# PP2PP RUN09

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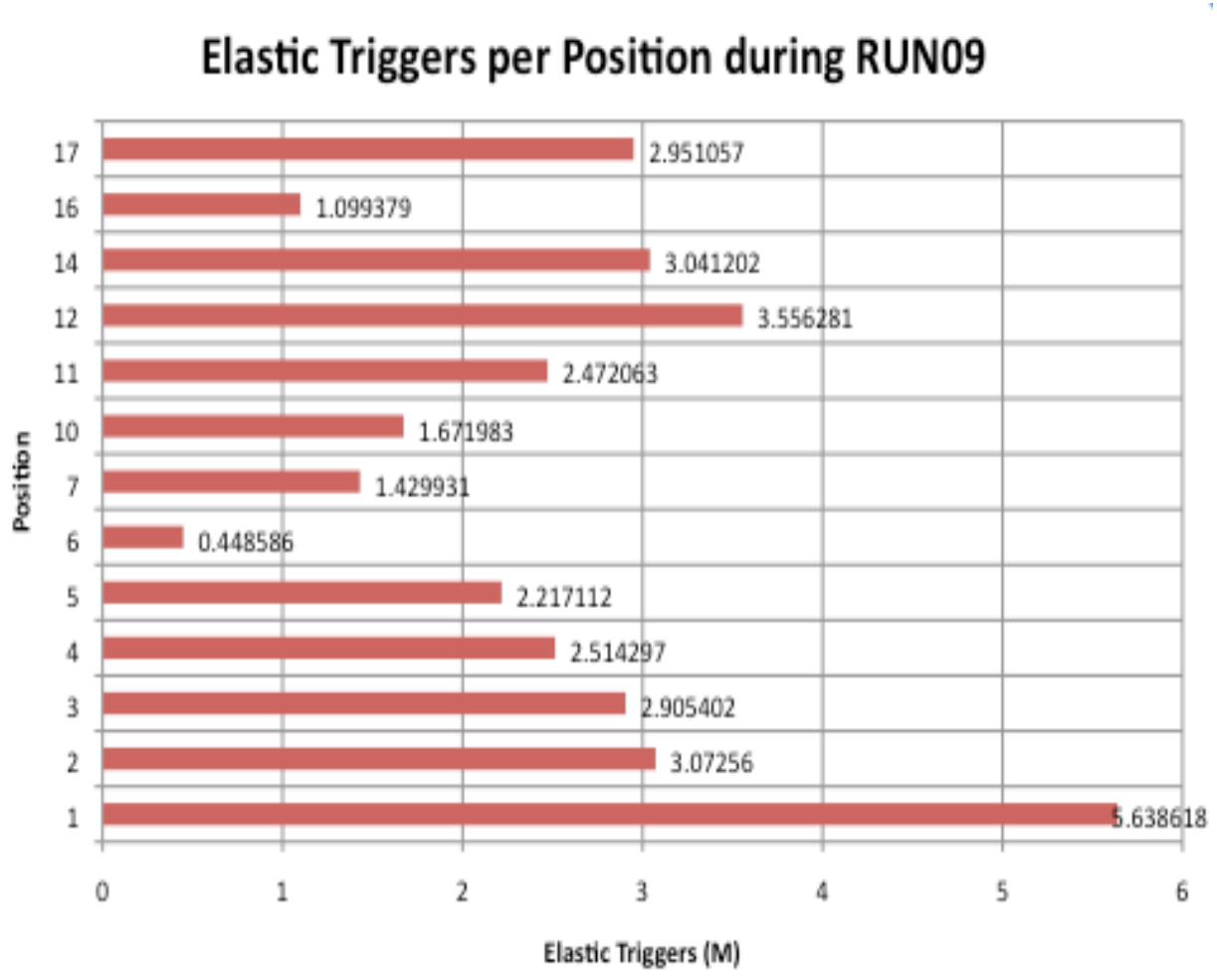
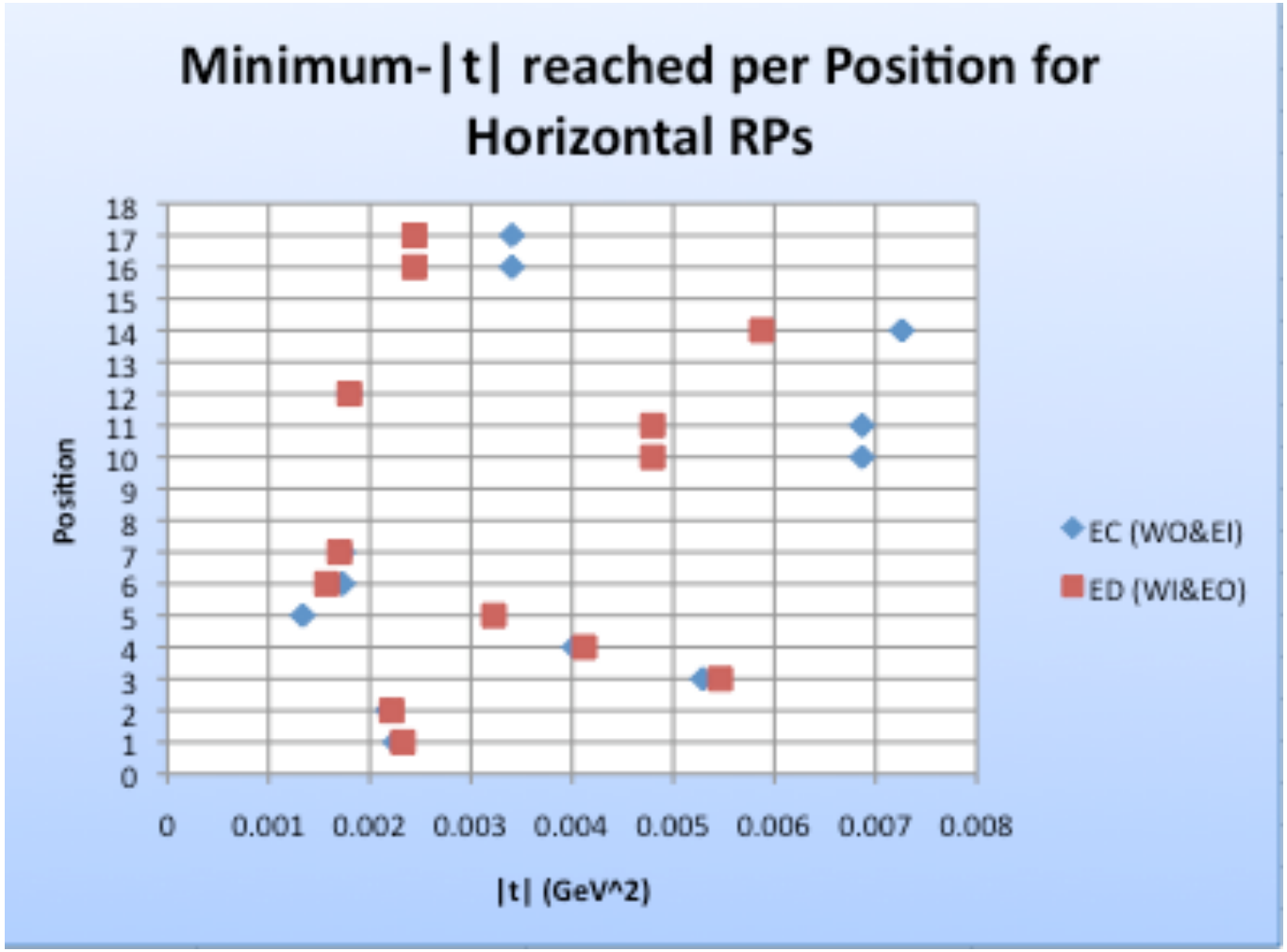
# Analysis Plans

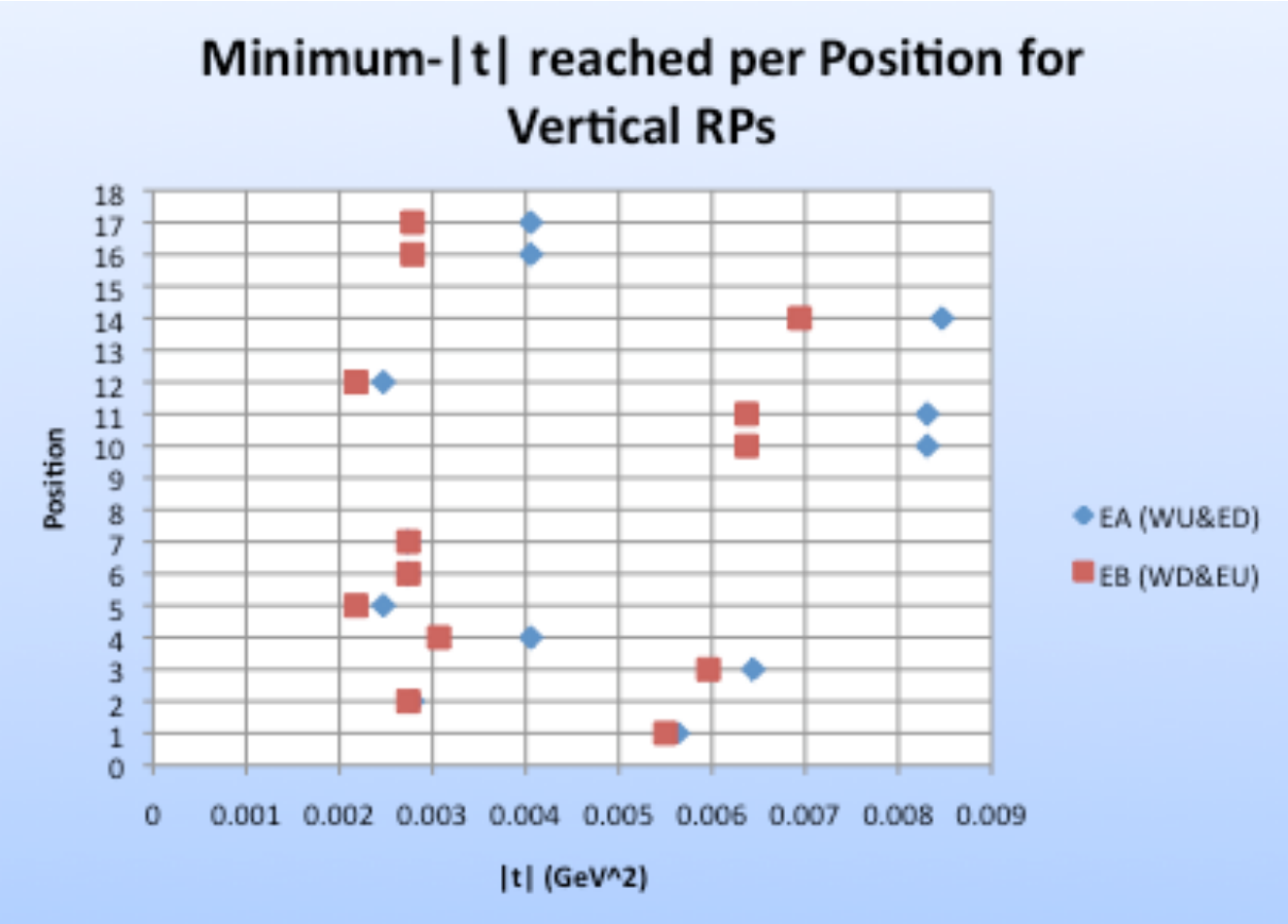
- Spin-dependence of elastic scattering
  - Measurements of single and double spin asymmetries
- Specific tasks
  - Calibration (Alignment, Survey)
  - Acceptance Simulations
  - d$N$/d$t$ distribution

# Specific Tasks

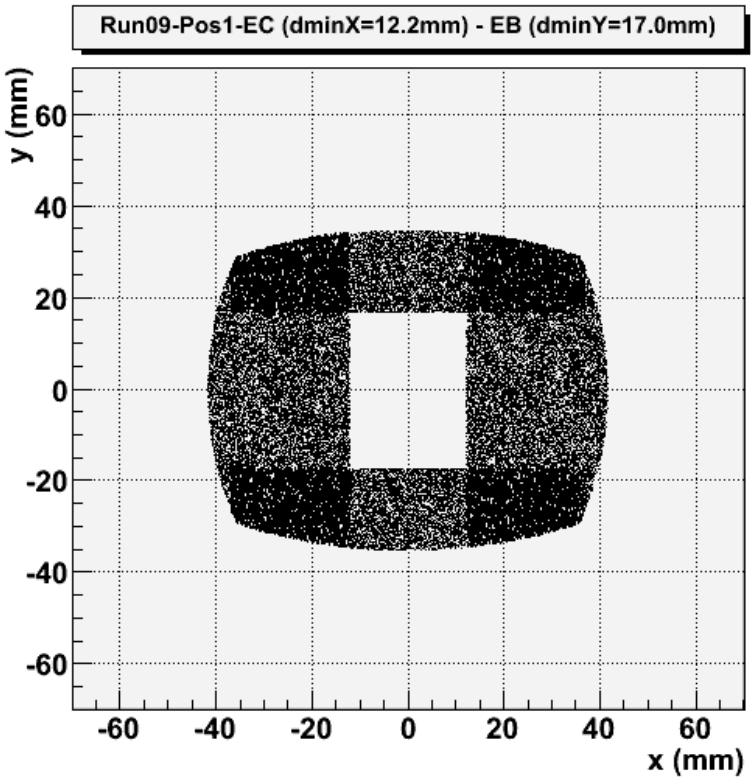
- Calibration
  - Alignment and survey interpretation
    - Survey is finished…need to get survey information from BNL
  - Alignment corrections using elastic events
- Acceptance
  - Acceptance simulations for actual RP positions as in Run09
  - For now:
    - The current transport matrices were calculated <u>from the design magnet strengths</u> that were used to calculate the required currents during Run09
    - I have not yet implemented different transport matrices for blue and yellow

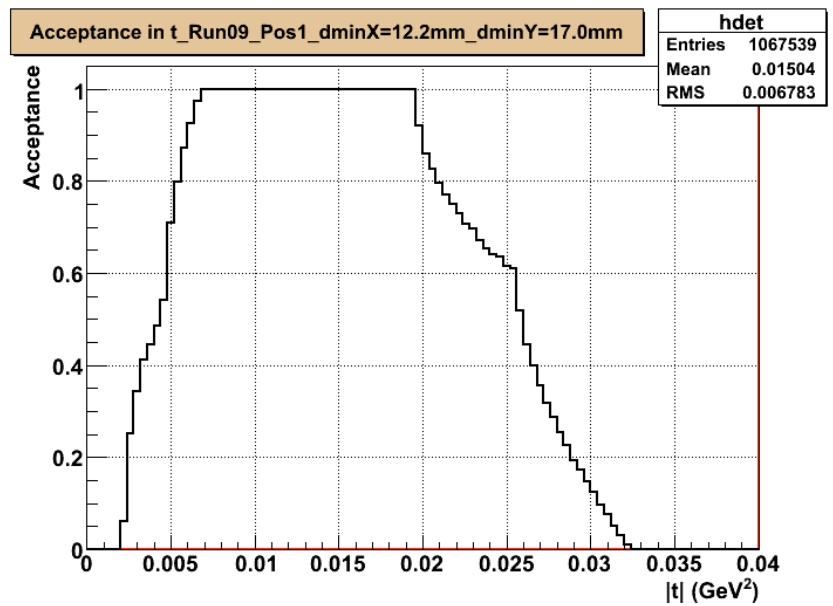

Elastic Triggers per Position during RUN09
Position
17
16
14
12
11
10
7
6
5
4
3
2
1
2.951057
1.099379
3.041202
3.556281
2.472063
1.671983
1.429931
0.448586
2.217112
2.514297
2.905402
3.07256
5.638618
0
1
2
3
4
5
6
Elastic Triggers (M)


Minimum-|t| reached per Position for Horizontal RPs
Position
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
0
0.001
0.002
0.003
0.004
0.005
0.006
0.007
0.008
|t| (GeV^2)
EC (WO&EI)
ED (WI&EO)

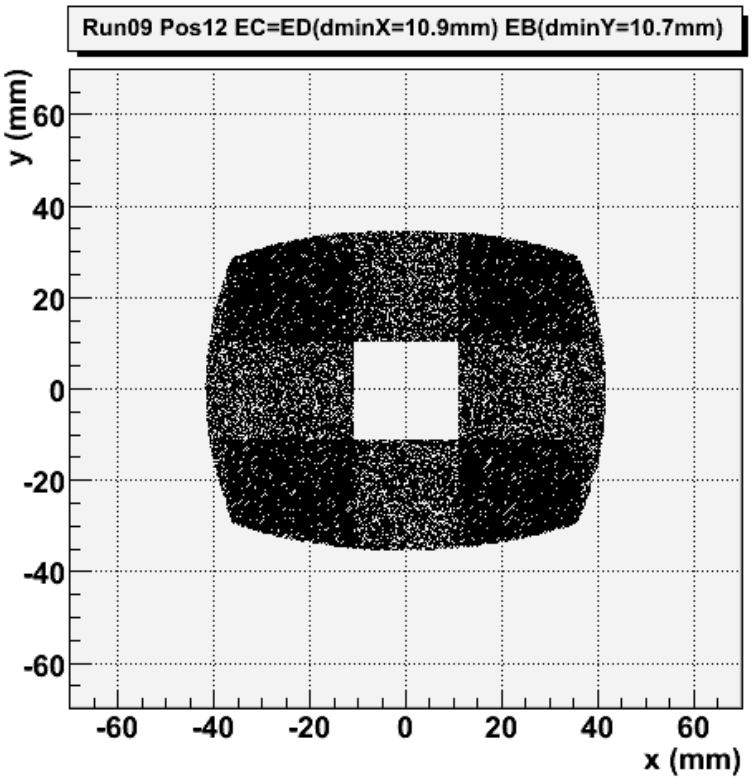

Minimum-|t| reached per Position for Vertical RPs
Position
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
0
0.001
0.002
0.003
0.004
0.005
0.006
0.007
0.008
0.009
|t| (GeV^2)
EA (WU&ED)
EB (WD&EU)

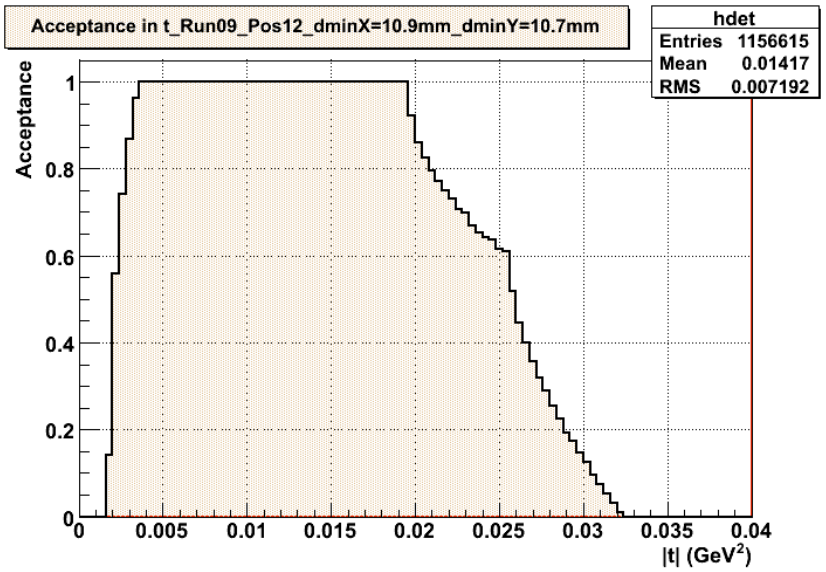
# Position 1
# (#Elastic triggers ~ 5.6M)



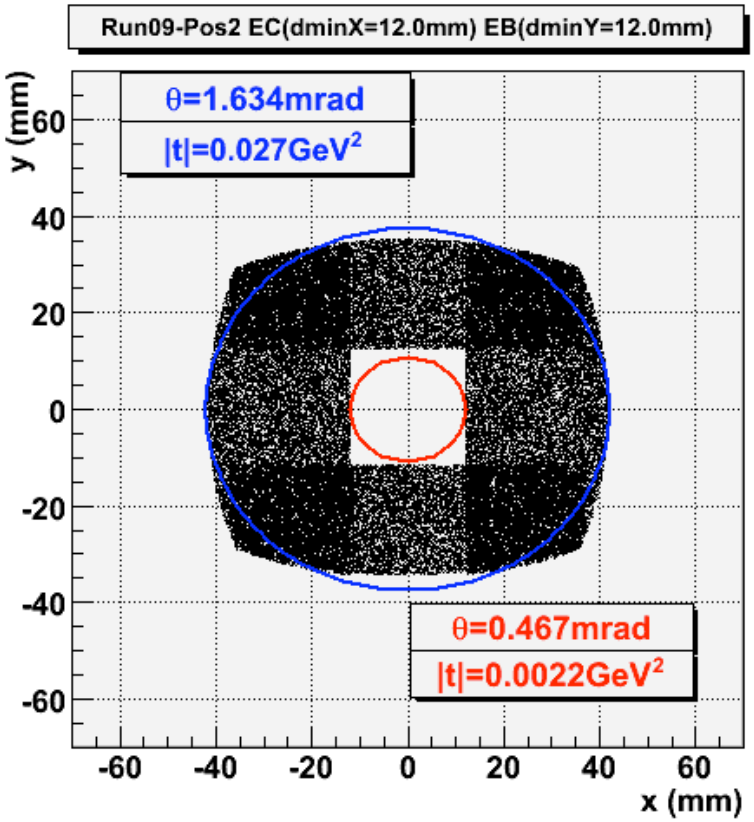



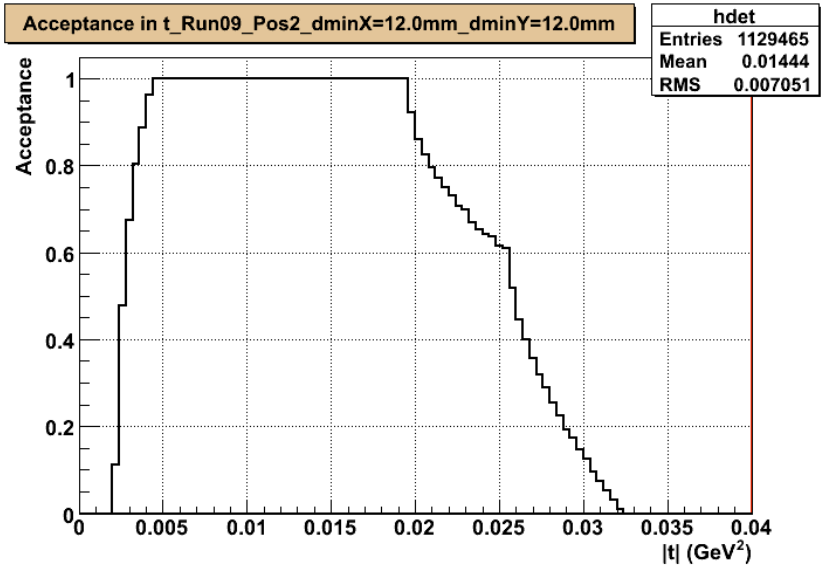
# Position 12 (#Elastic triggers ~ 3.5M)



# Position 2 (#Elastic triggers ~ 3M)



# Acceptance

## Comparisons Between Different Positions

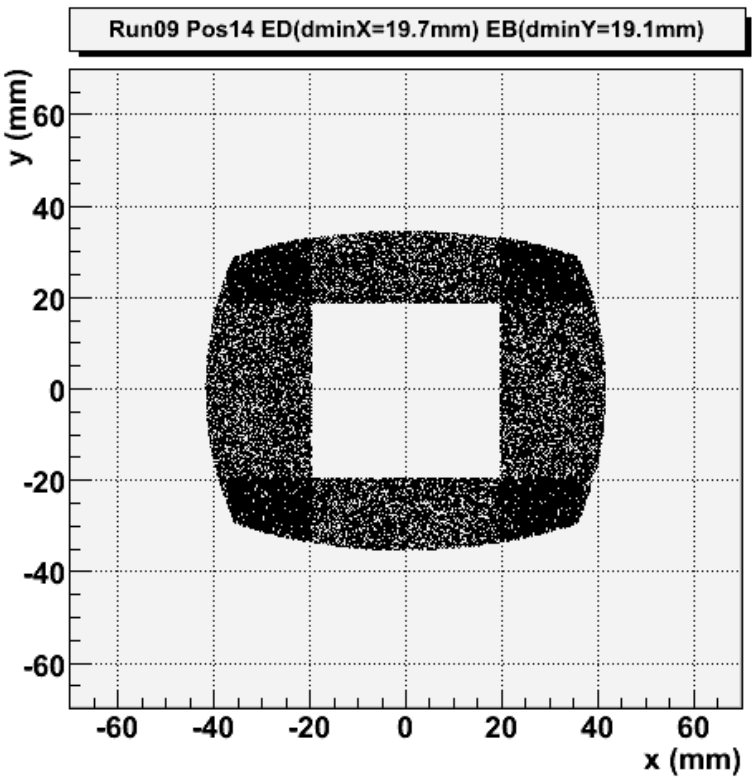
- For different positions, one can easily observe a difference in the low-*t* region of the acceptance (reachable min-*t* value)
- Not much difference in the high-*t* region

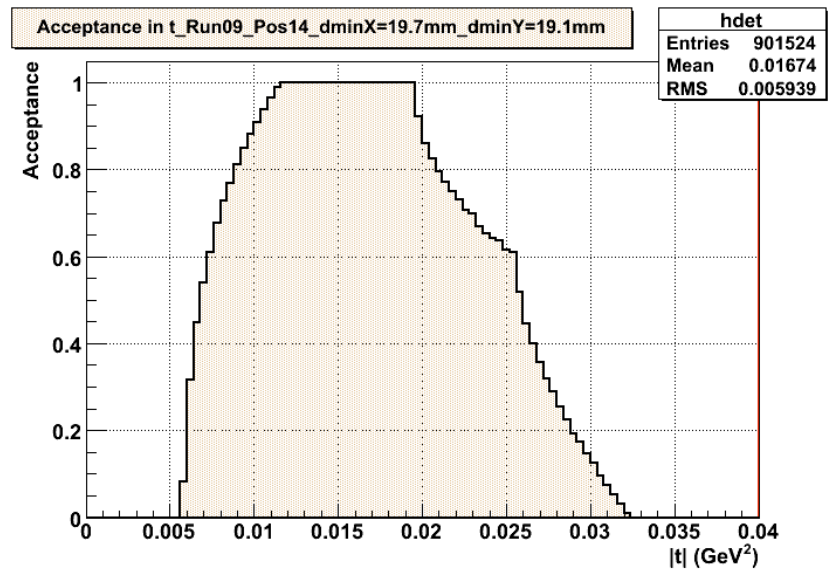
# Specific Tasks

- Acceptance
  - Acceptance simulations for actual RP positions as in Run09
    - Need to consider the exact position of each Roman Pot
  - Use different transport for blue and yellow
  - Should use transport matrices that are being calculated from the strengths that correspond to the magnet settings during Run09 (not design strengths).
  - Include systematic effects: beam divergence, z-vertex etc.
  -

# Additional Slides

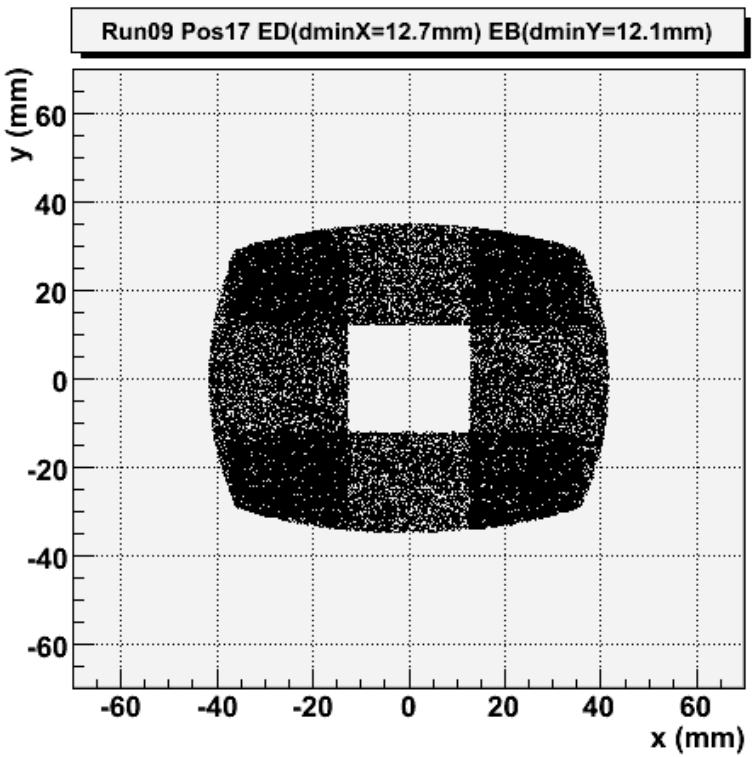
# Position 14 (#Elastic triggers ~ 3M)

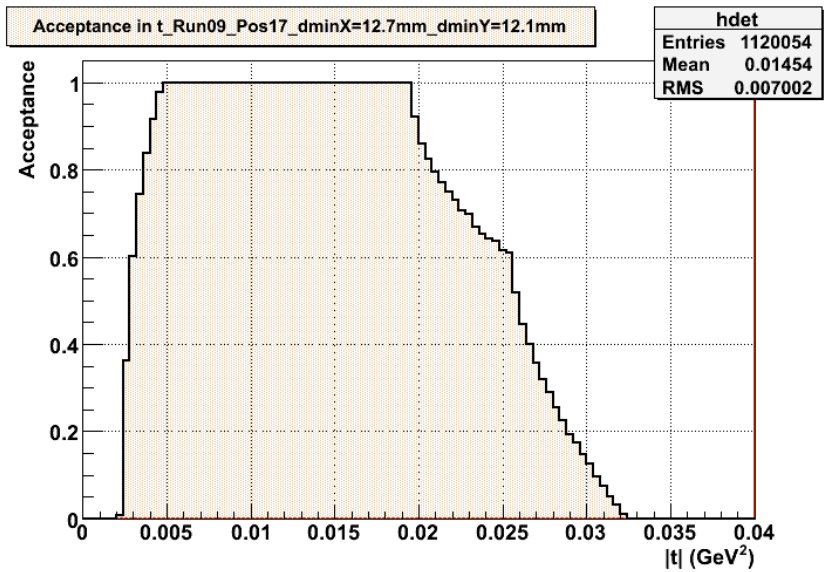


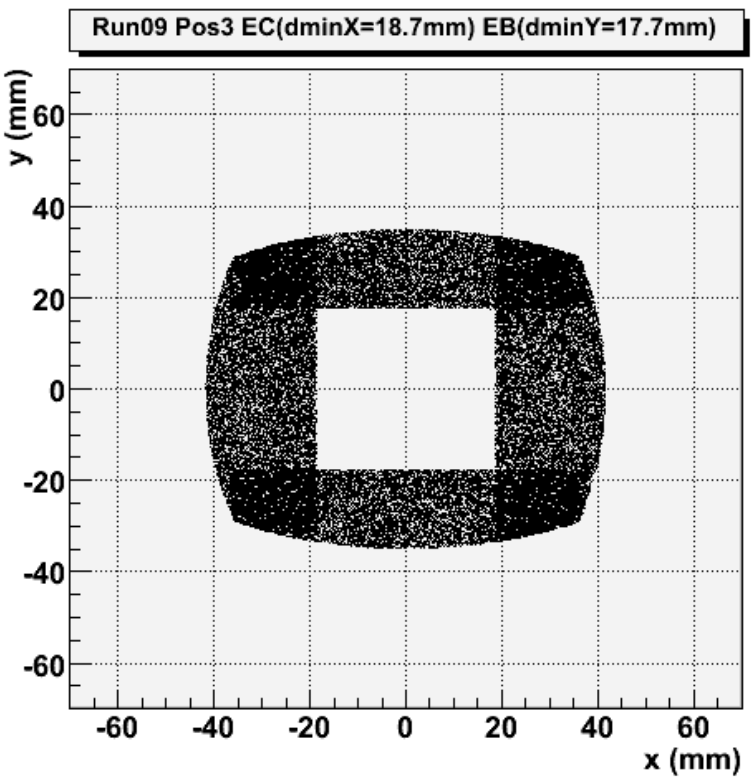
# Position 17 (#Elastic triggers ~ 2.9M)

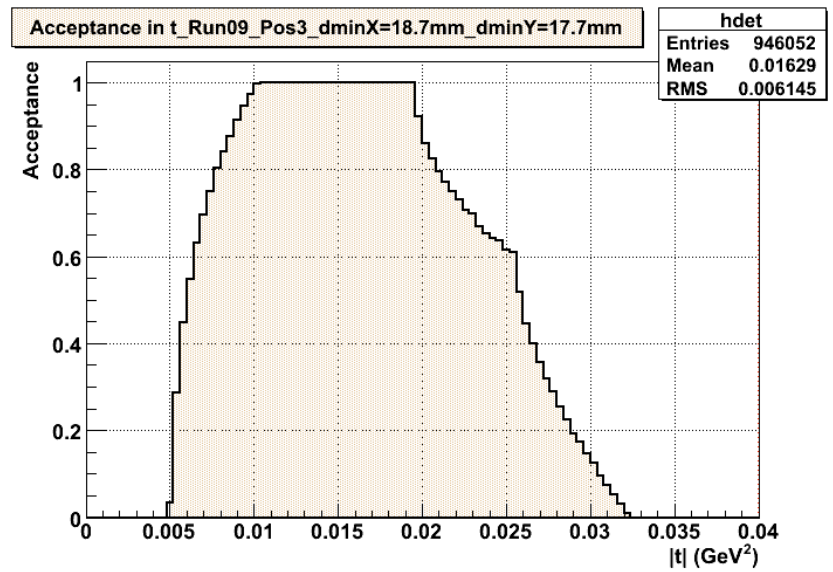
Position 16 plots are the same and # Elastic triggers for Pos16 ~ 1M



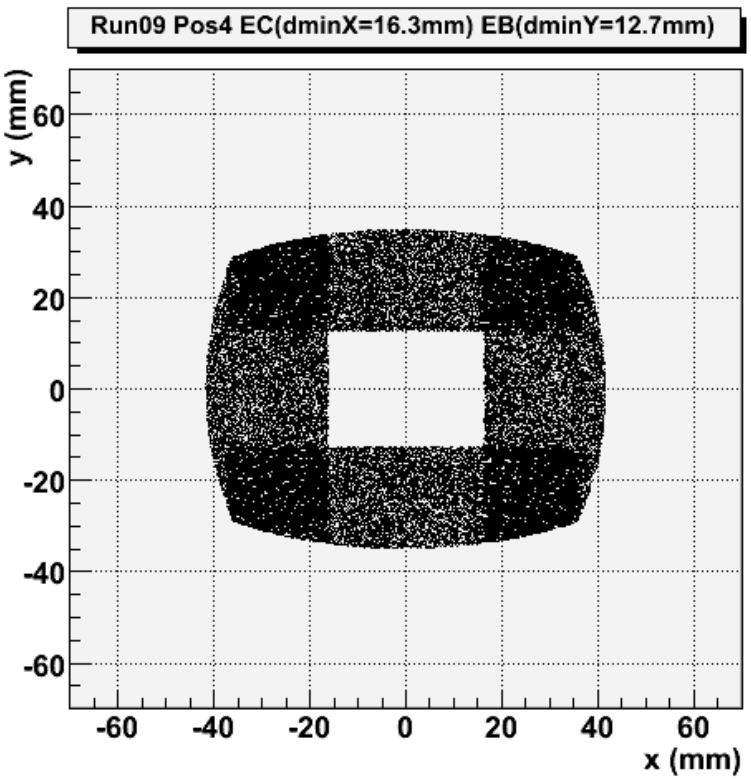



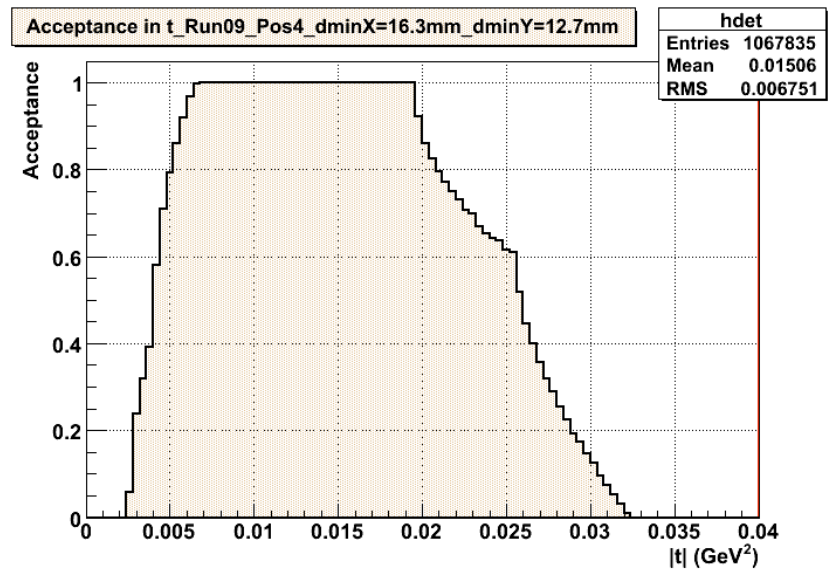
# Position 3 (~2.9M)



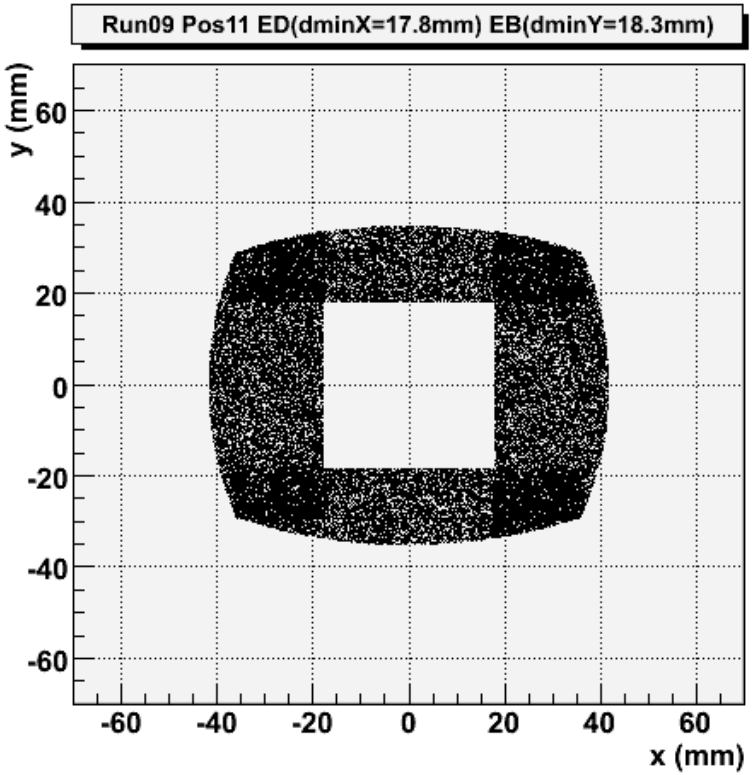
# Position 4 (~2.5M)

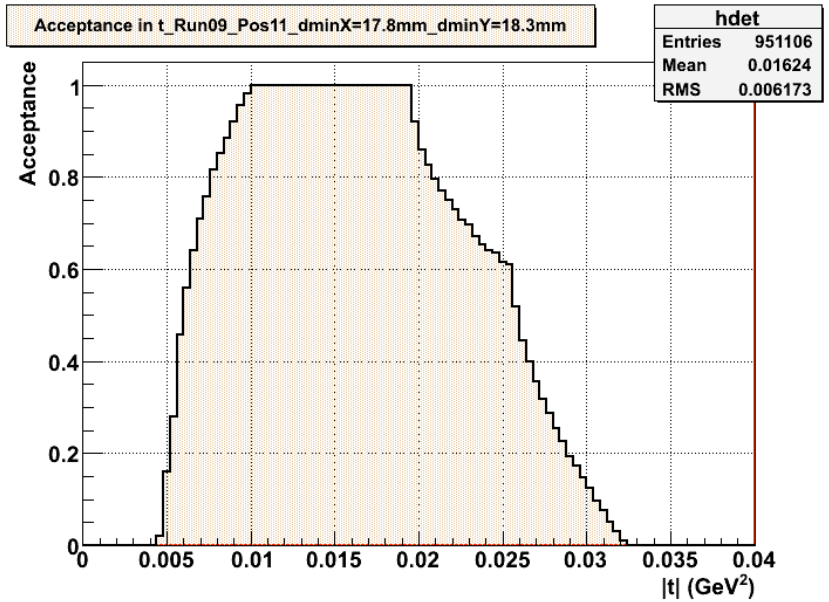


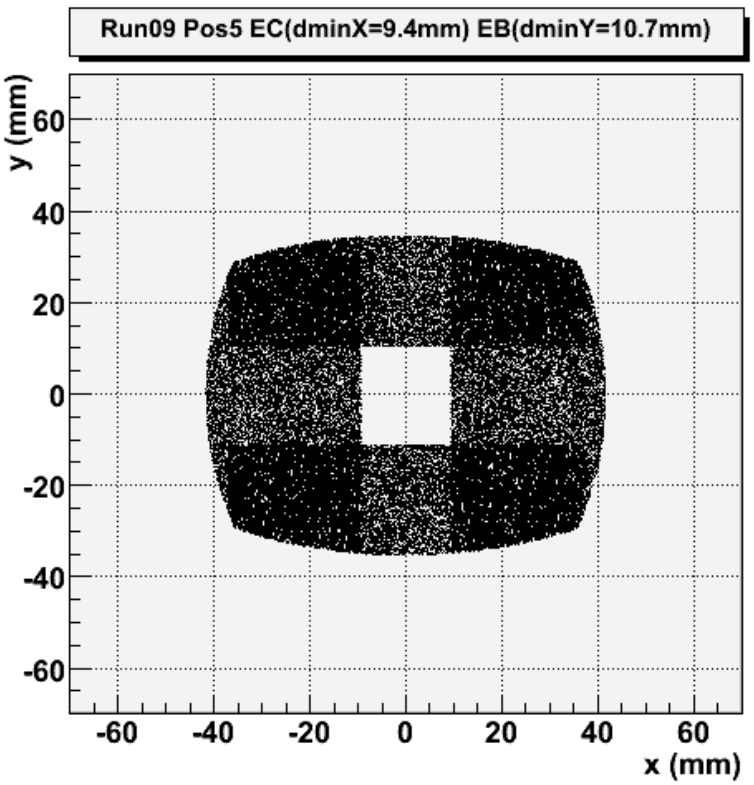
# Position 11 (~2.4M)

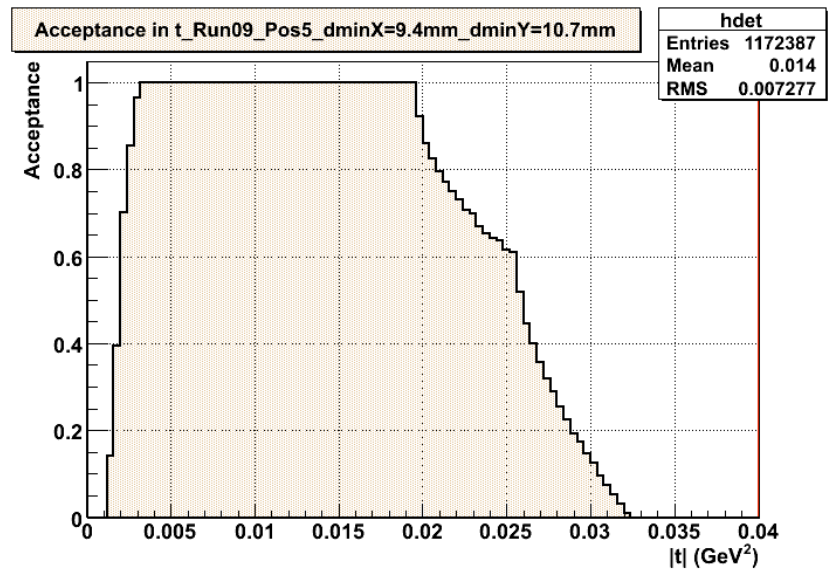
Position 10 plots are the same and #Elastic triggers for Pos10 ~ 1.6M



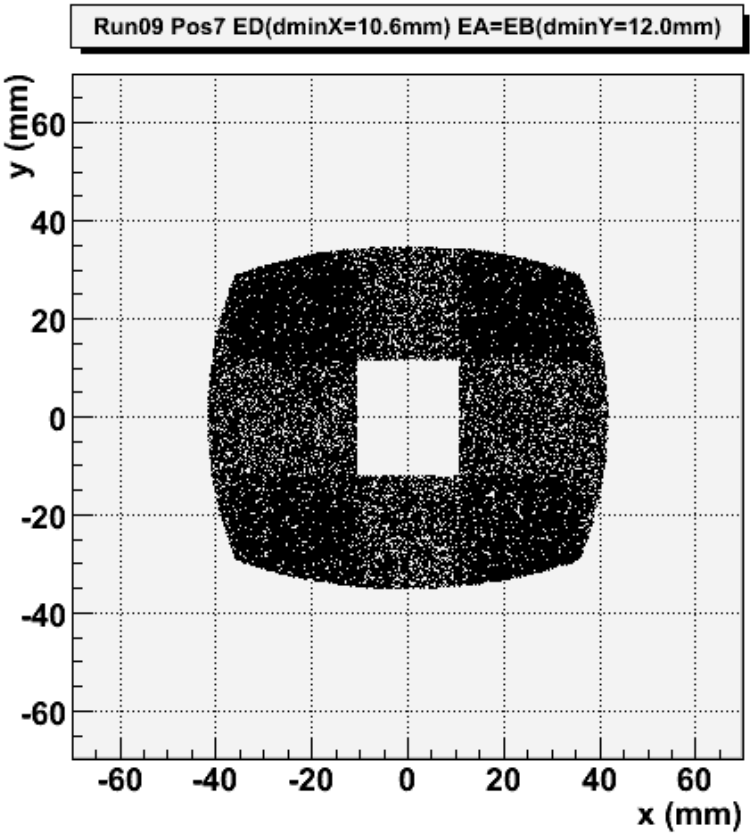



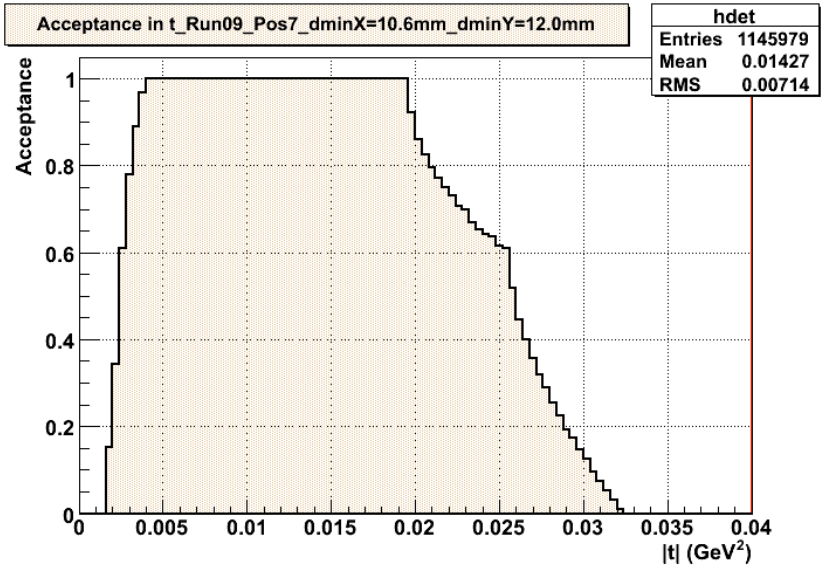
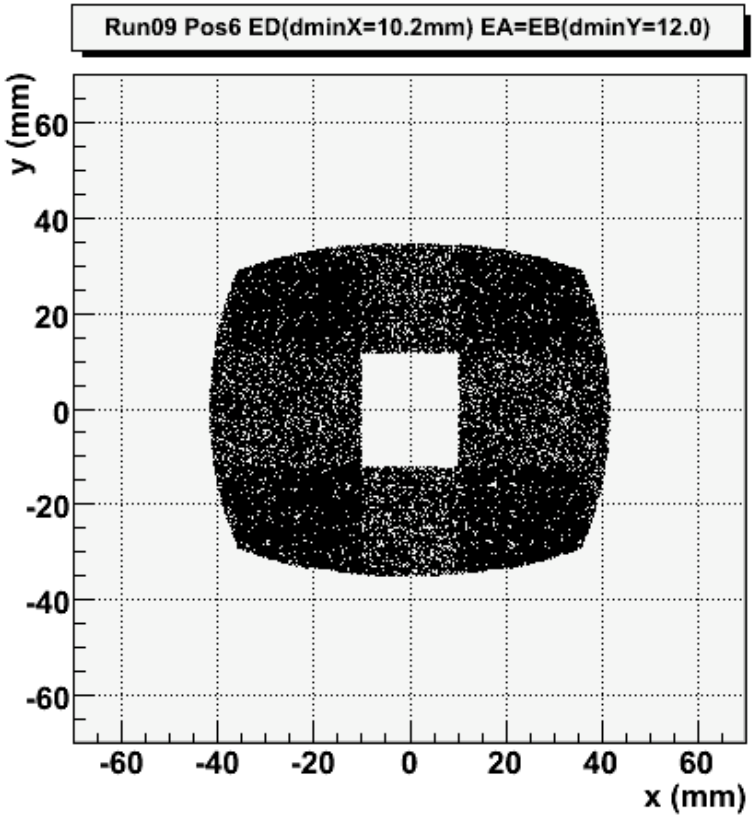
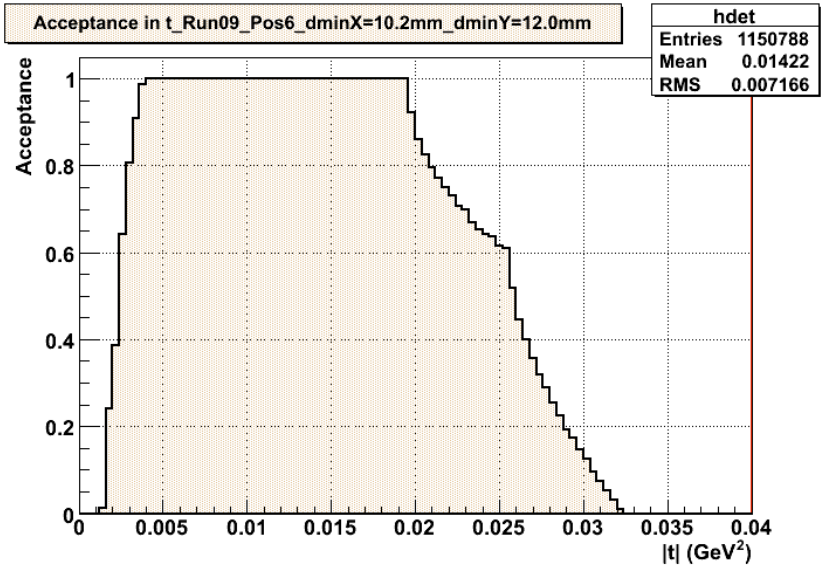
# Position 5 (~2.2M)



# Position 7 (~1.4M)






# Position 6 (440k)