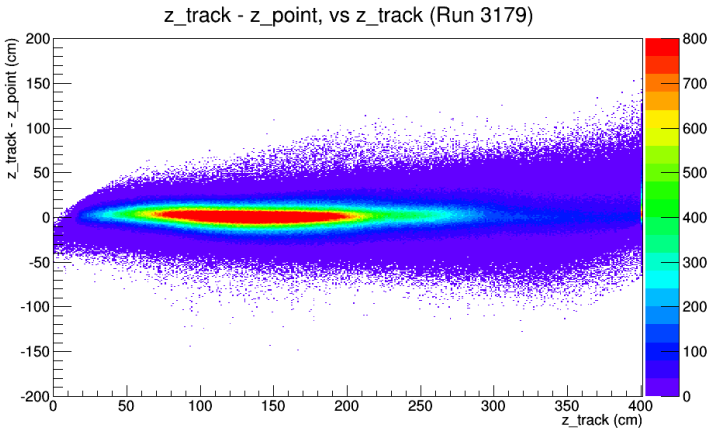
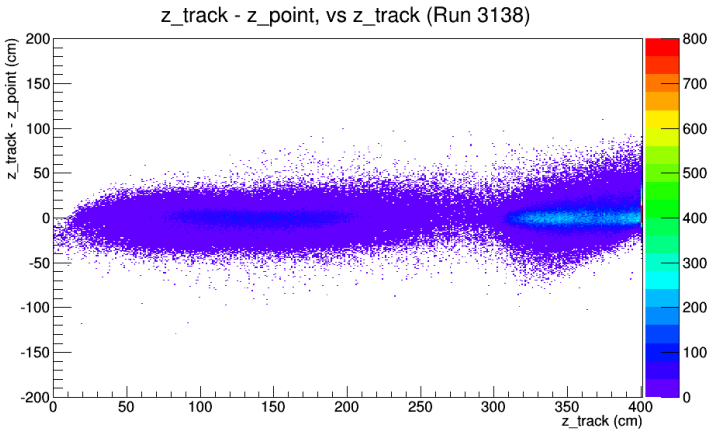
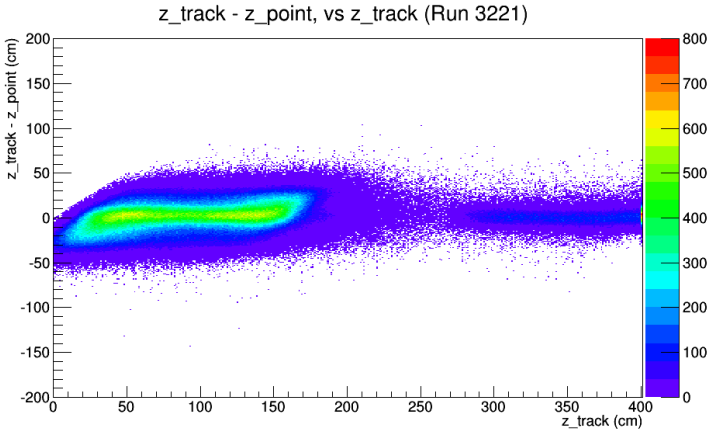
z-position resolution

1. Plot the difference $z_{track} - z_{point}$. Fit a gaussian. Get the mean and sigma.
2. In order to check z-behaviour/dependence: plot the same difference but this time as a function of z_{track}.
3. Take slices of this 2D histogram and plot the mean and sigma for each slice (and therefore as a function of z_{track}).
4. "Slice width": 1cm (400 values)
5. Runs used:
   (a) Run 3179 (B = ON)
   (b) Run 3138 (B = OFF)
   (c) Run 3221 (Cosmics)

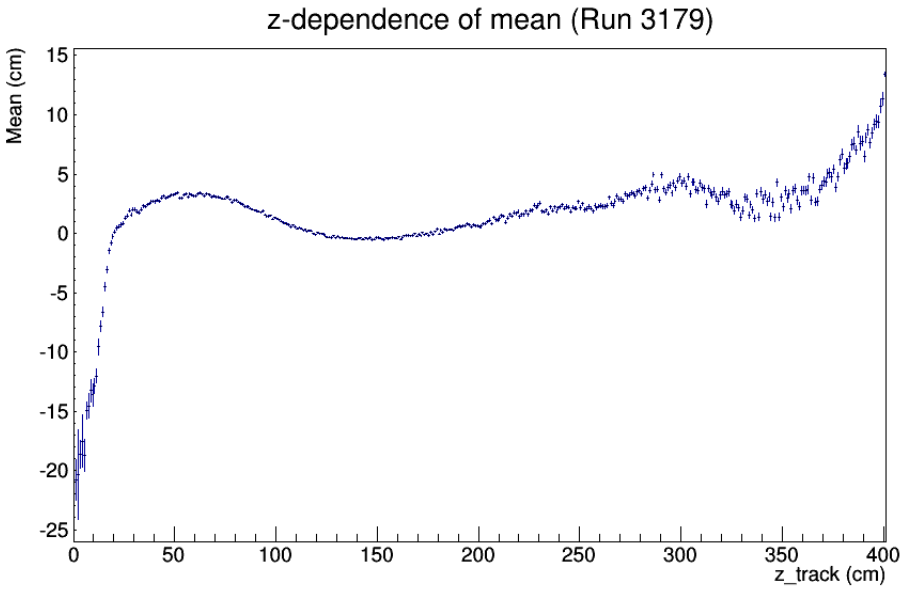
$z_{track} - z_{point}$ as a function of z_{track}

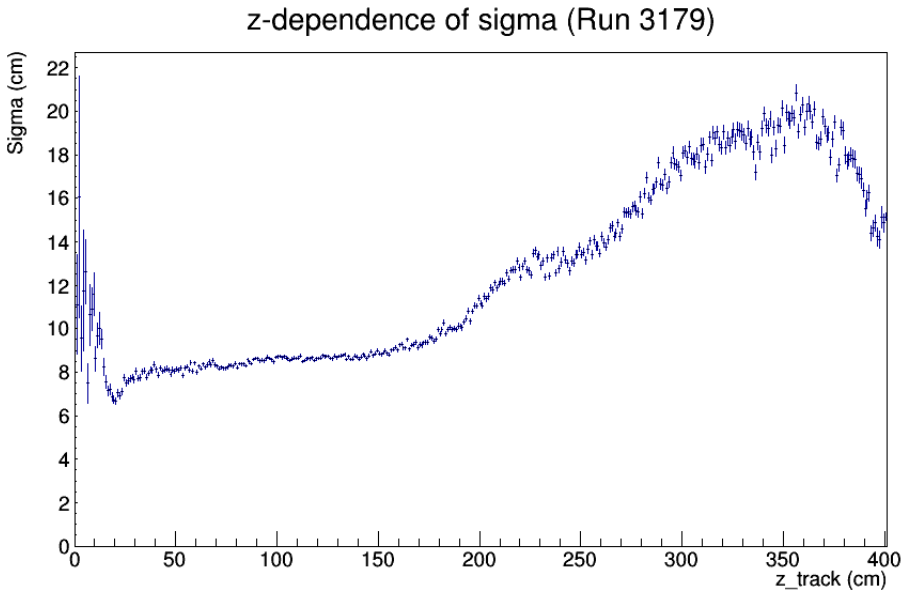




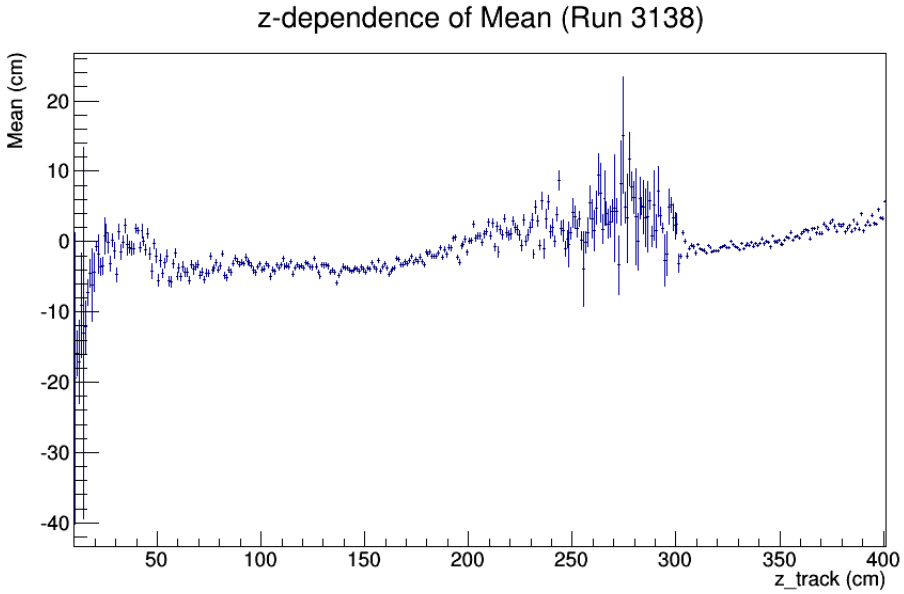


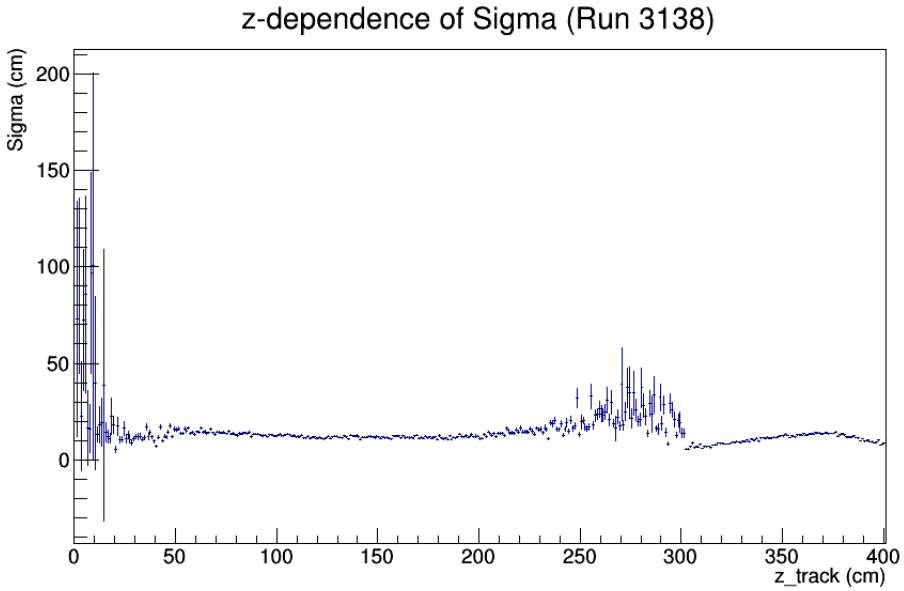
Run 3179


z-dependence of mean (Run 3179)
Mean (cm)
15
10
5
0
-5
-10
-15
-20
-25
0
50
100
150
200
250
300
350
400
z_track (cm)

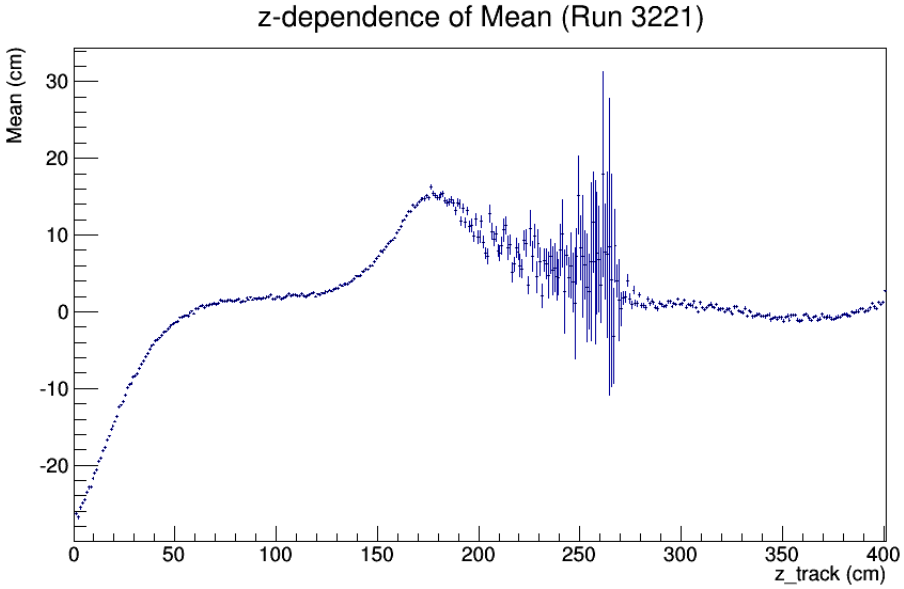

z-dependence of sigma (Run 3179)
Sigma (cm)
22
20
18
16
14
12
10
8
6
4
2
0
0
50
100
150
200
250
300
350
400
z_track (cm)

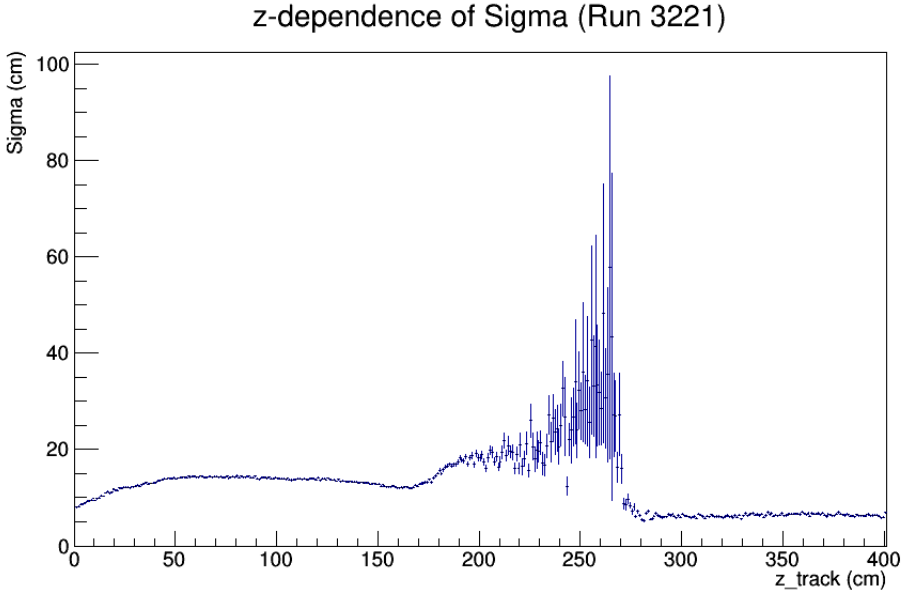
Run 3138


z-dependence of Mean (Run 3138)
Mean (cm)
20
10
0
-10
-20
-30
-40
50
100
150
200
250
300
350
400
z_track (cm)


z-dependence of Sigma (Run 3138)
Sigma (cm)
200
150
100
50
0
0
50
100
150
200
250
300
350
400
z_track (cm)

Run 3221


z-dependence of Mean (Run 3221)
Mean (cm)
30
20
10
0
-10
-20
0
50
100
150
200
250
300
350
400
z_track (cm)


z-dependence of Sigma (Run 3221)
Sigma (cm)
100
80
60
40
20
0
0
50
100
150
200
250
300
350
400
z_track (cm)

Comments

1. The region $0 < z < 20$ is "unstable" in every Run.
2. Run 3138: not enough statistics.
3. Cosmics (Run 3221): there are not enough statistics in Run 3221 at the region $220 < z < 270$, hence the abnormal behaviour of the graphs in this region
4. A different segmentation might improve the z-dependence. Say, slices of 10cm instead of 1cm.