

# Simulation Chain for InGrid

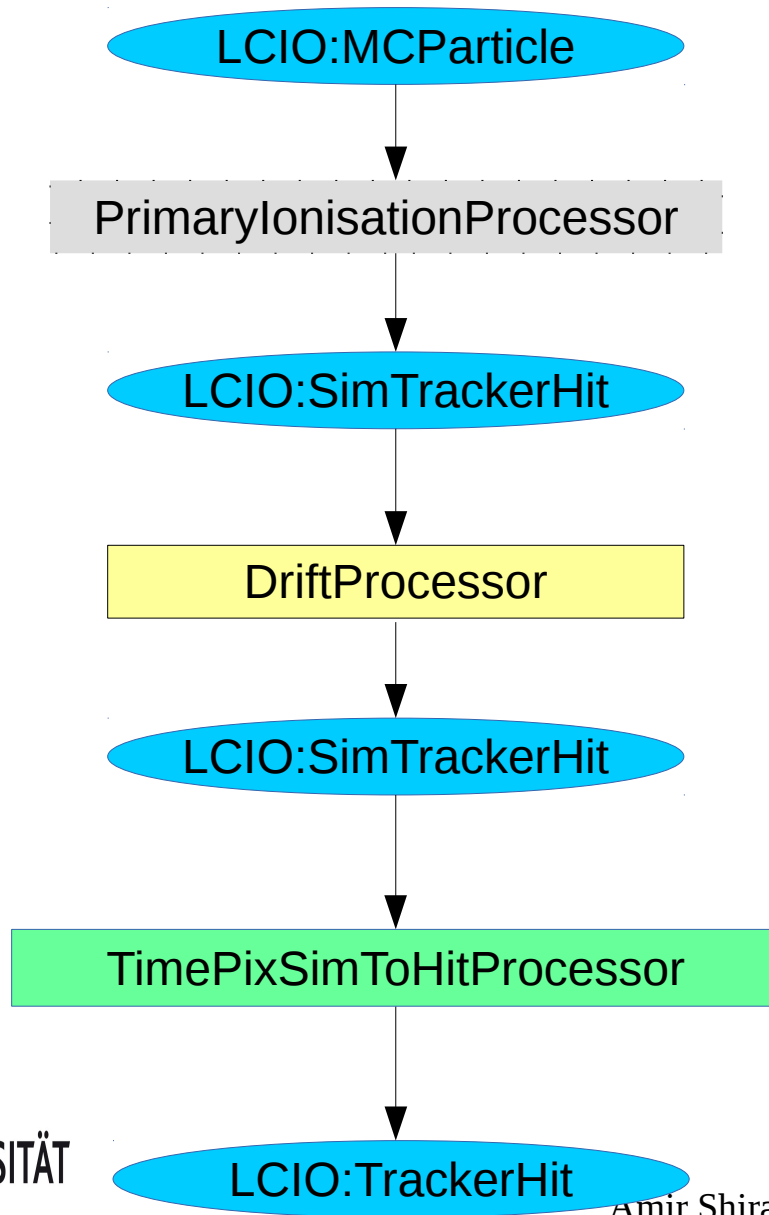
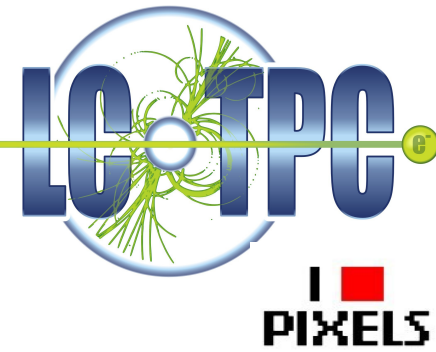
Amir Noori Shirazi

Siegen University

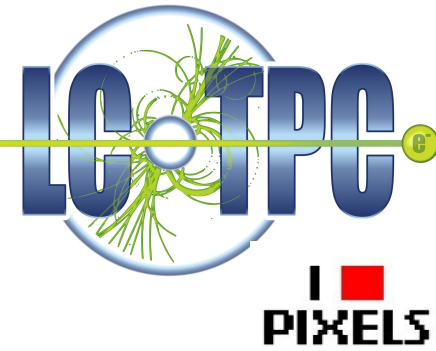
## Content:

- Test Beam Simulation
- Fast Hough Transform
- Outlook

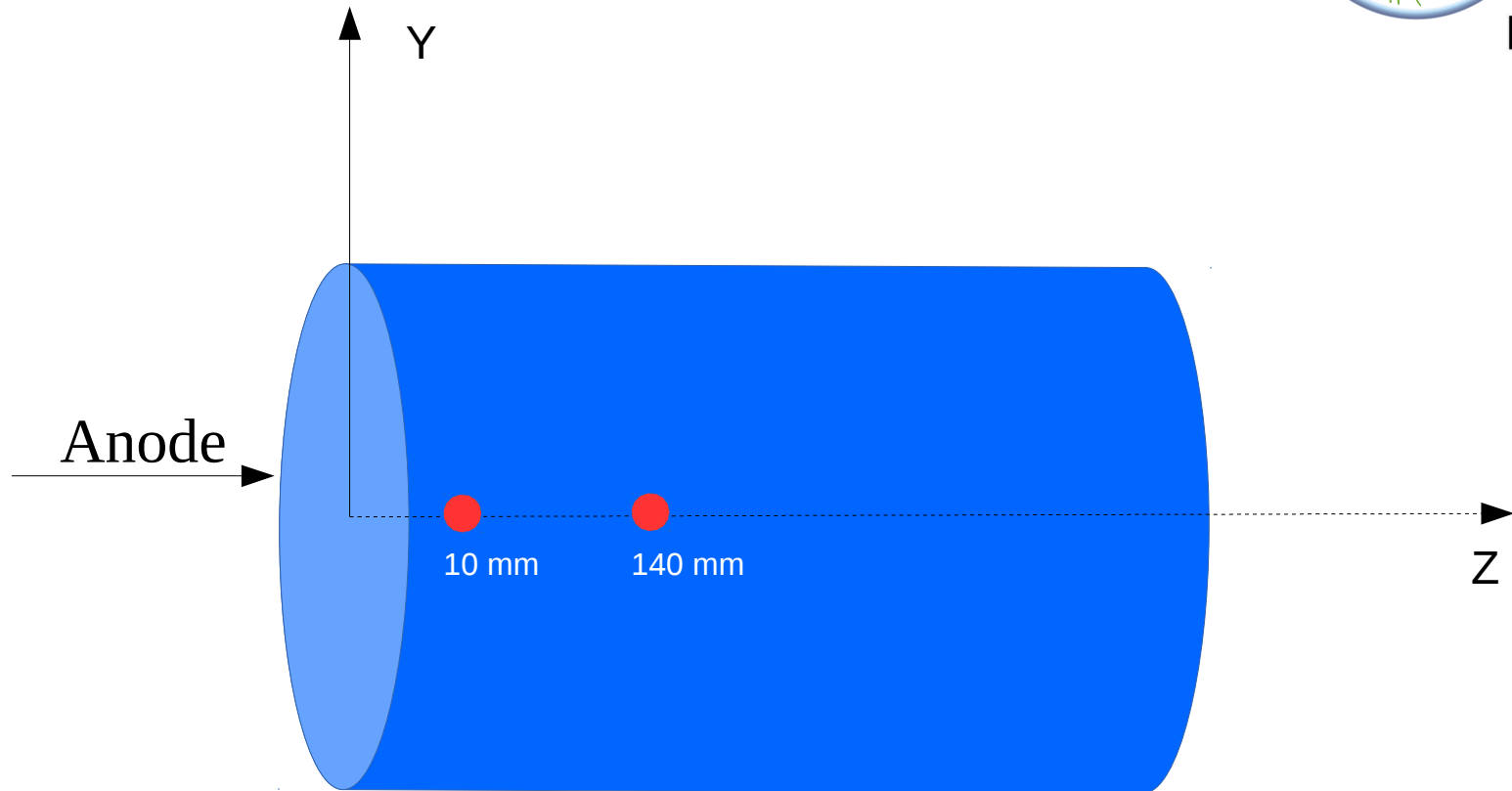
# Test Beam Simulation



# Test Beam Simulation



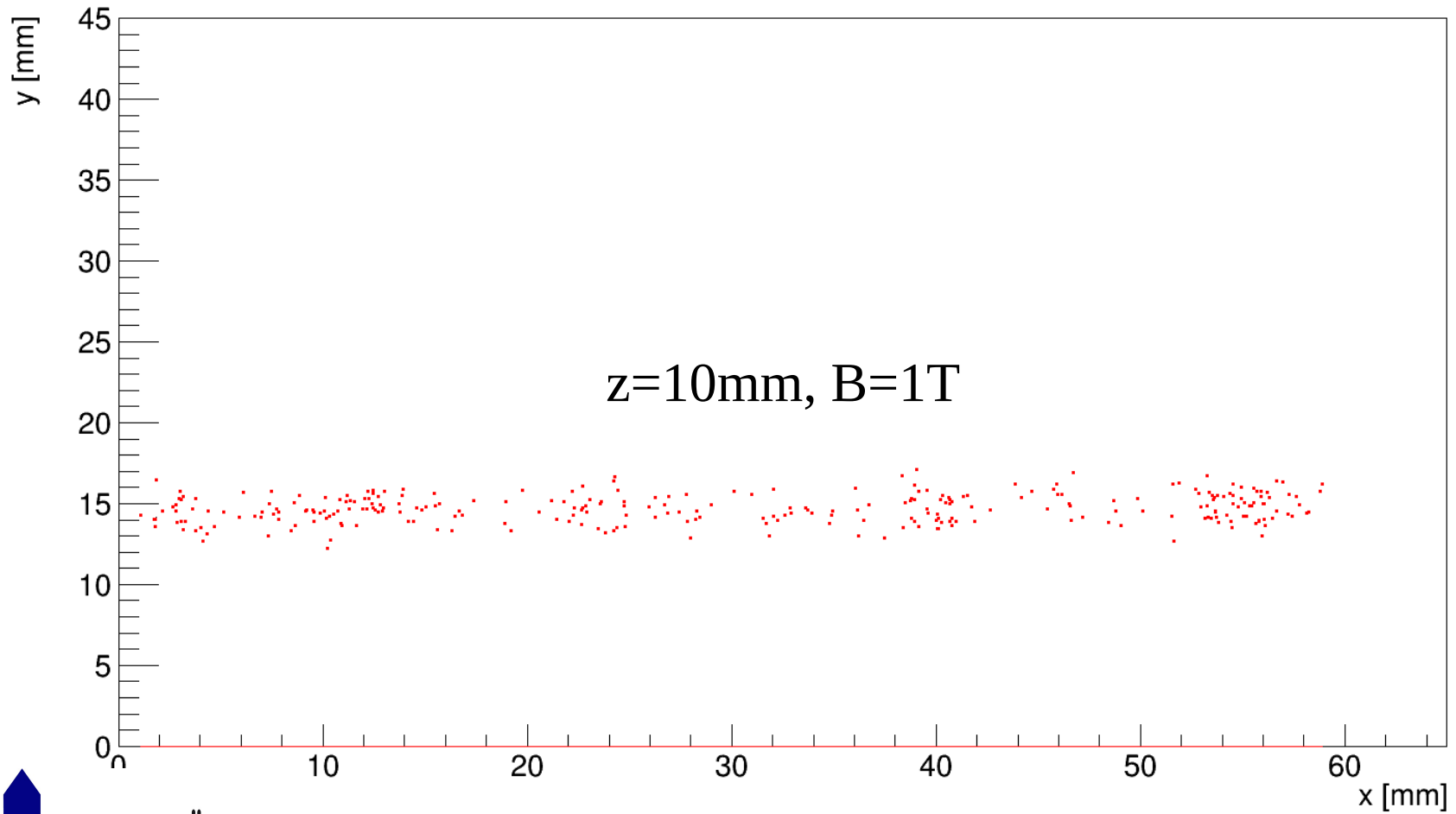
Gas Mixture	T2K
Magnetic Field	1T
Electric Field	260 (V/cm)
Drift Velocity	76.9 (mm/us)
Readout system( Octoboard)	45 X 60 mm
Group Electrons	false
TPC Length	600 mm



# Test Beam Simulation



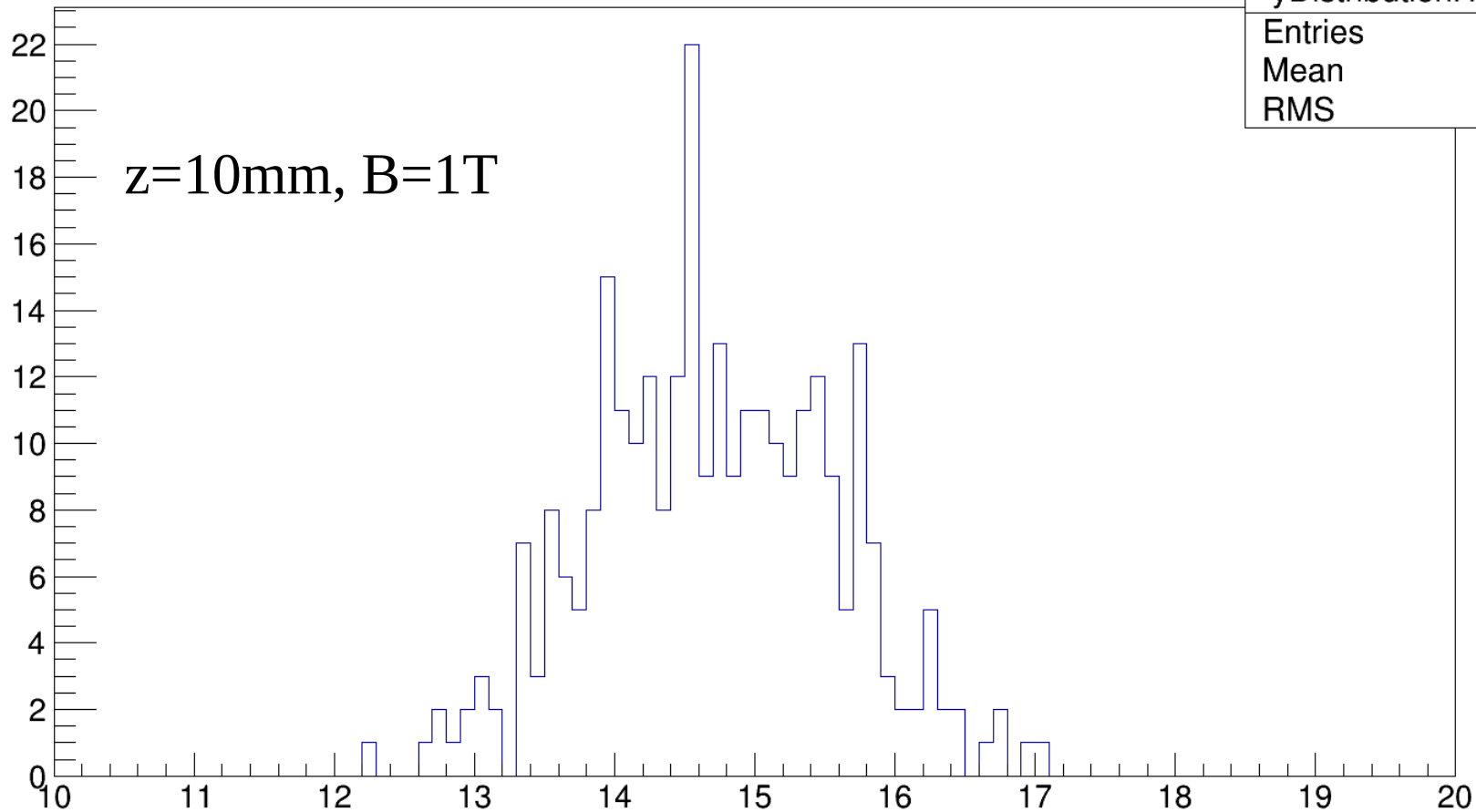
Drawing\_1\_Tracks\_289\_Hits



# Test Beam Simulation



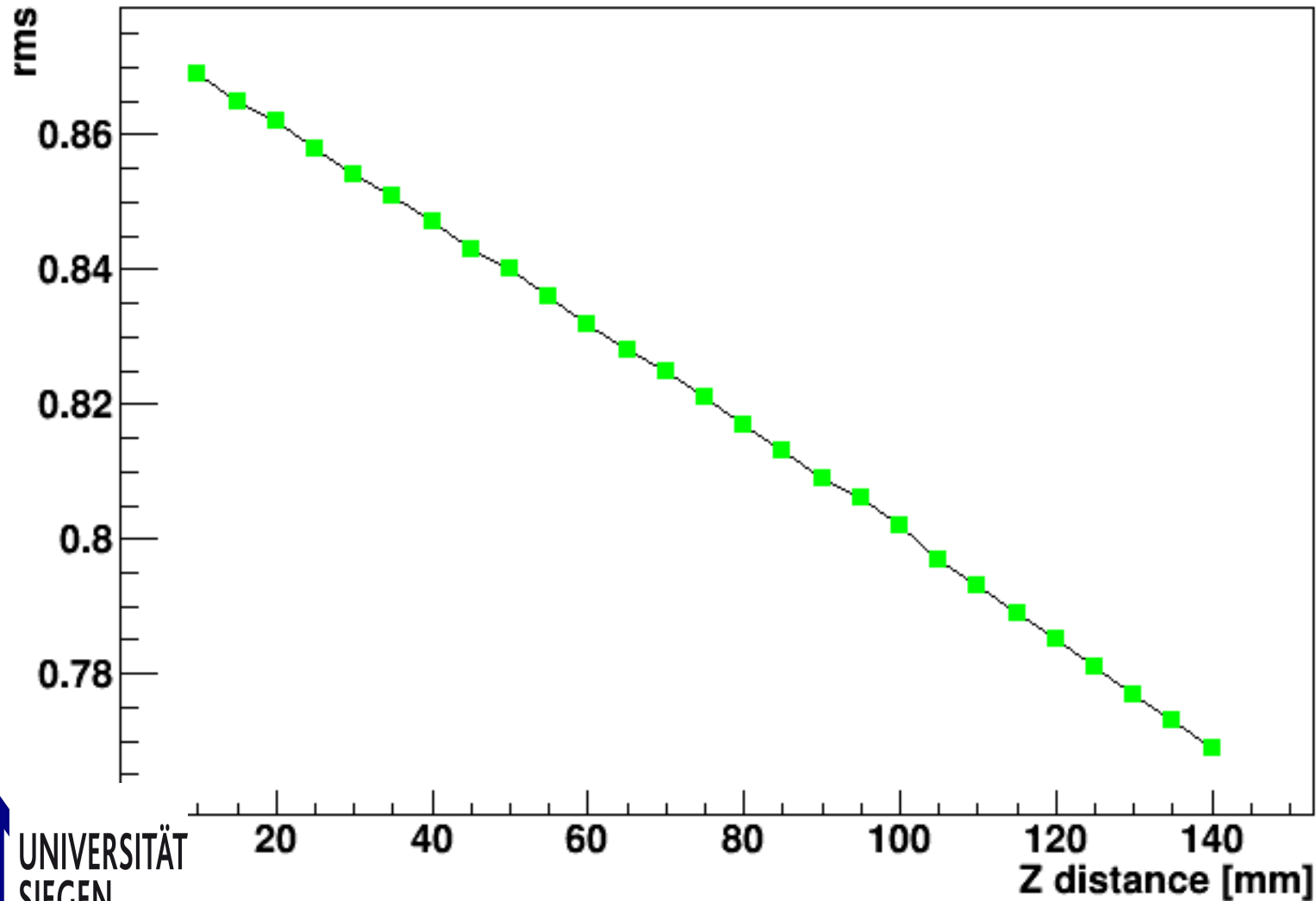
yDistributionHitHisto



# Test Beam Simulation



RMS of Y Distribution for test beam (width of beam  $B= 1T$ )

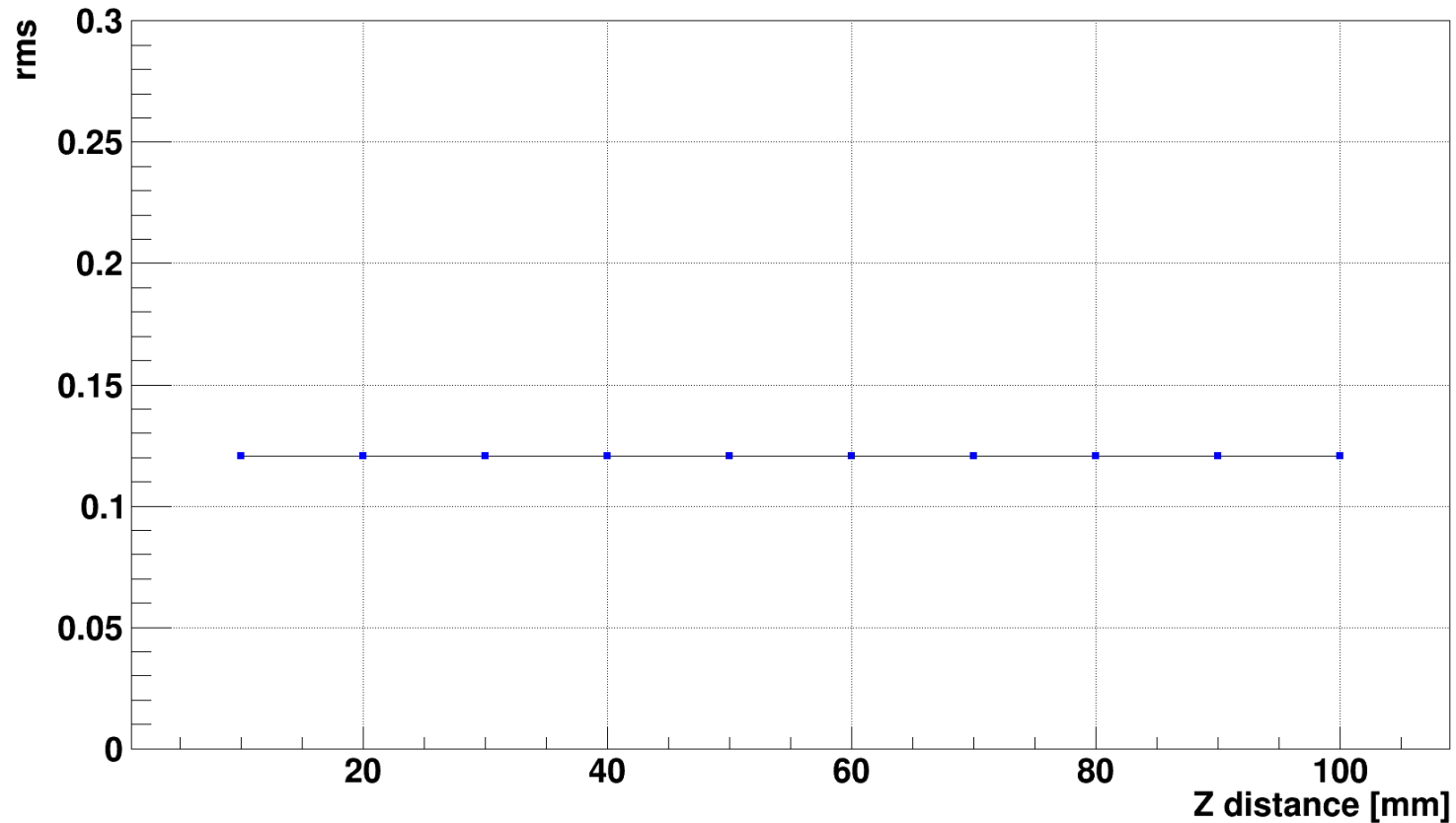




# Test Beam Simulation

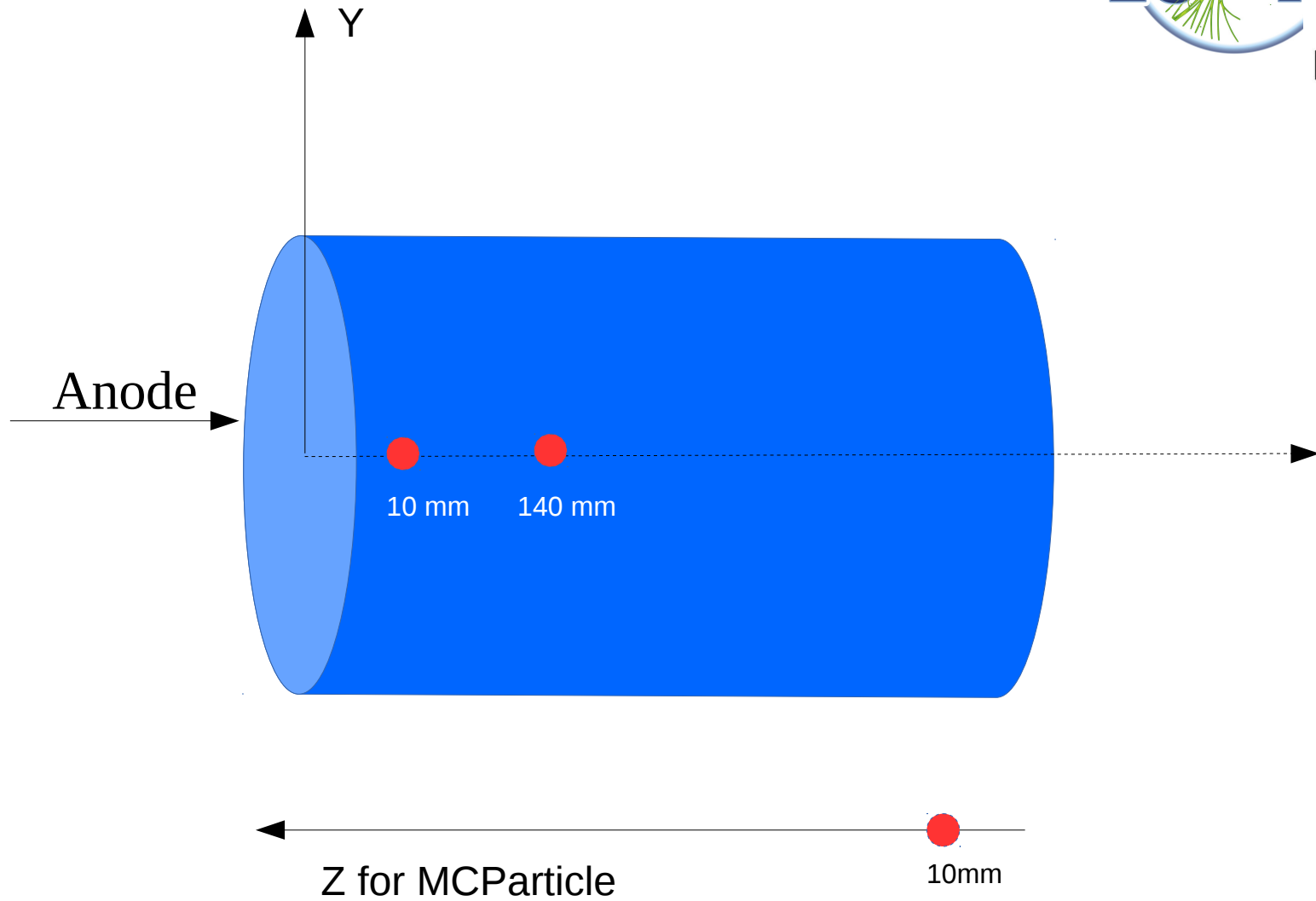


RMS of Y Distribution for Primary Ionization (Test Beam simulation), Group Electron:False, B= 1T



RMS (mm) for Y Distribution for Primary Ionization , B= 1T

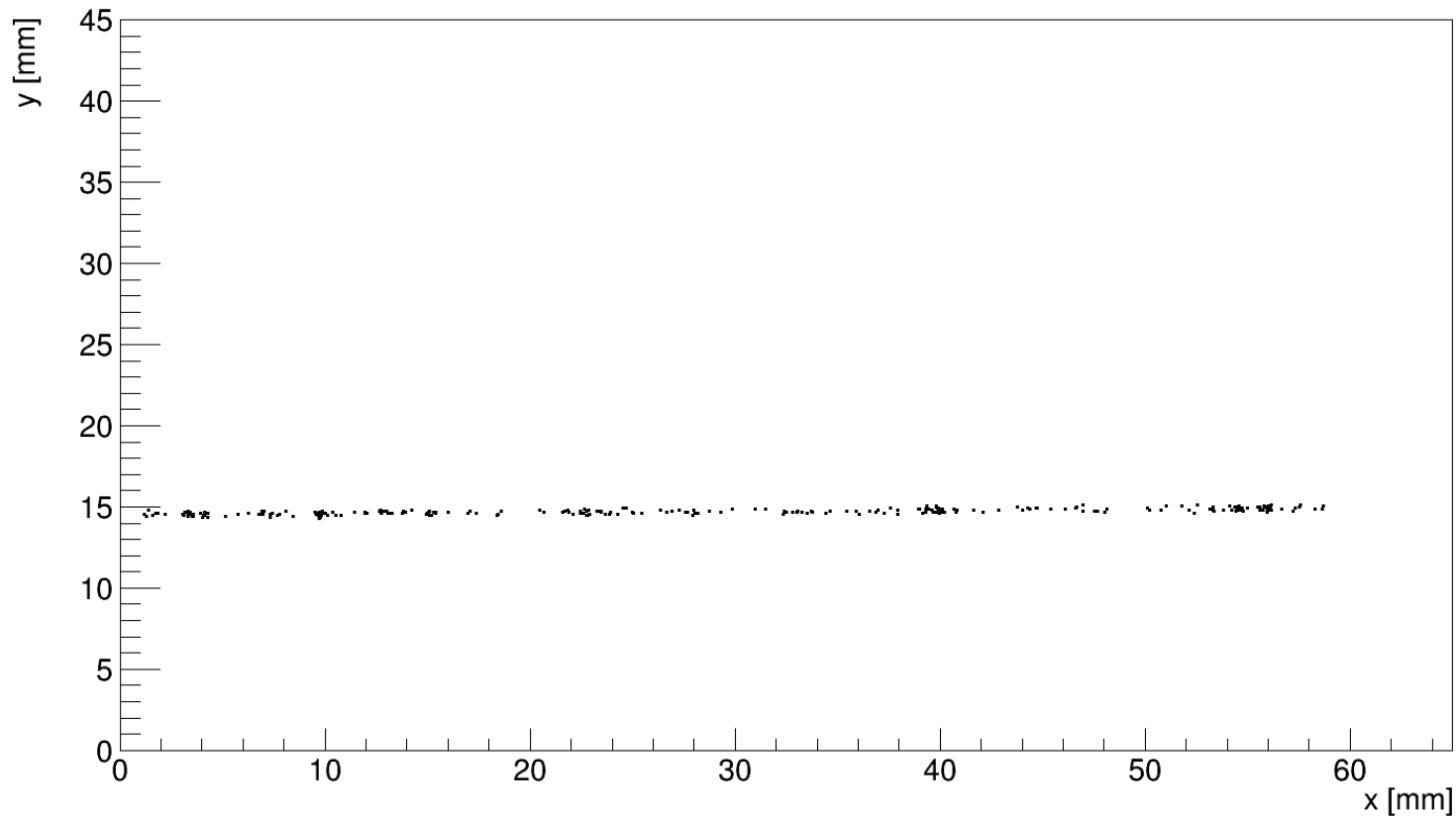
# Test Beam Simulation



# Test Beam Simulation



Drawing\_no\_Tracks\_289\_Hits

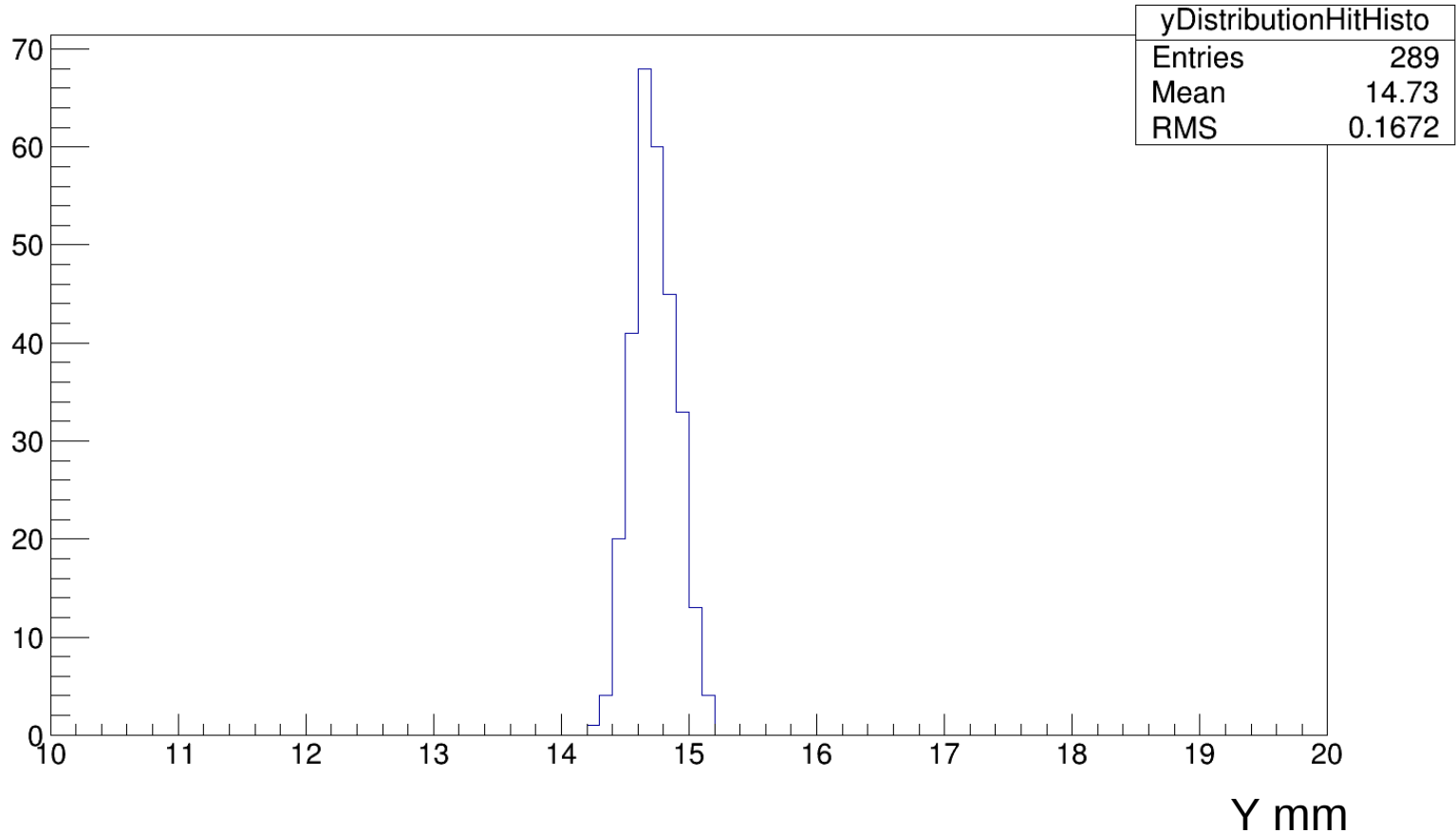


590 mm from Cathode => 10 mm from anode  
 $B = 1T$

# Test Beam Simulation



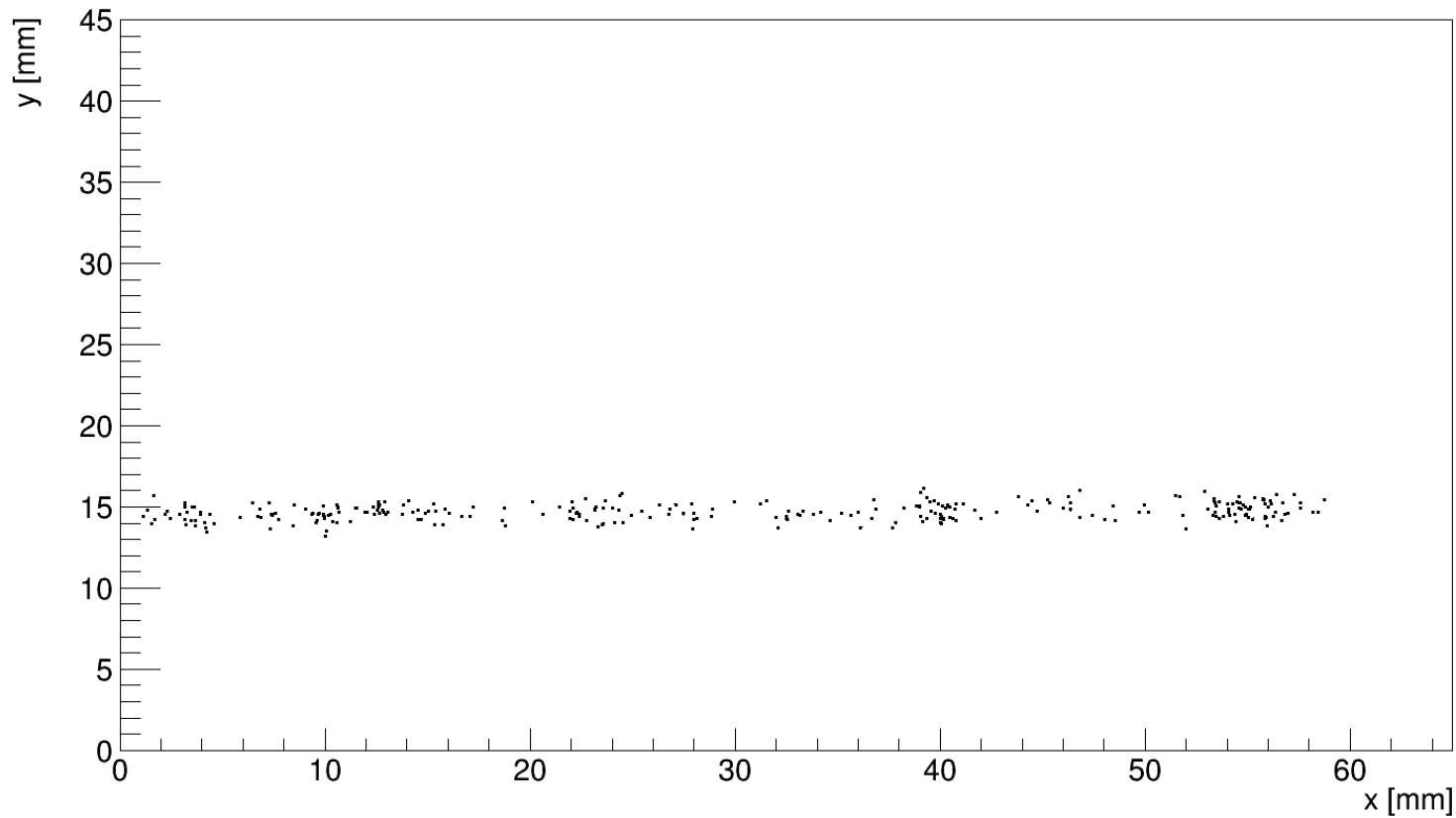
yDistributionHitHisto



# Test Beam Simulation



Drawing\_no\_Tracks\_289\_Hits

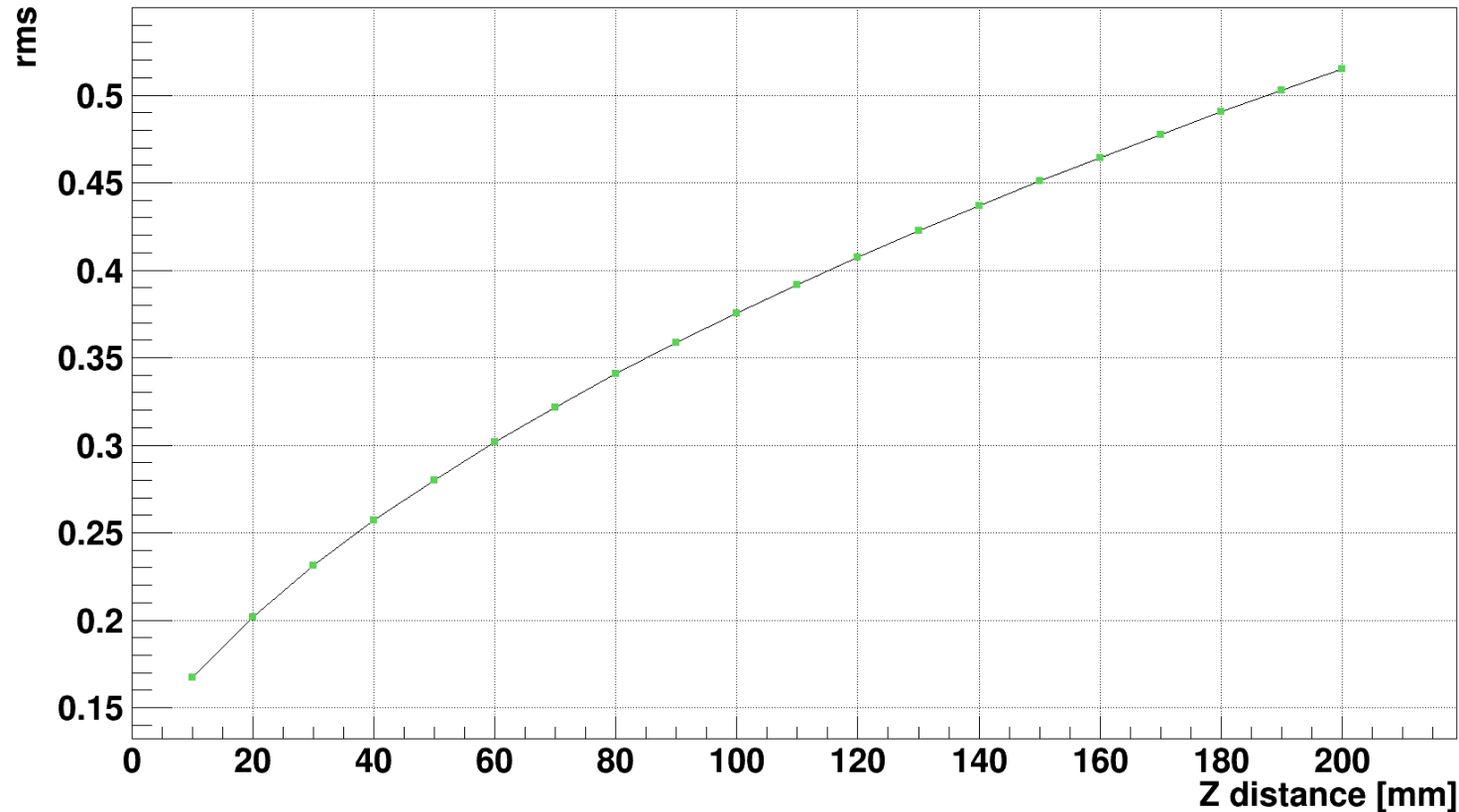


400 mm from Cathode => 200 mm from anode  
B = 1T

# Test Beam Simulation



RMS of Y Distribution after Drifting (Test Beam simulation), B= 1T



400 - 600 mm from Cathode => 10 - 200 mm from anode  
B = 1T

# Fast Hough Transform.



- In cooperation with Claus Kleinwort from Desy for one data package for real test beam:
  - 50 Events : 0 Tracks
  - 41 Events: 1 Tracks
  - 9 Events: 2 Tracks

## Outlook:

- Correcting the coordinate
- Comparing different algorithms for finding and fitting for both real data and simulation.
- Doing simulation for one model end plate :
- Calculation the number of hits via HEED and comparing the result with Primary Ionization Processor.



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

