

Simulation Chain for InGrid

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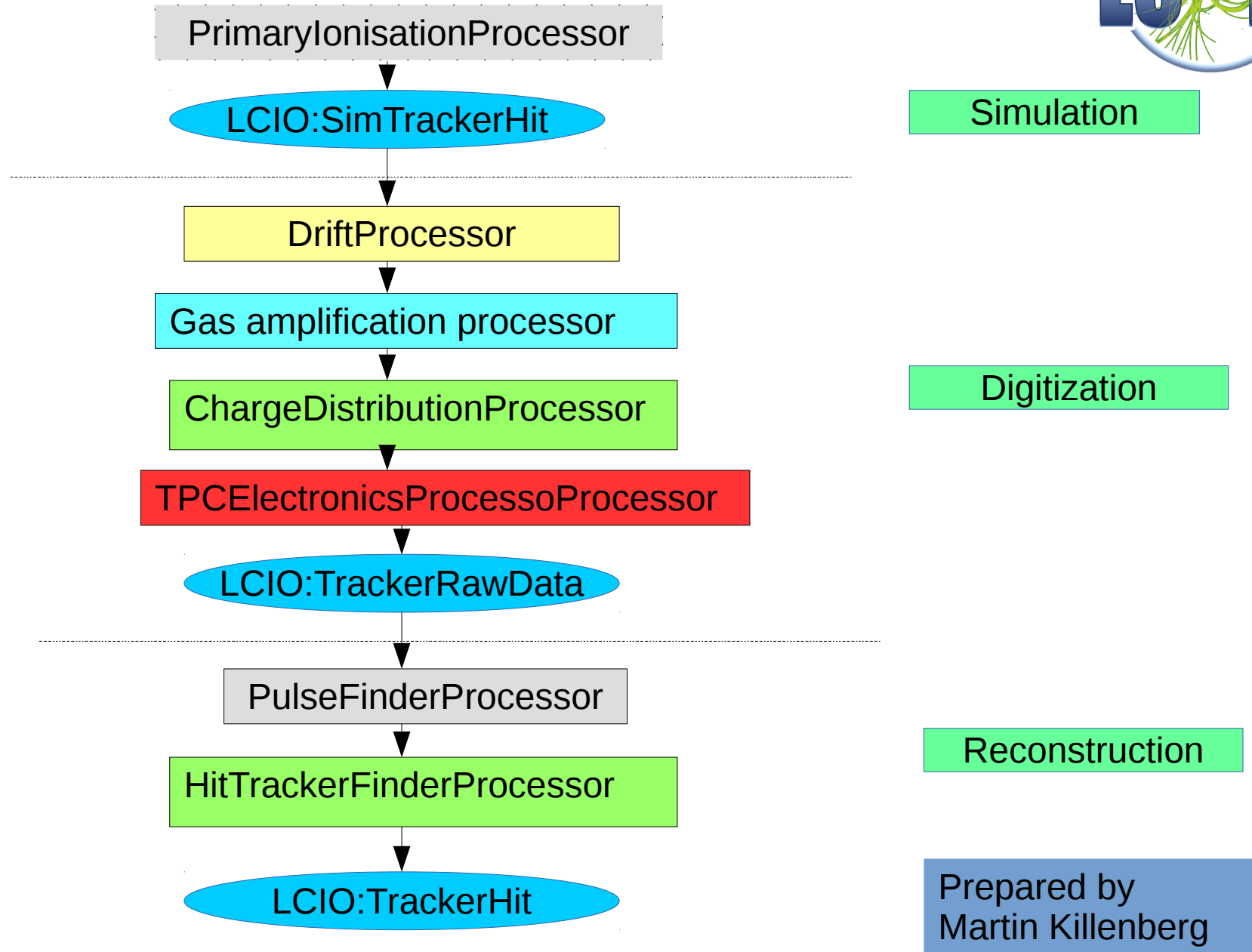
Siegen University

Content:

- Full Endplate
- Perfect One Module
- Test Beam Simulation
- Width of Beam
- Result
- Outlook



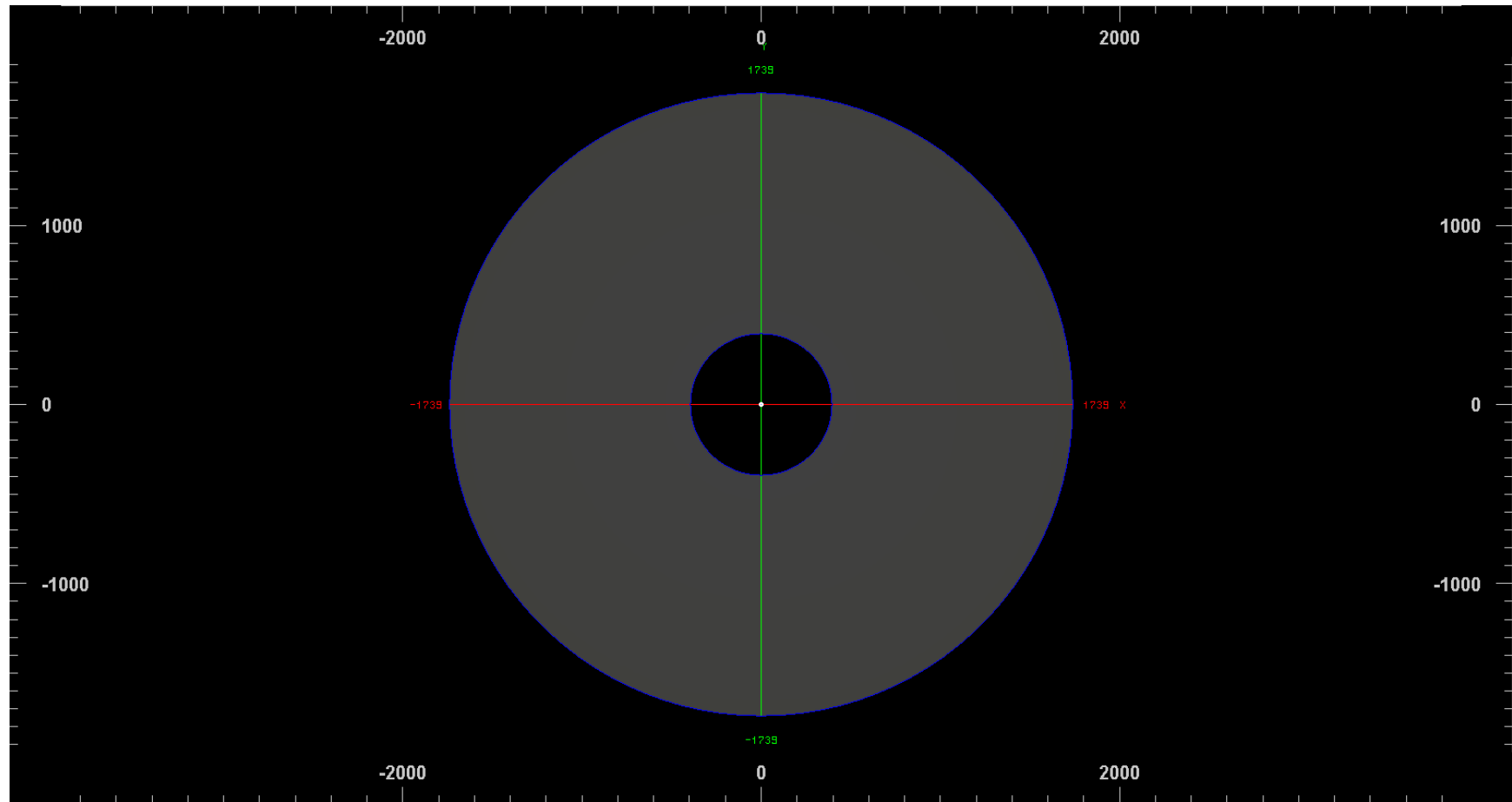
Simulation Chain Full End Plate



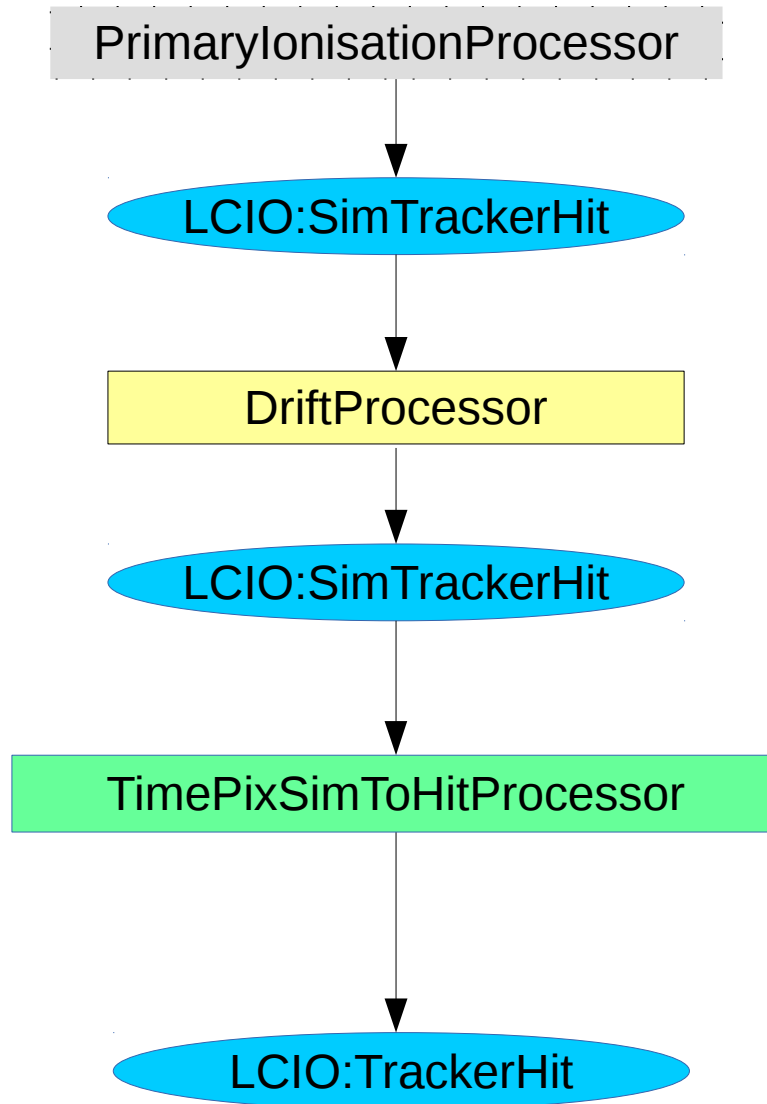
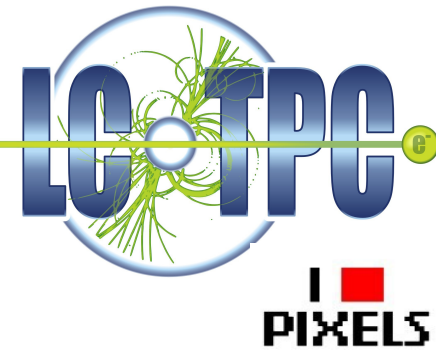


Simulation Chain Full End Plate

Max Drift Length = 2m
Inner radius = 0.33 m
TPC radius = 1.8 m
B Field = 4 T



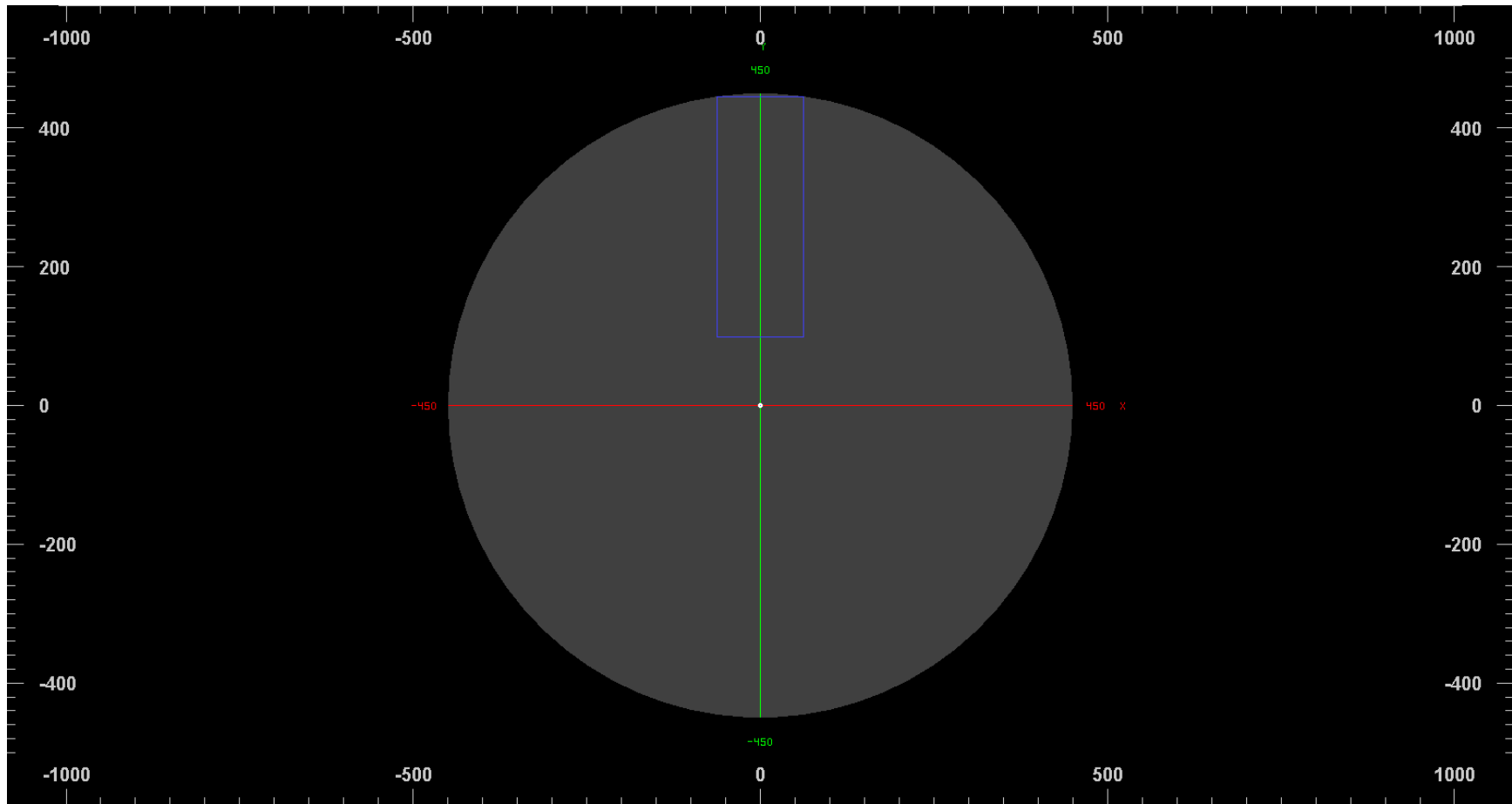
Perfect One Module End Plate



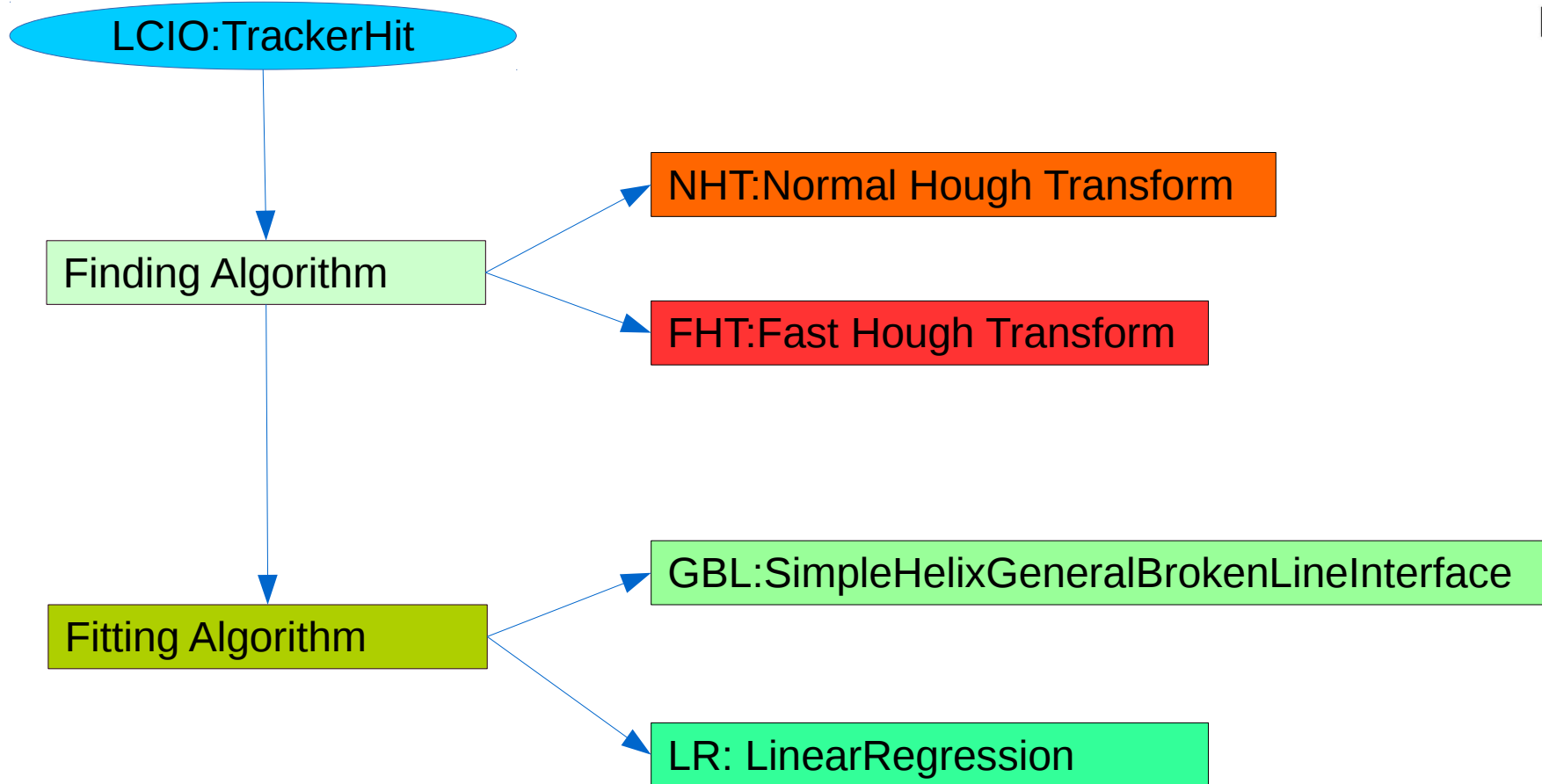
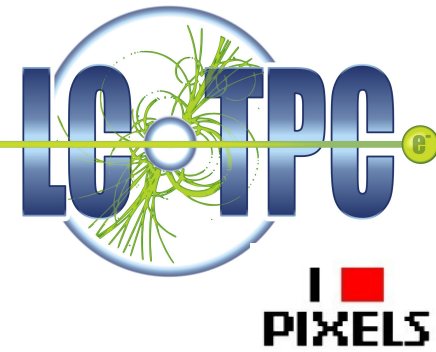
Perfect One Module End Plate

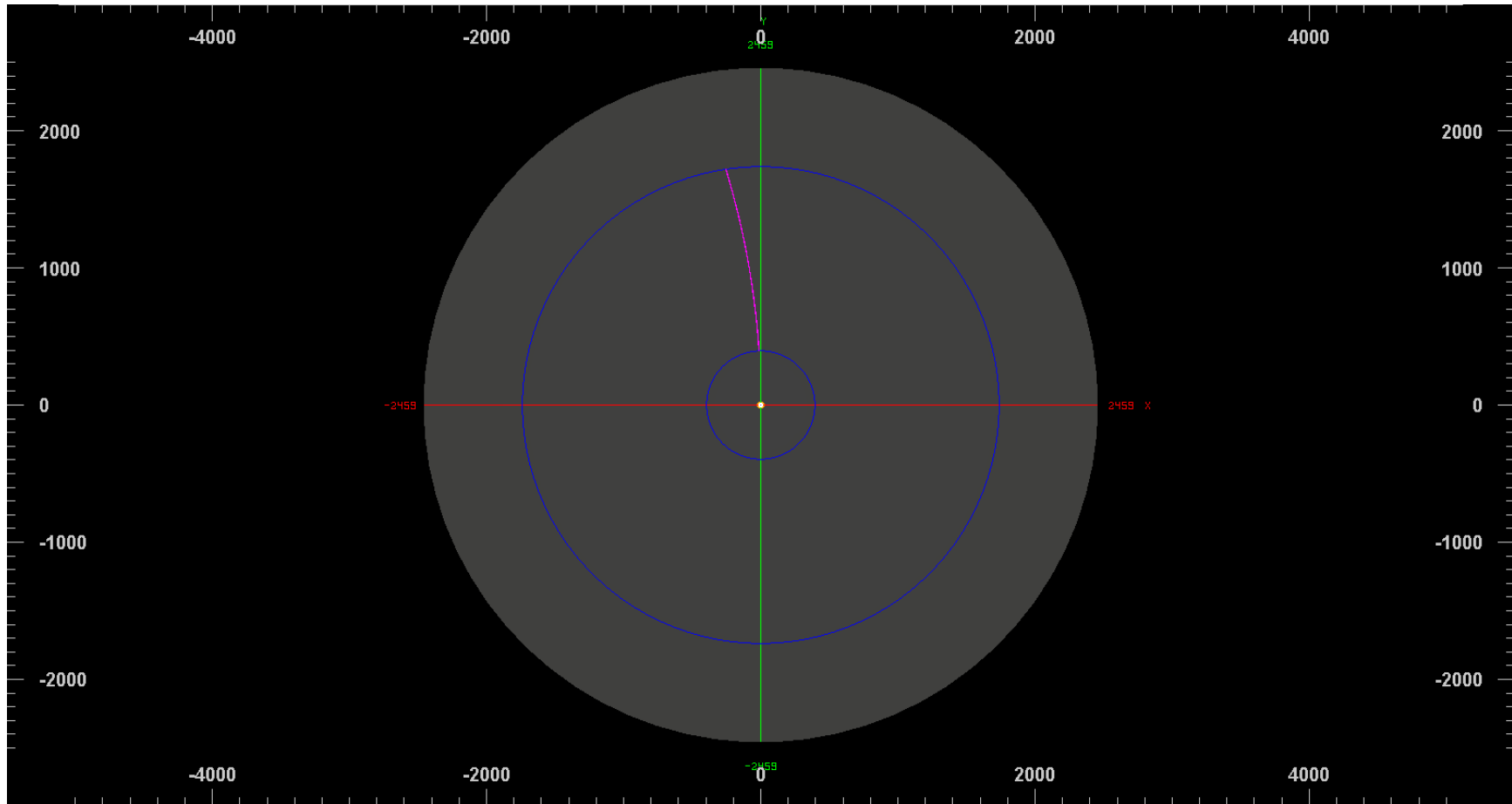


TPCRadius = 450 mm
Inner Radius = 99 mm
Width of Module = 125 mm
Height of Module = 351 mm



Track Reconstruction



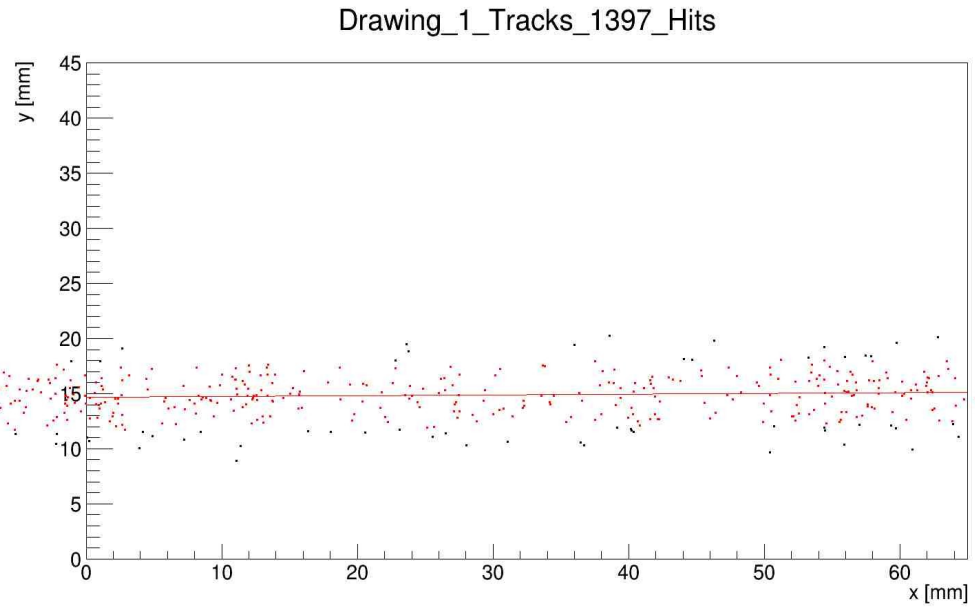


- There was no out put from Fast Hough Transform.
- The number of hits for Muon with 10 GeV was between 12000 up to 18000 for 278 mm.
- The width of the beam was very wide with around 15 mm which could be the reason that FHT did not find any track.
- Did some simulation for test beam in order to compare the width of beam with real one.

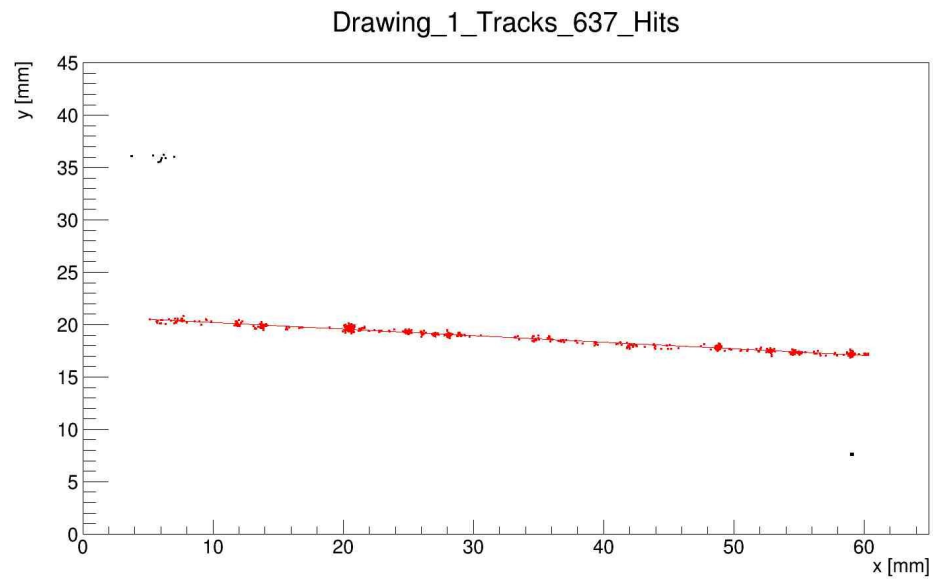
Test Beam Simulation



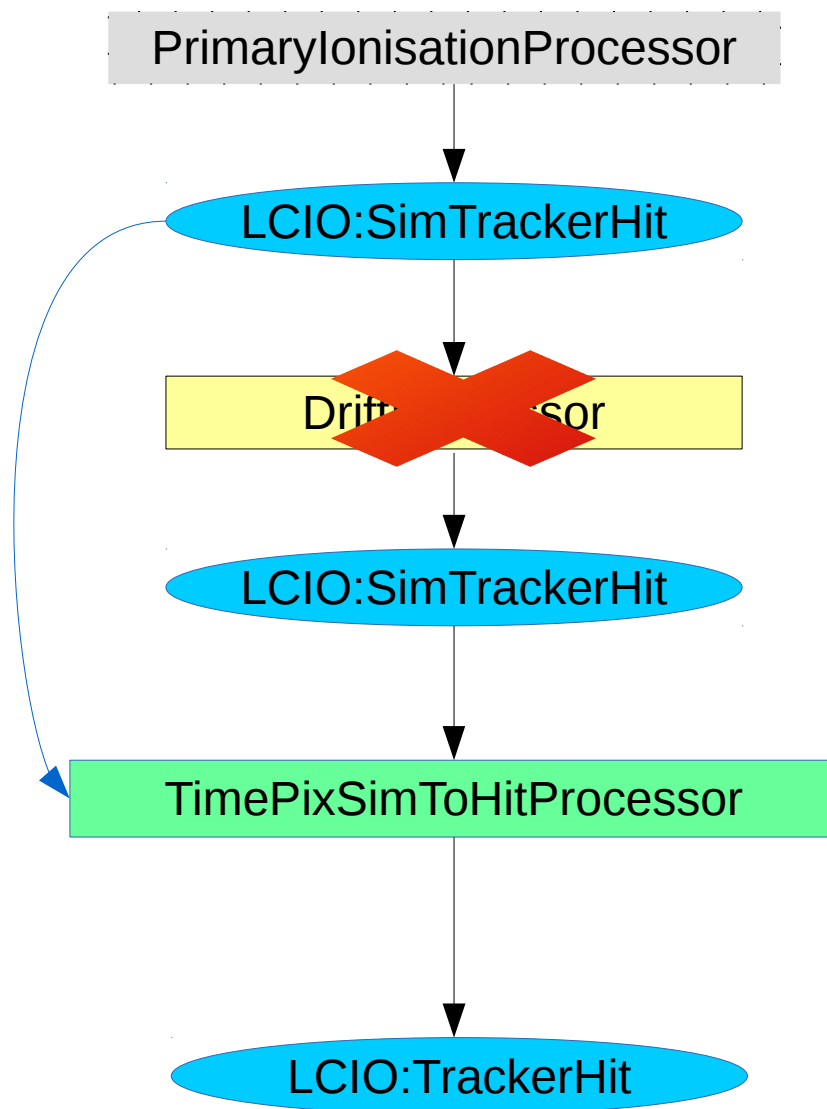
Simulation
(only
primary
electrons)



Real Test
Beam



Width of Beam



Already corrected



Working on it

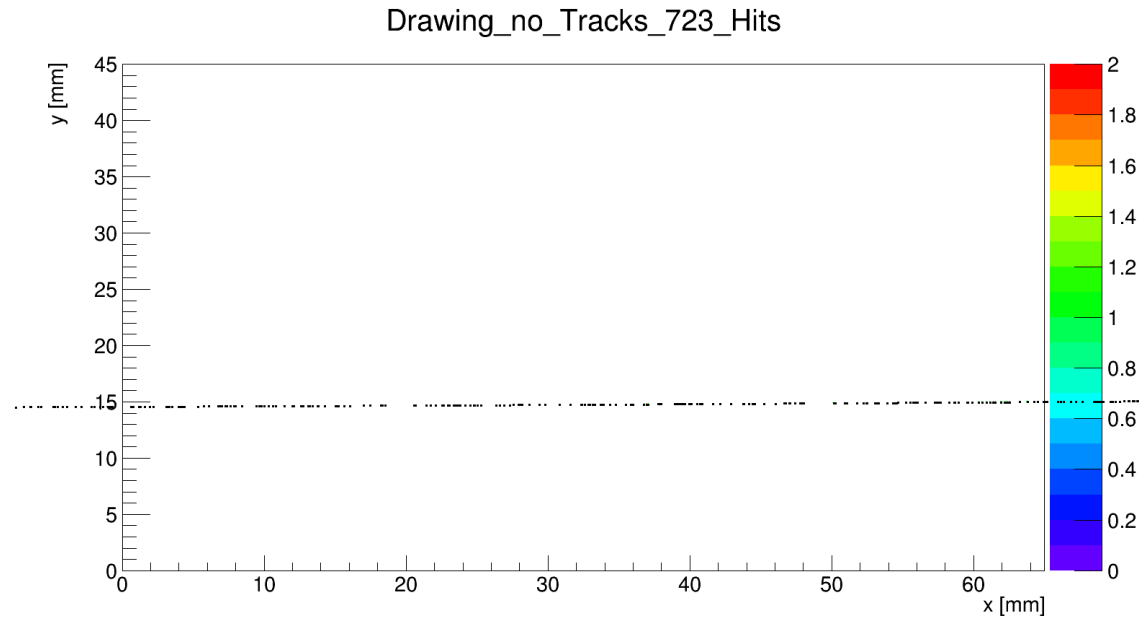
- The number of hits for Muon with 10 GeV was between 5000 up to 8000.

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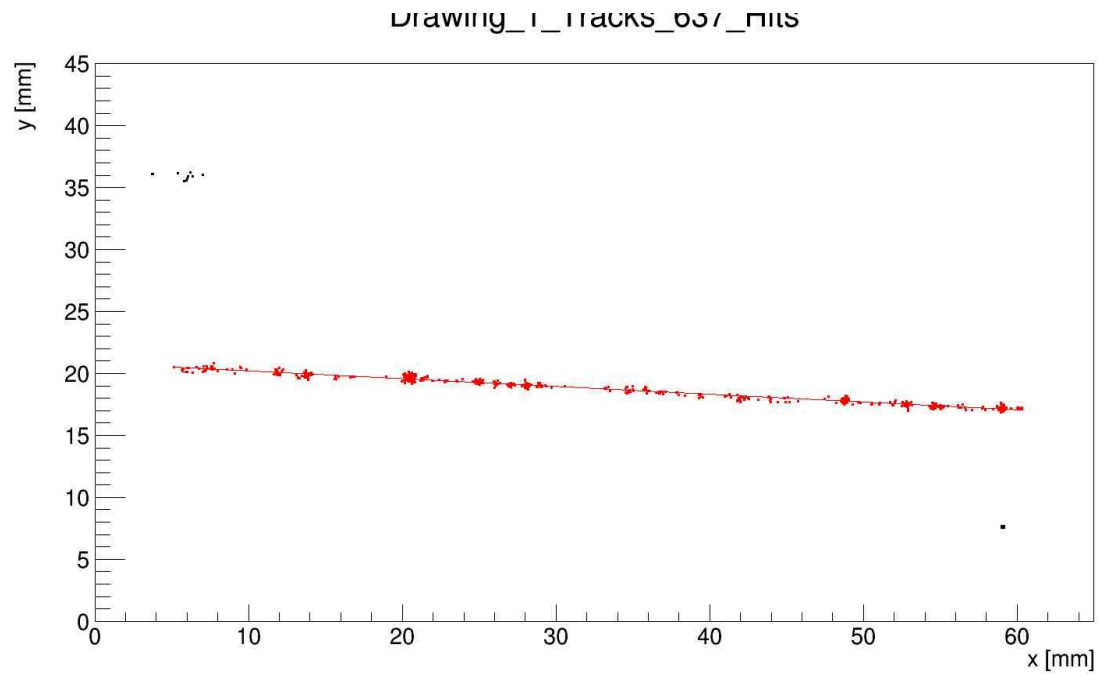
Test Beam Simulation



Simulation
(only
primary
electrons)



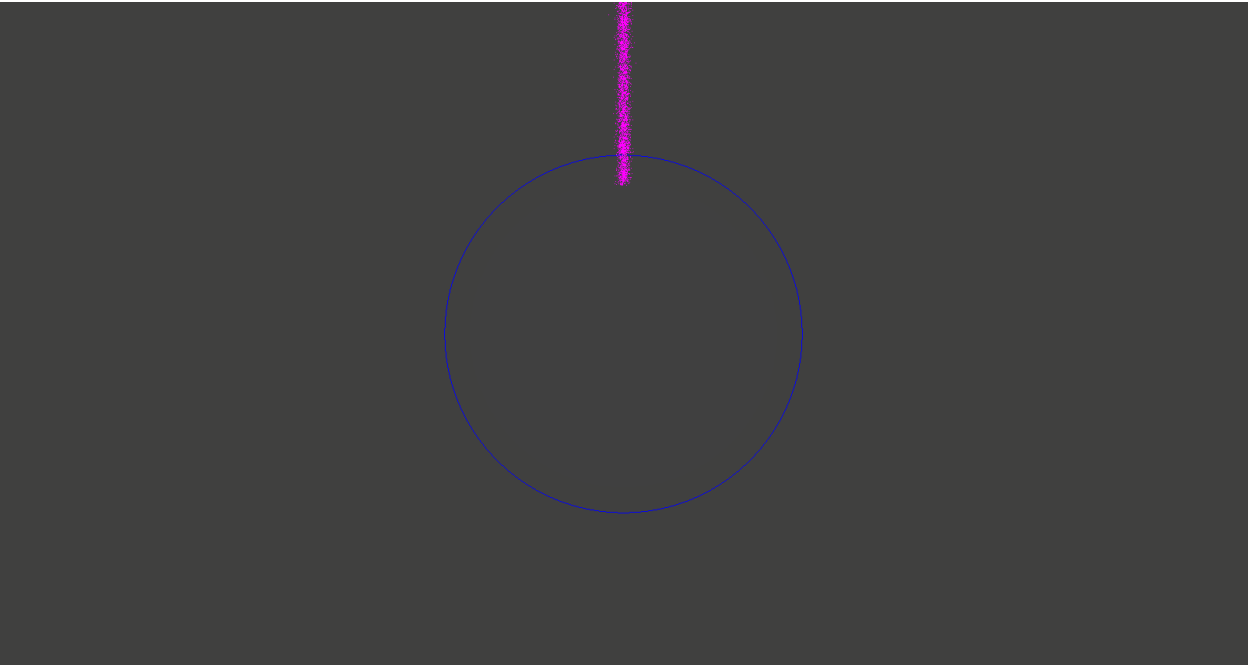
Real Test
Beam



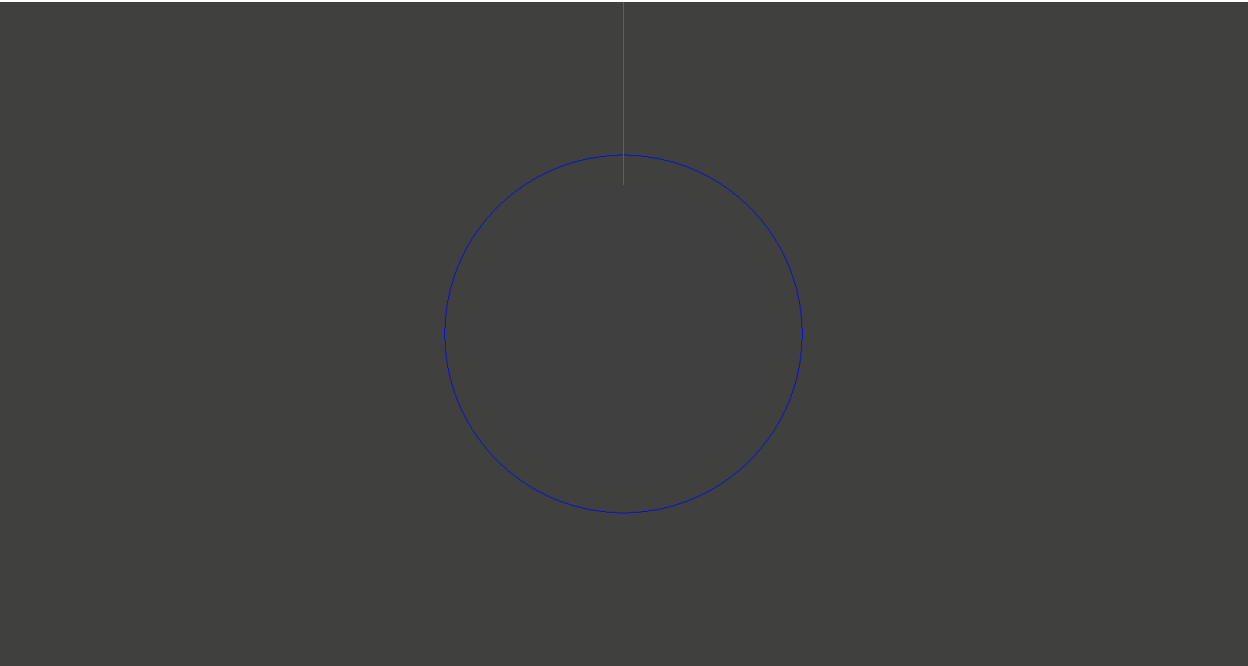
Width of Beam



Before correction



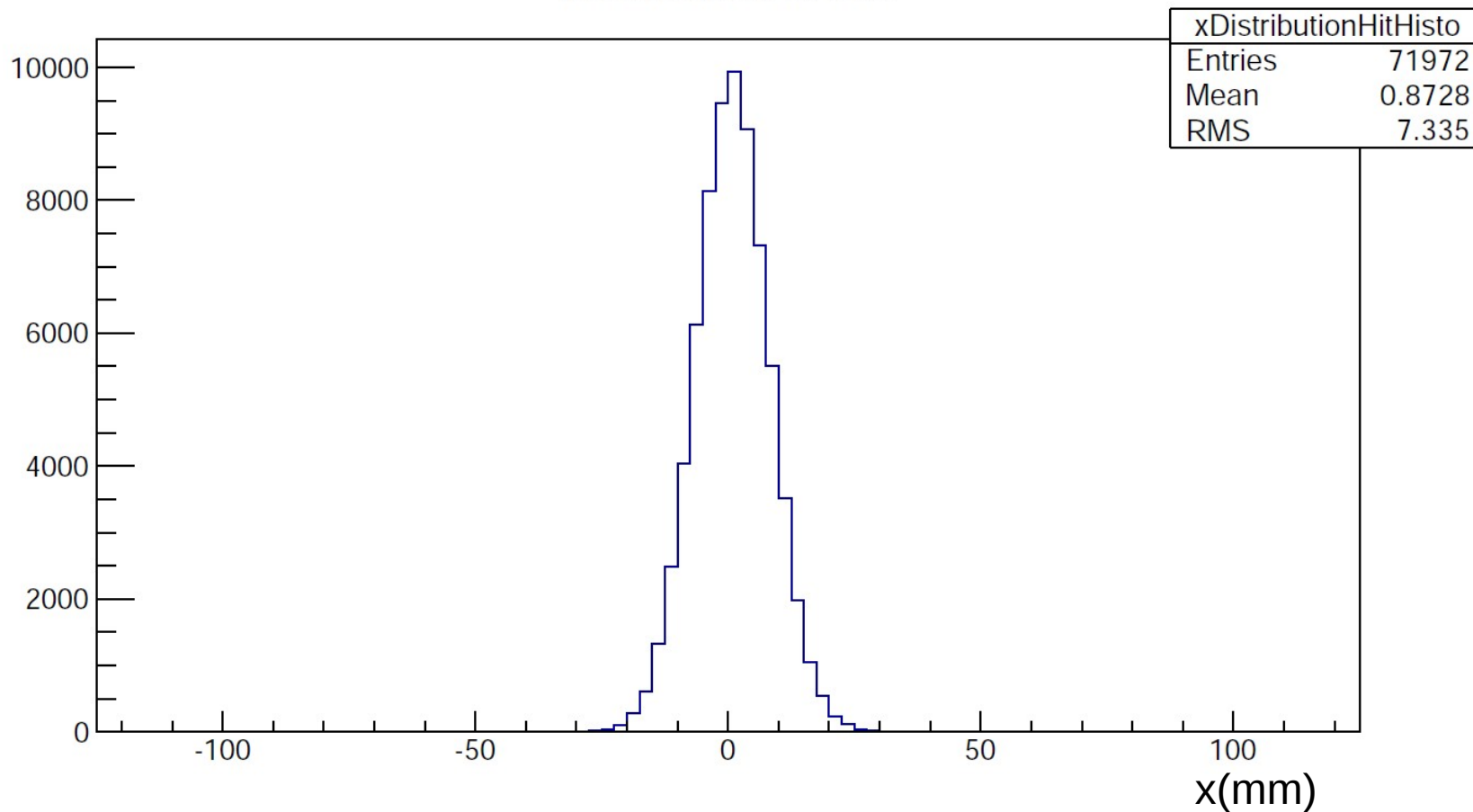
After correction



Width of Beam

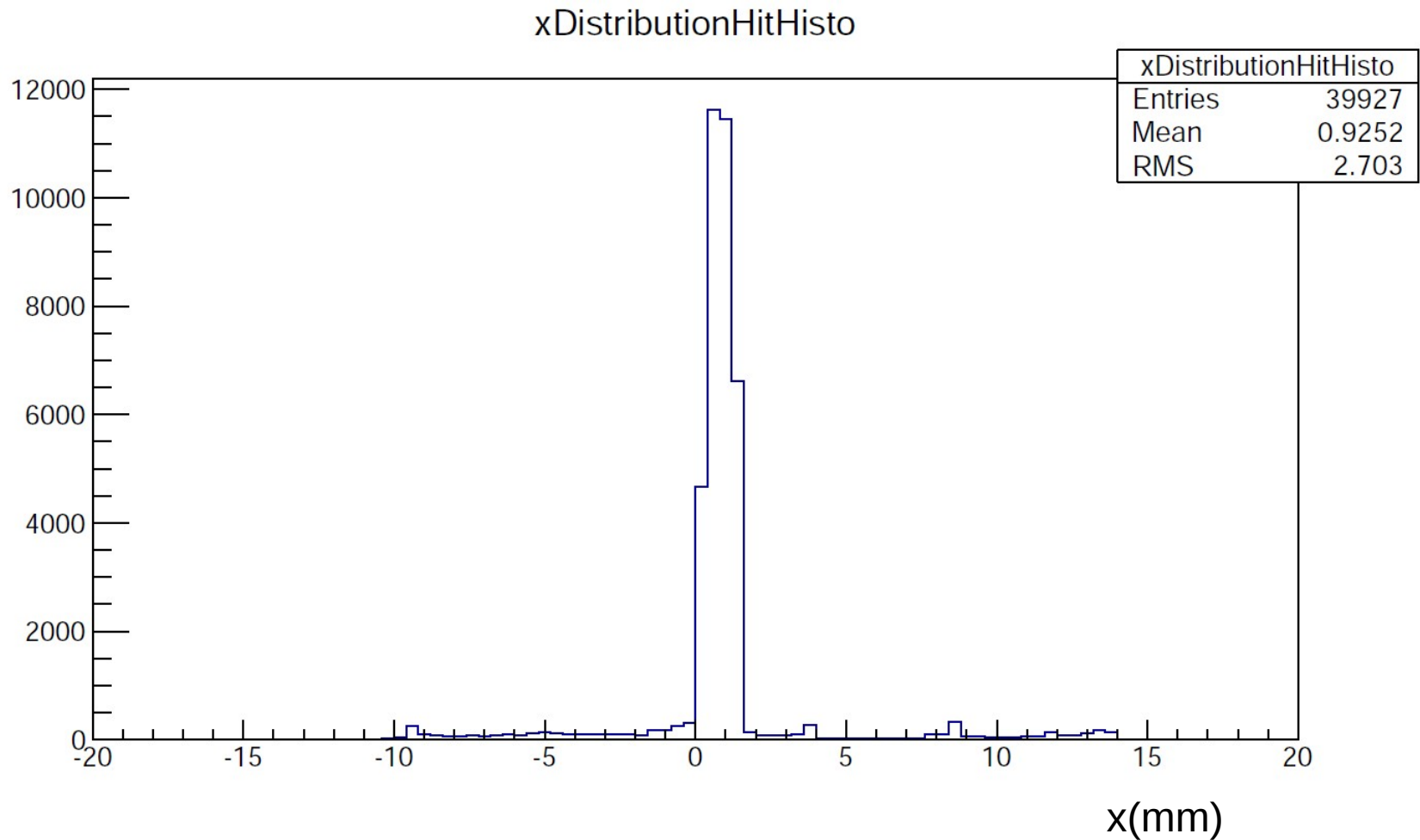


xDistributionHitHisto



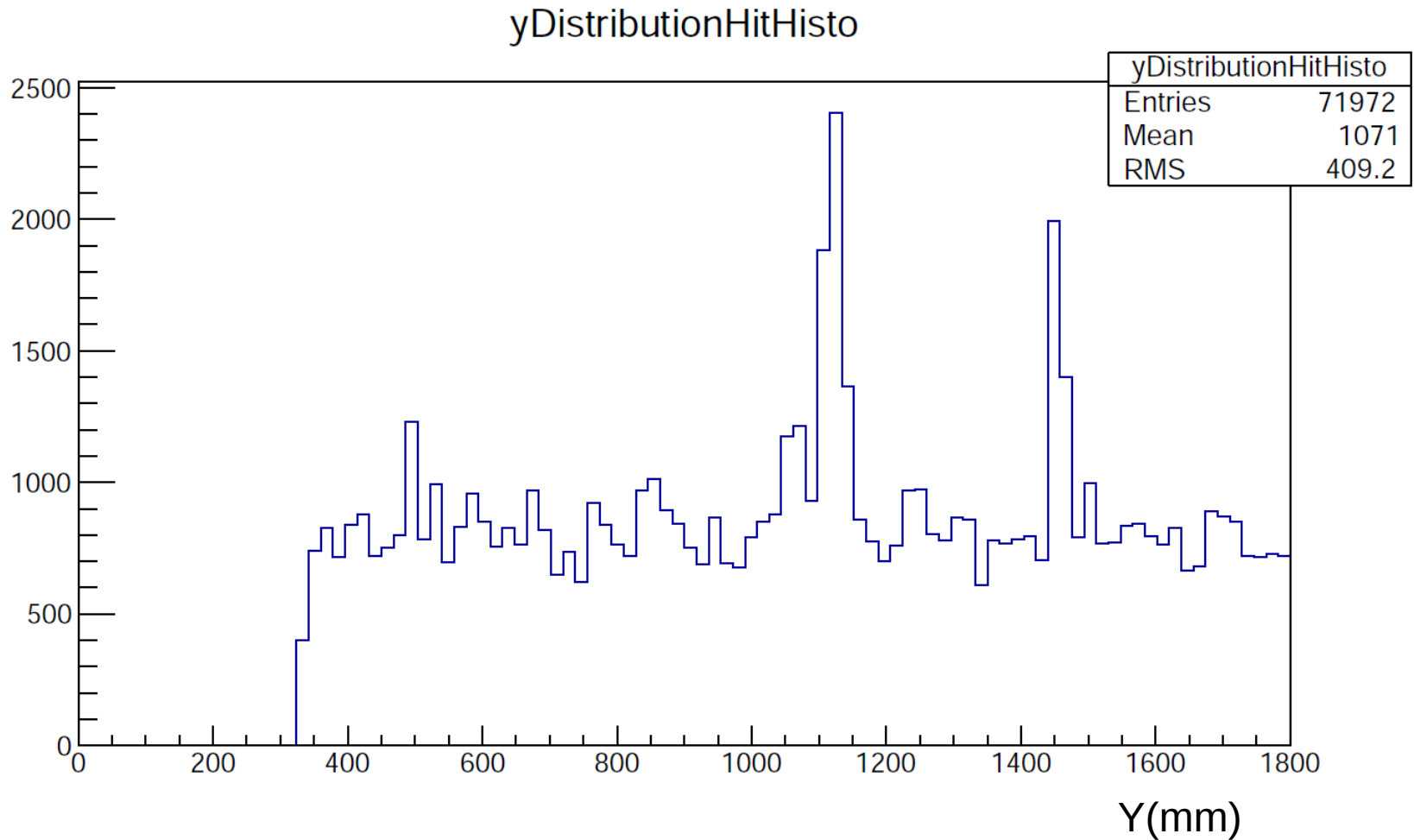
X-distribution of hits before correction for 5 events of Muon with 100 GeV without magnetic field.

Width of Beam



X-distribution of hits after correction for 5 events of Moun with 100 GeV without magnetic field.

Width of Beam

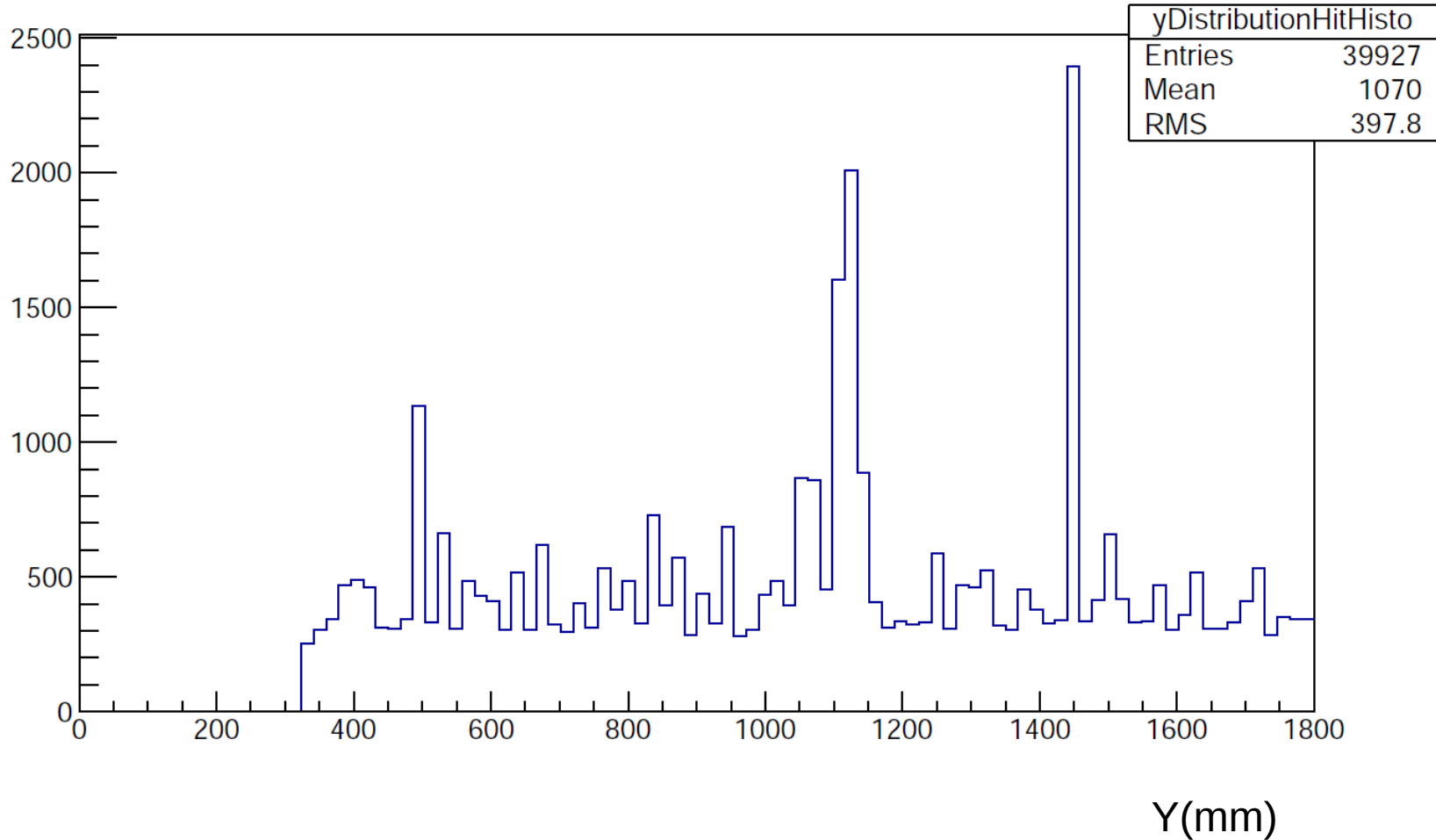


Y-distribution of hits before correction for 5 events of Moun with 100 GeV without magnetic field.

Width of Beam



yDistributionHitHisto



Y-distribution of hits after correction for 5 events of Moun with 100 GeV without magnetic field.

Result:

1 Track -10GeV	Phi=90, lambda=0	10 Events	One Module	NHT+LR	✓	NHT+GBL	✓	FHT+LR	✗	FHT+GBL	✗
1 track- 10GeV	Phi=90, lambda=0	10 Events	Full Endplate	NHT+LR	Not done	NHT+GBL	✓	FHT+LR	✗	FHT+GBL	✗
1 Track -10GeV	Phi=90, lambda=45	10 Events	Full Endplate	NHT+LR	Not done	NHT+GBL	✗	FHT+LR	✗	FHT+GBL	✗

Outlook:

- Correct width of beam after Drift Processor.
- Comparing different algorithms for finding and fitting.
- Simulation with two tracks

Backup



PIXELS

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