentum between reco and MC

RecoMom-MCMom	
Entries	100
Mean	-0.9274
RMS	1.687

5

X axis: Momentum (GeV/c)

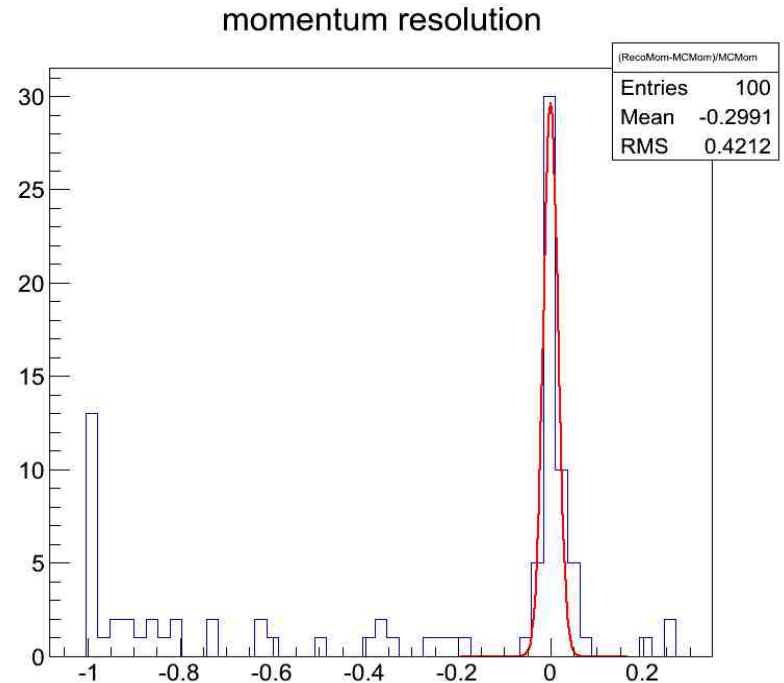# Momentum Resolution for two setups

Here compared momentum resolution [(Reco_mom-MC_mom)/MC_mom] for two setups of FT

Original Geometry for FT

Compact Geometry for FT

Next:

Now I am trying to fit hits from reconstruction for all layers of FT in X-Z plane to get bending angle of track due to dipole field.

Thank You.