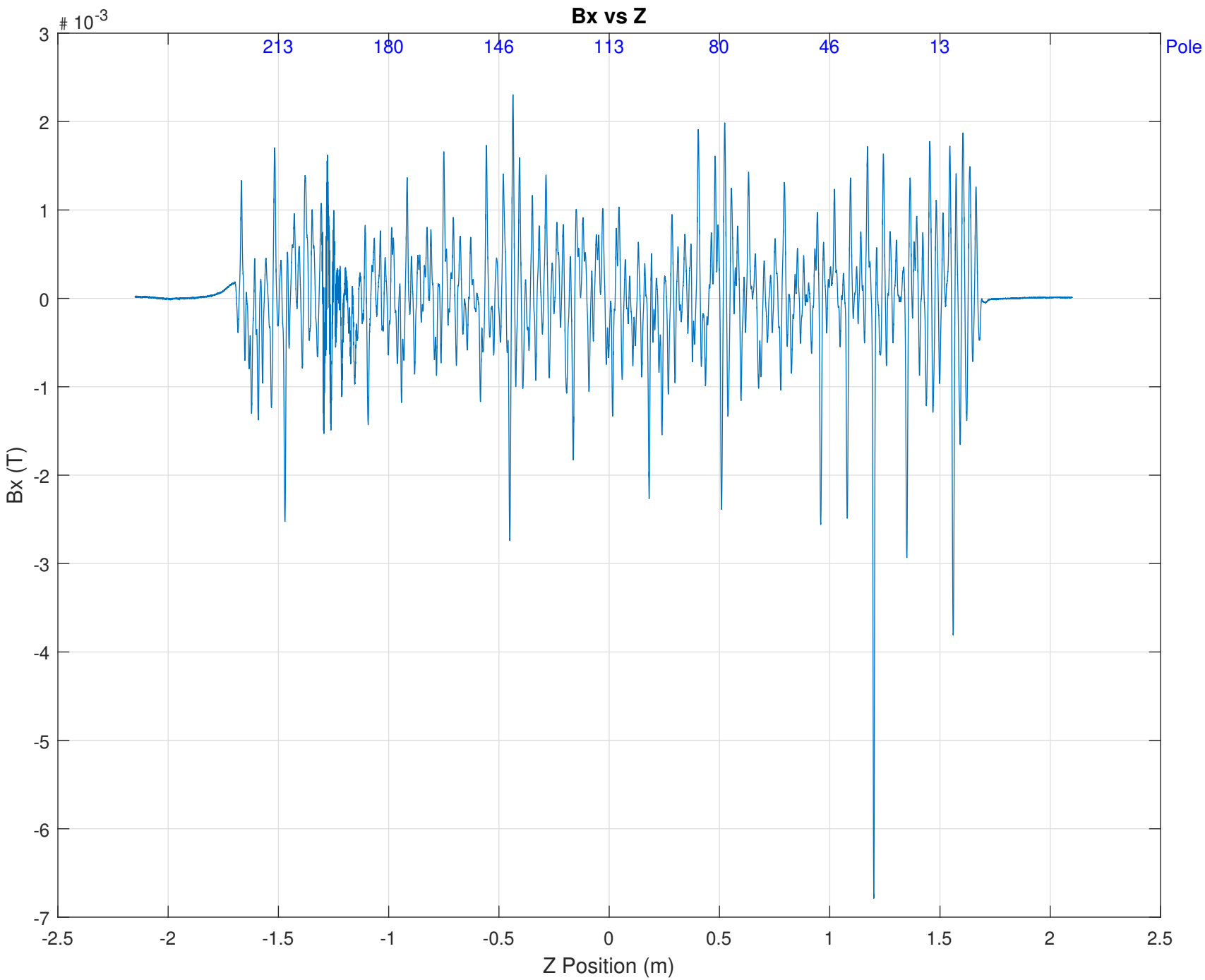
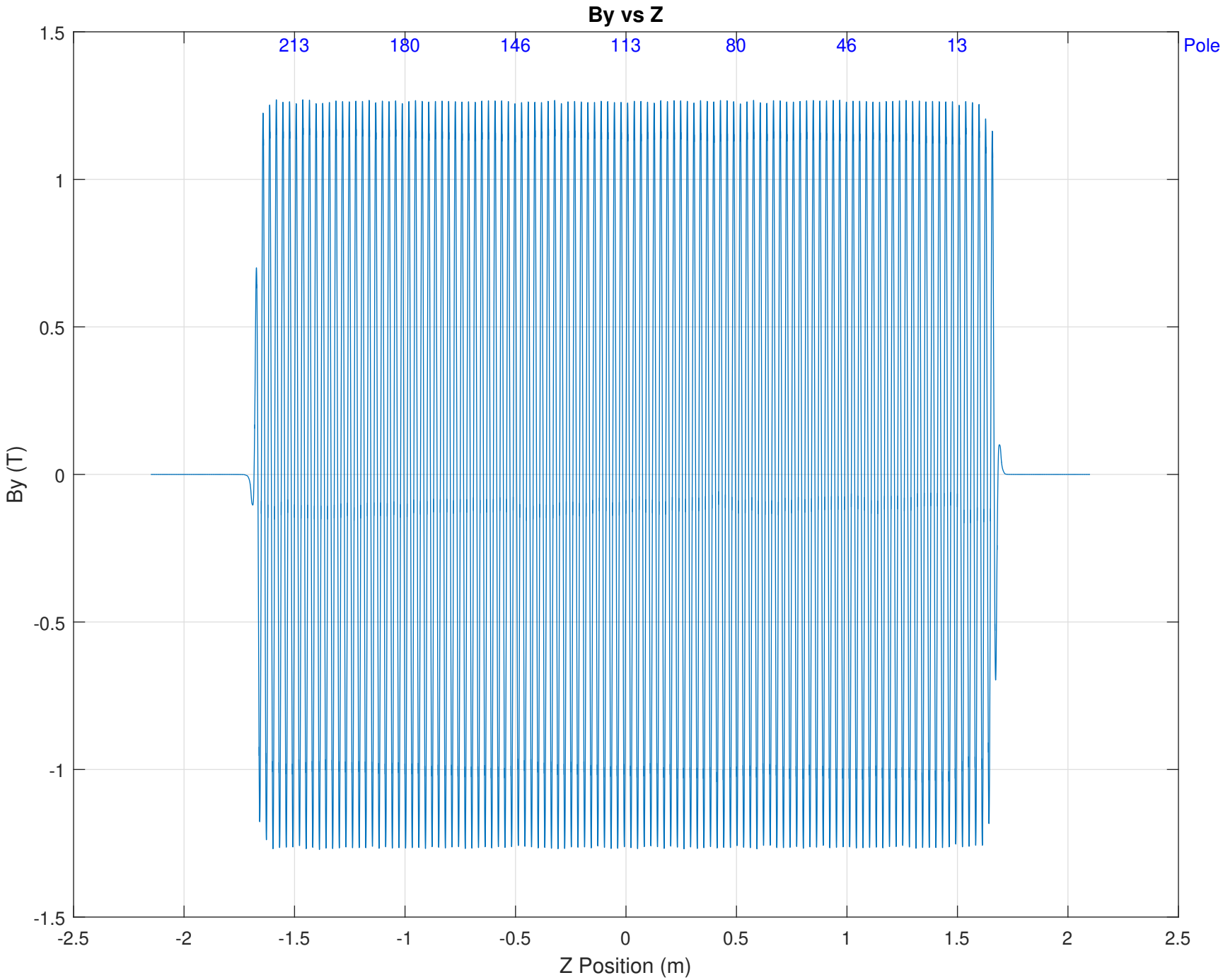
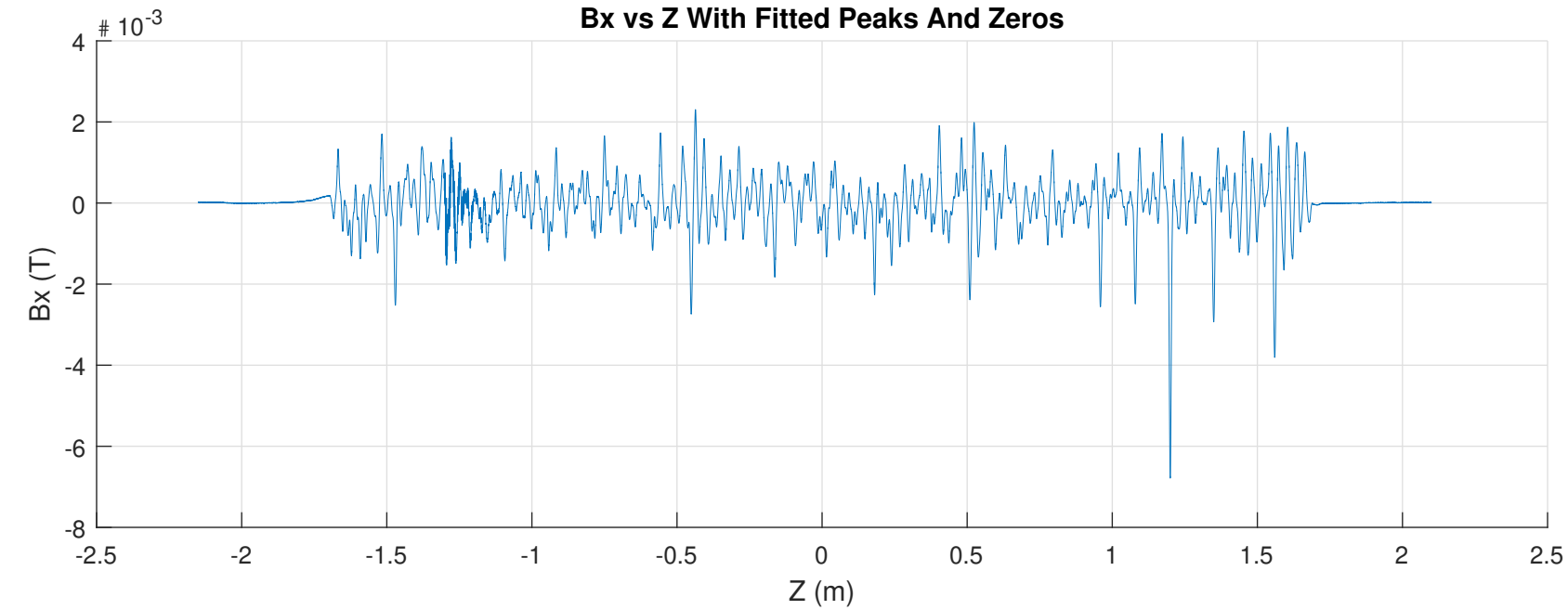
SLAC Magnetic Measurements

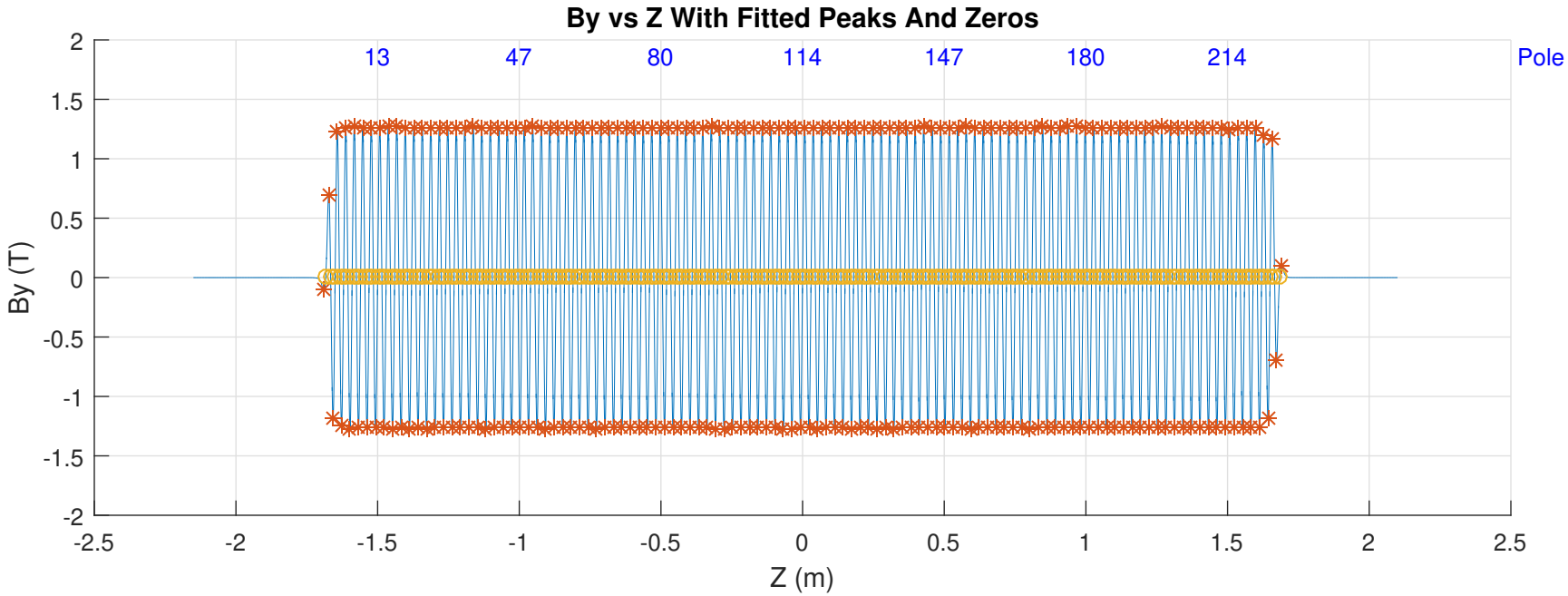
Planar Insertion Device Analysis

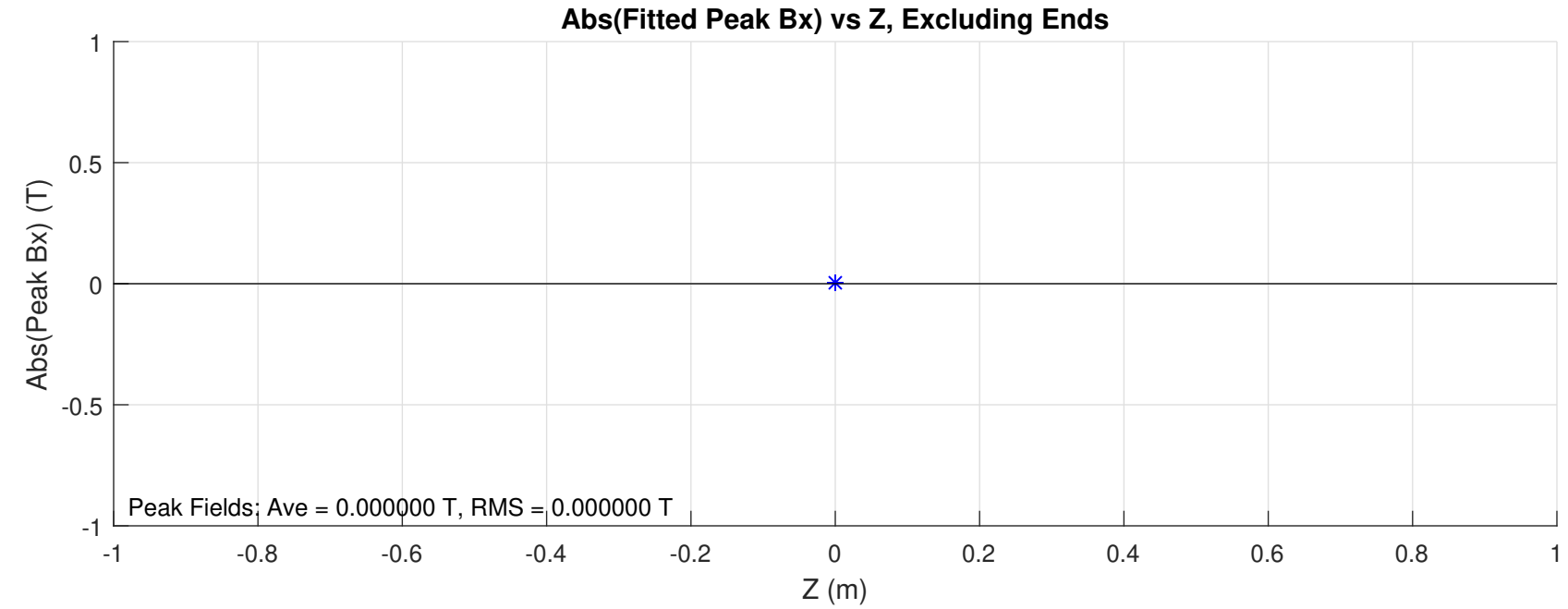
Parameters:
INPUT-FILE-DIR =S:\MagData\LCLS\Undulator\L143-112000-04\DATASET0004\INITIAL-MEASUREMENT\
INPUT-FILE-NAME =x+00000-y+000-bscanz.dat
INPUT-FILE-TYPE =ZVXYBXYH
CORR-REQUIRED =1
GAMMA =26689
NOM-LAMBDA-U =0.03
NOM-K-VALUE =3.5
NOM-LAMBDA-R =1.5004e-10
NUM-POLES =226
NUM-END-POLES =6
CELL-LENGTH =3.656

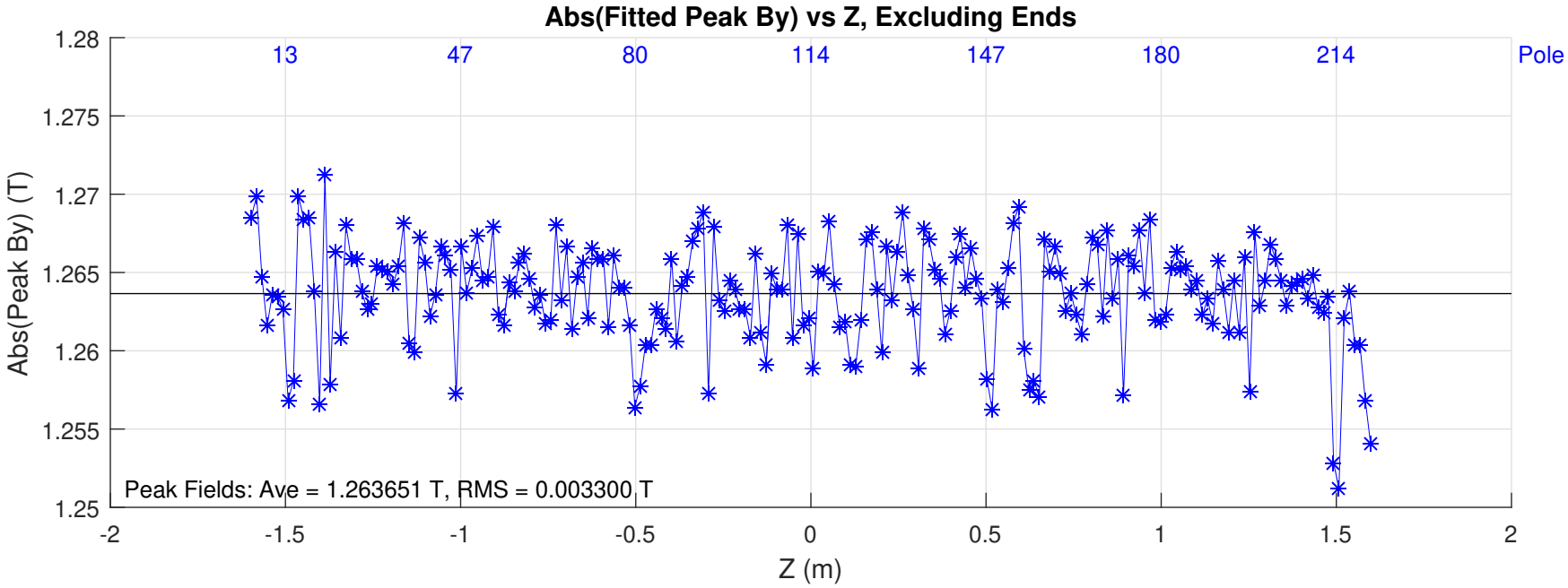

Bx vs Z
# 10^-3
213
180
146
113
80
46
13
Pole
3
2
1
0
-1
-2
-3
-4
-5
-6
-7
Bx (T)
-2.5
-2
-1.5
-1
-0.5
0
0.5
1
1.5
2
2.5
Z Position (m)

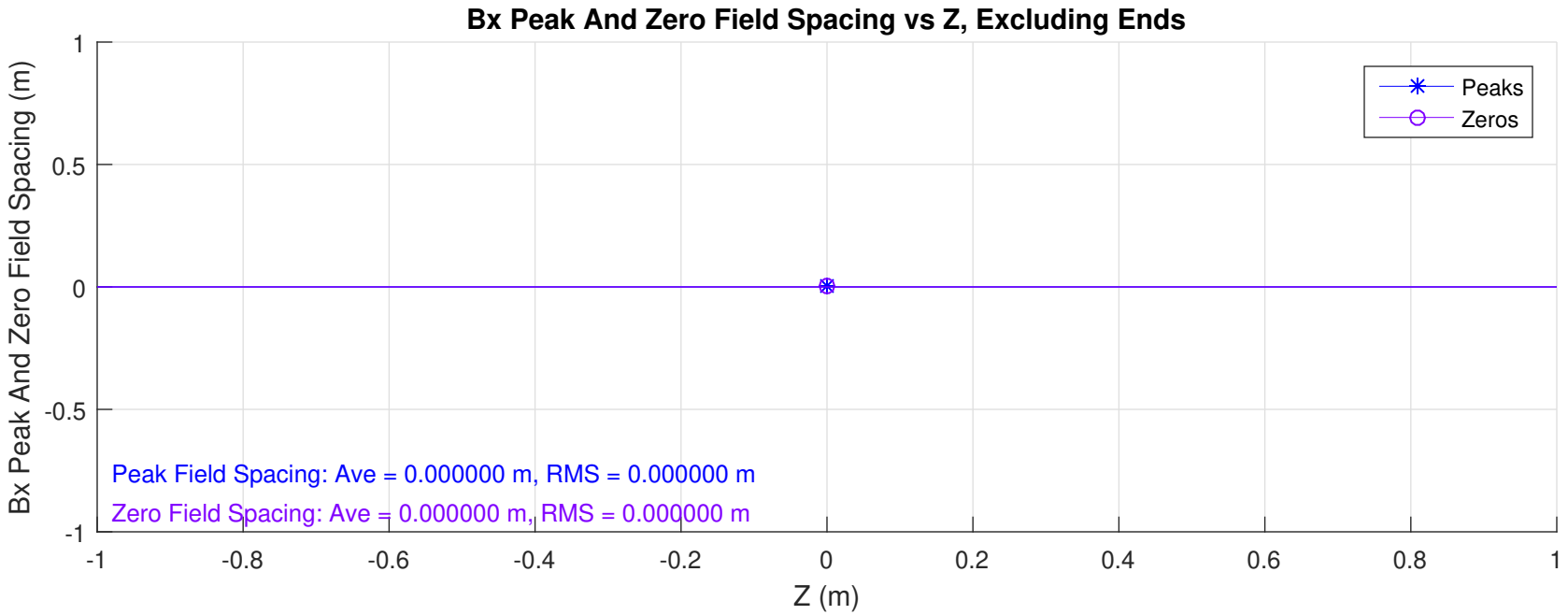

By vs Z
213
180
146
113
80
46
13
Pole
1.5
1
0.5
0
-0.5
-1
-1.5
By (T)
-2.5
-2
-1.5
-1
-0.5
0
0.5
1
1.5
2
2.5
Z Position (m)

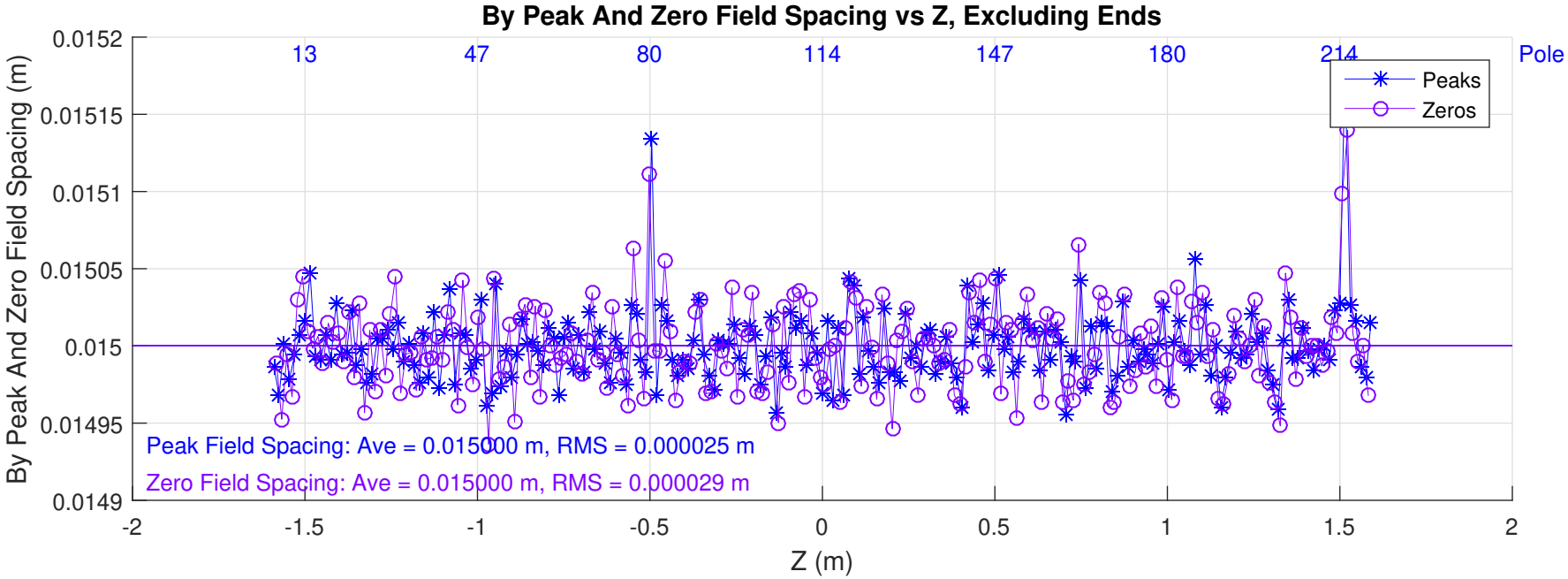

Bx vs Z With Fitted Peaks And Zeros
# 10^-3
Bx (T)
Z (m)

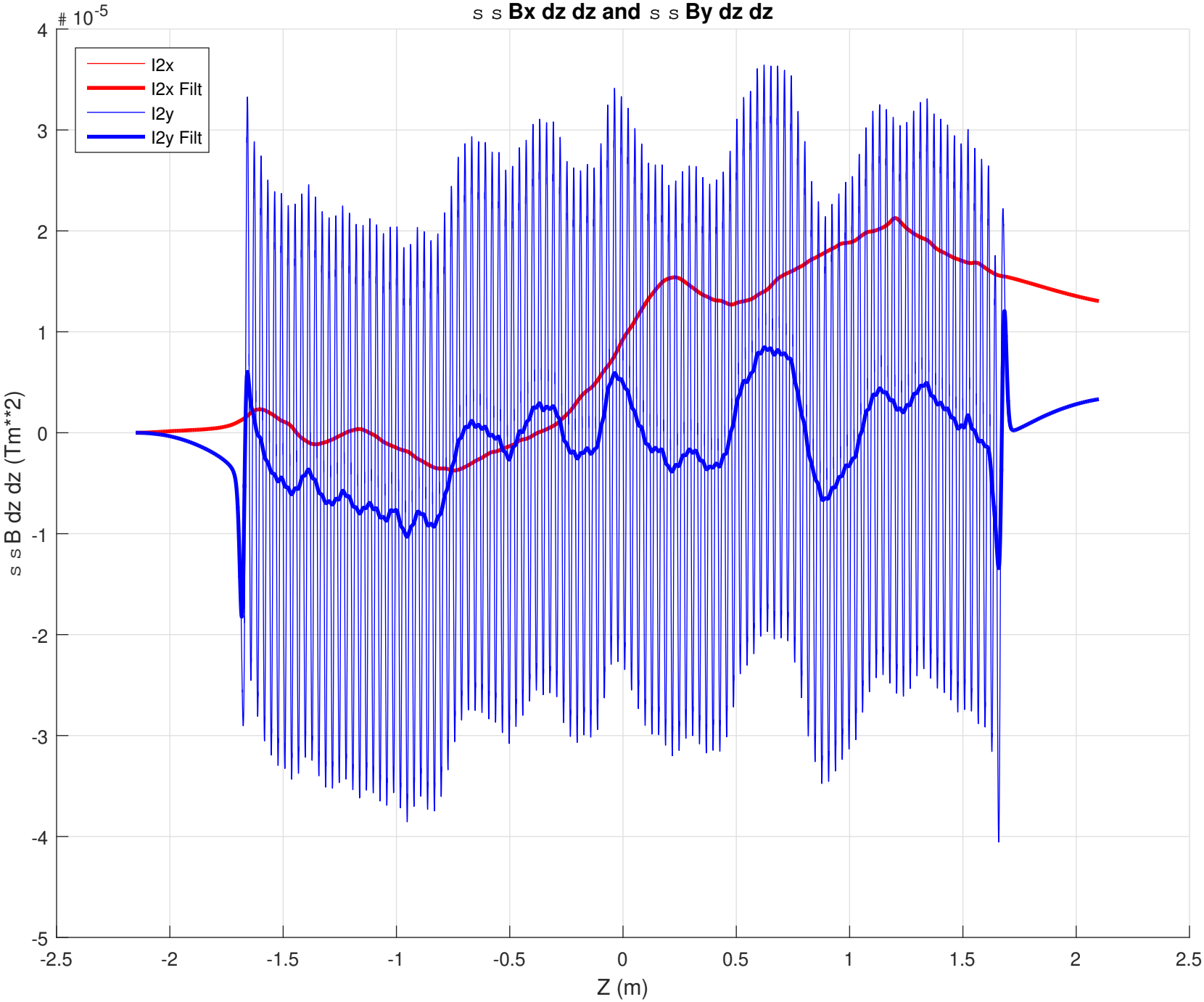

By vs Z With Fitted Peaks And Zeros
13
47
80
114
147
180
214
Pole
By (T)
Z (m)

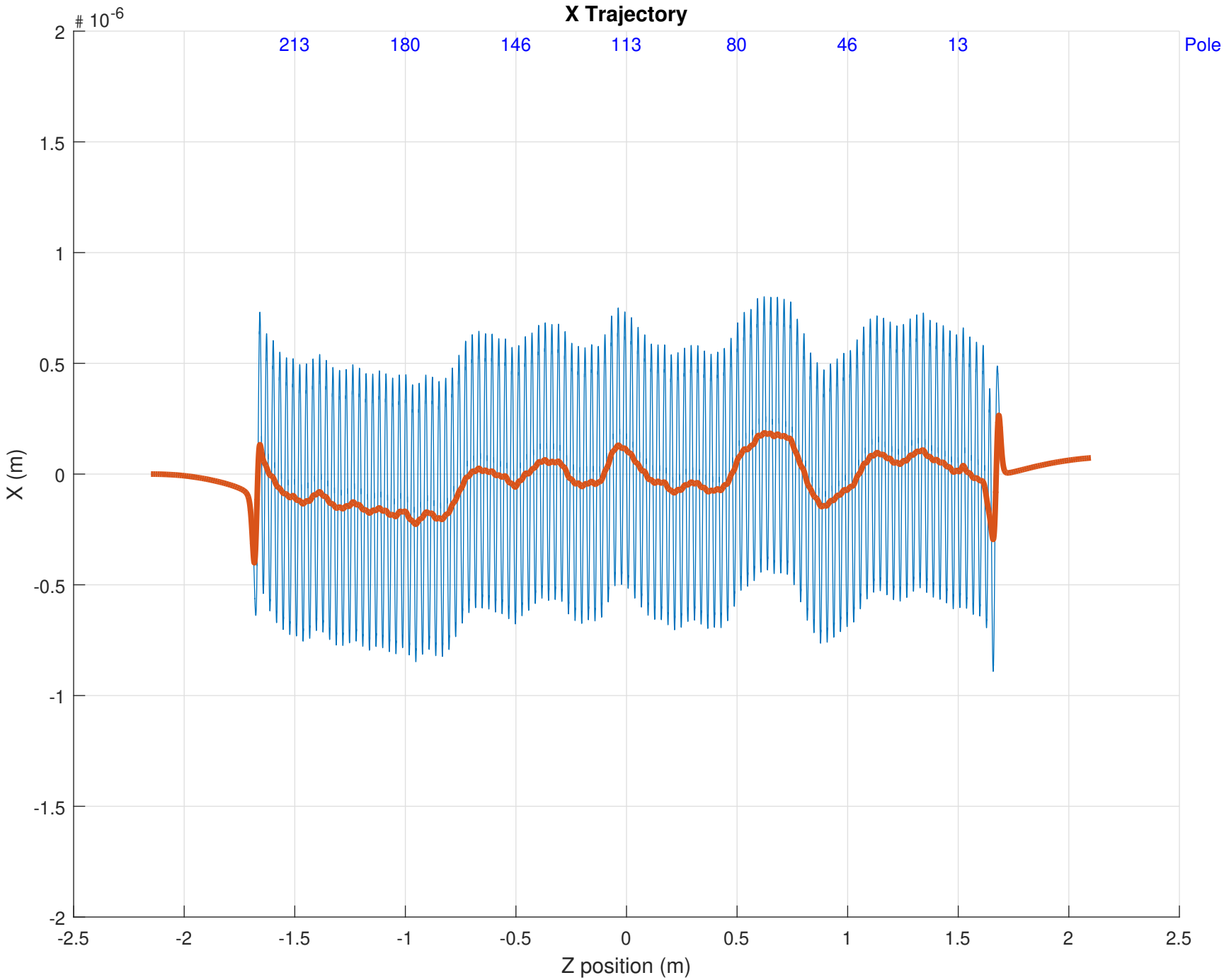

Abs(Fitted Peak Bx) vs Z, Excluding Ends
Abs(Peak Bx) (T)
Z (m)
Peak Fields: Ave = 0.000000 T, RMS = 0.000000 T
1
0.5
0
-0.5
-1
-1
-0.8
-0.6
-0.4
-0.2
0
0.2
0.4
0.6
0.8
1

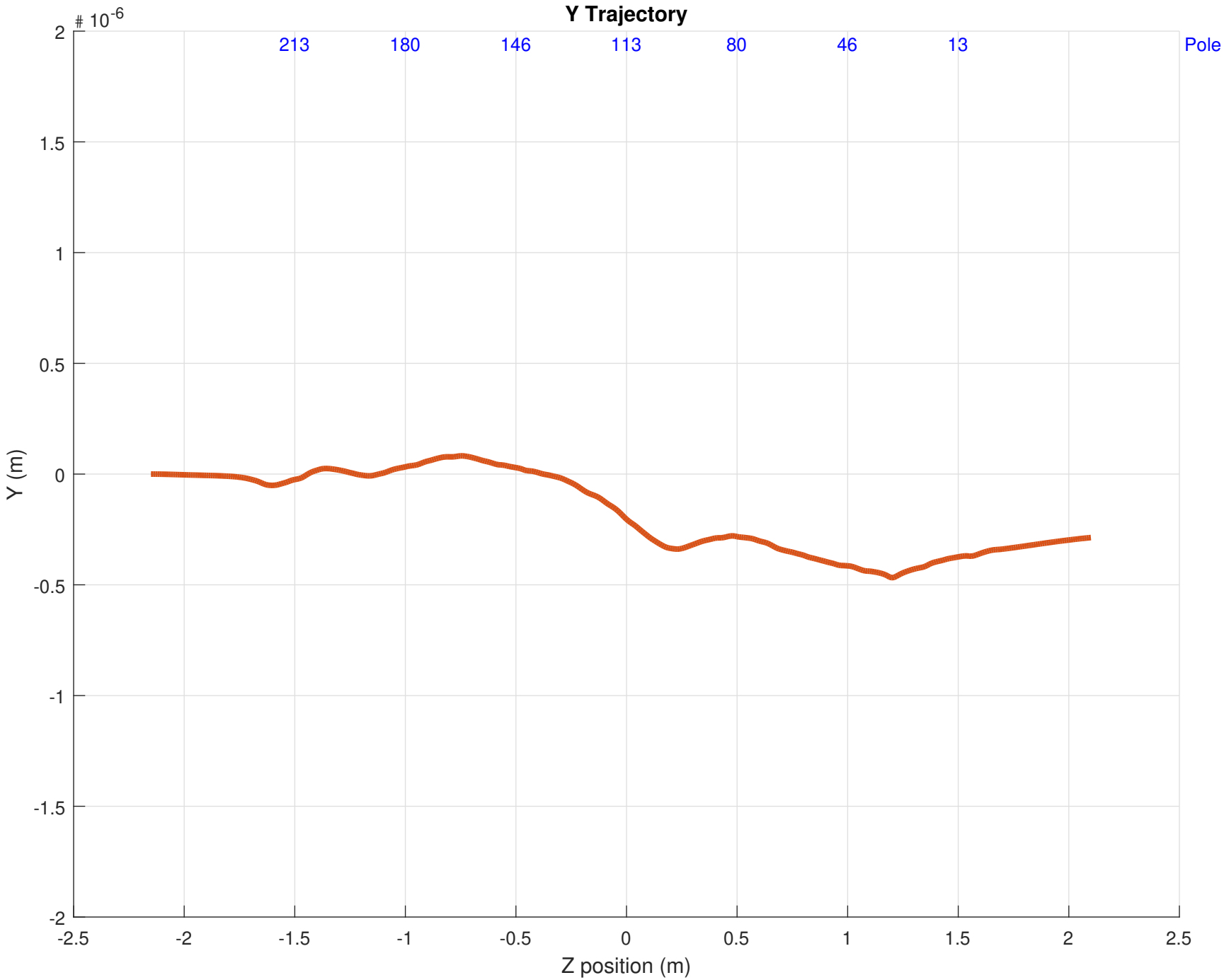

Abs(Fitted Peak By) vs Z, Excluding Ends
13
47
80
114
147
180
214
Pole
Abs(Peak By) (T)
Z (m)
Peak Fields: Ave = 1.263651 T, RMS = 0.003300 T
1.28
1.275
1.27
1.265
1.26
1.255
1.25
-2
-1.5
-1
-0.5
0
0.5
1
1.5
2

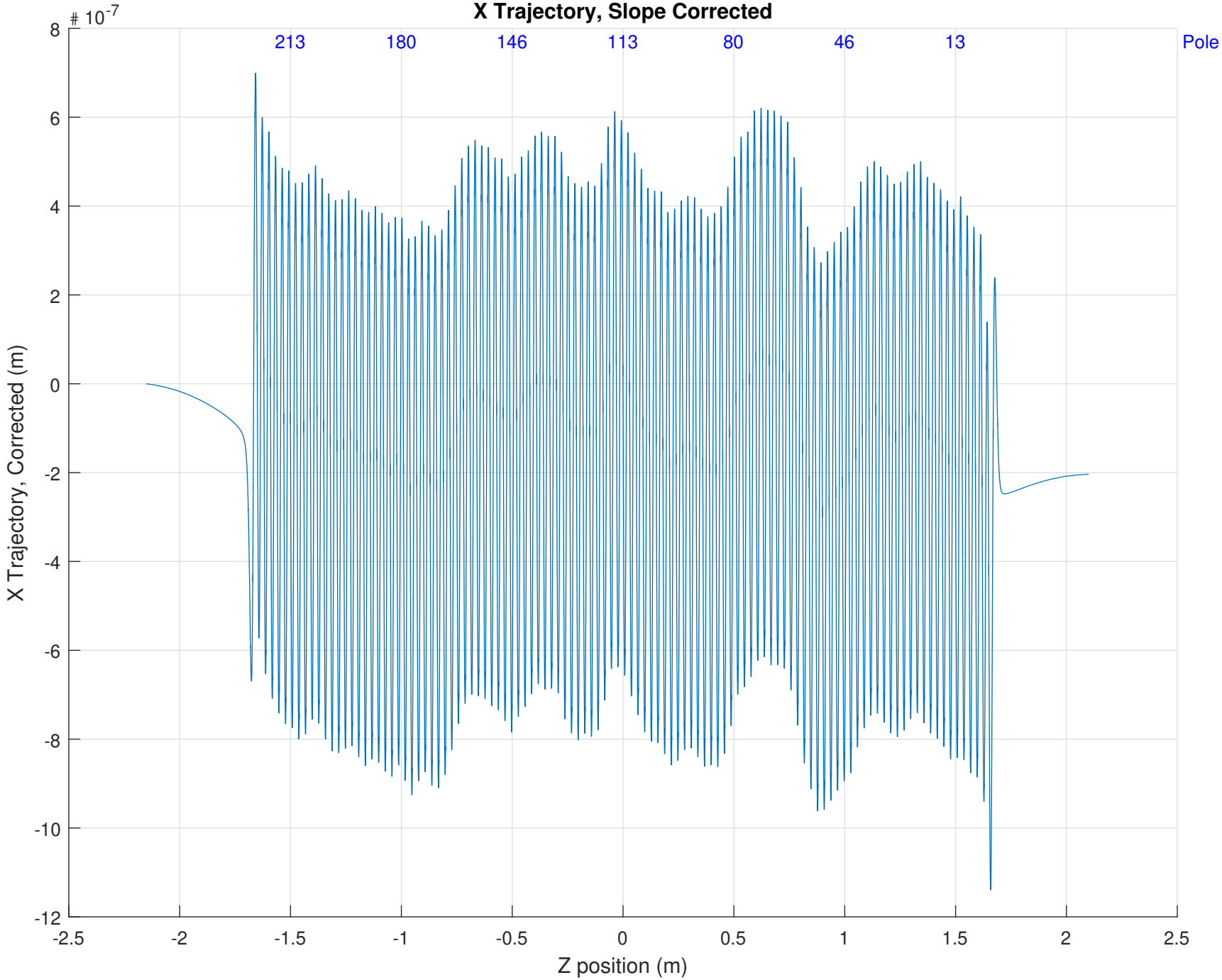

Bx Peak And Zero Field Spacing vs Z, Excluding Ends
Bx Peak And Zero Field Spacing (m)
Z (m)
Peaks
Zeros
Peak Field Spacing: Ave = 0.000000 m, RMS = 0.000000 m
Zero Field Spacing: Ave = 0.000000 m, RMS = 0.000000 m

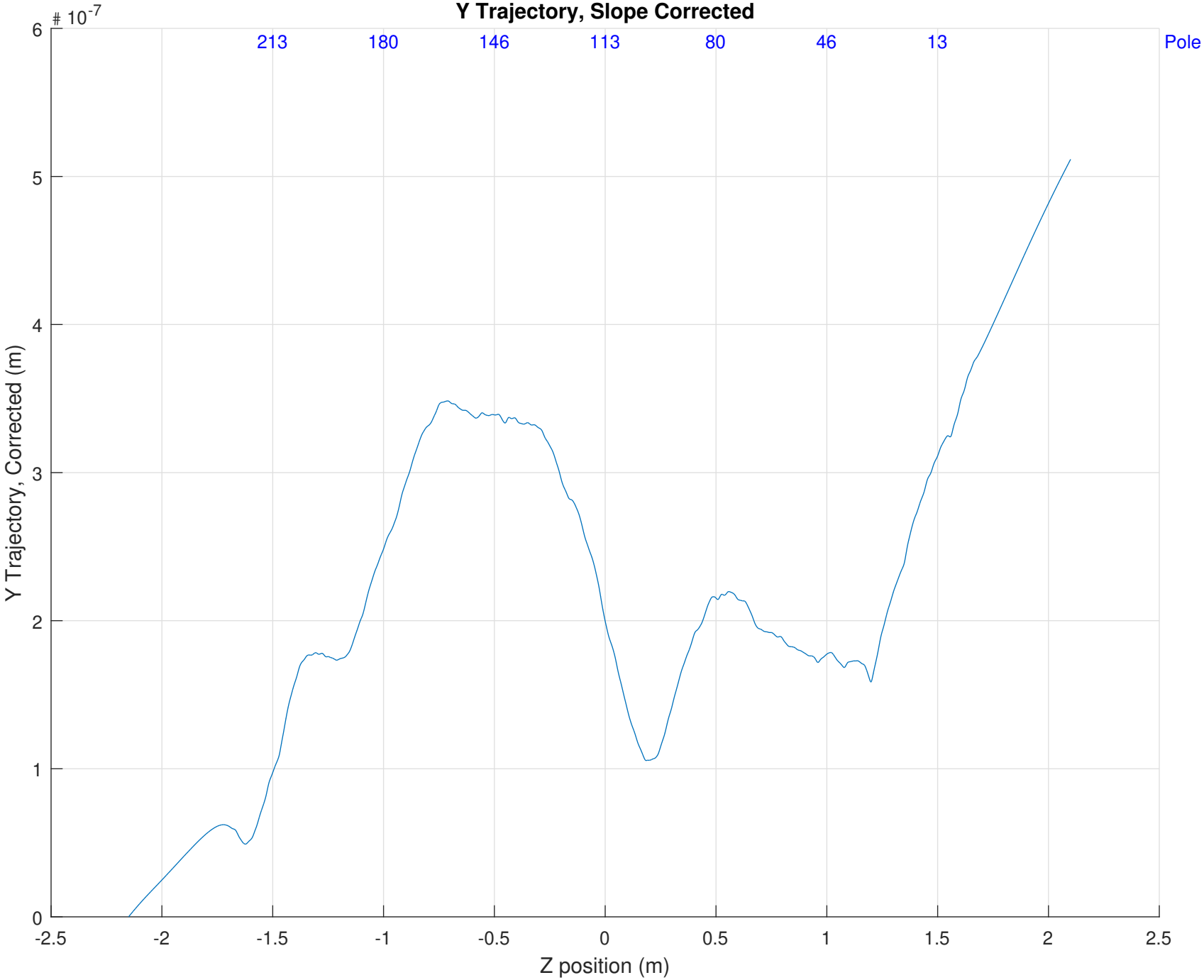

By Peak And Zero Field Spacing vs Z, Excluding Ends
By Peak And Zero Field Spacing (m)
Z (m)
13
47
80
114
147
180
214
Pole
Peaks
Zeros
Peak Field Spacing: Ave = 0.015000 m, RMS = 0.000025 m
Zero Field Spacing: Ave = 0.015000 m, RMS = 0.000029 m

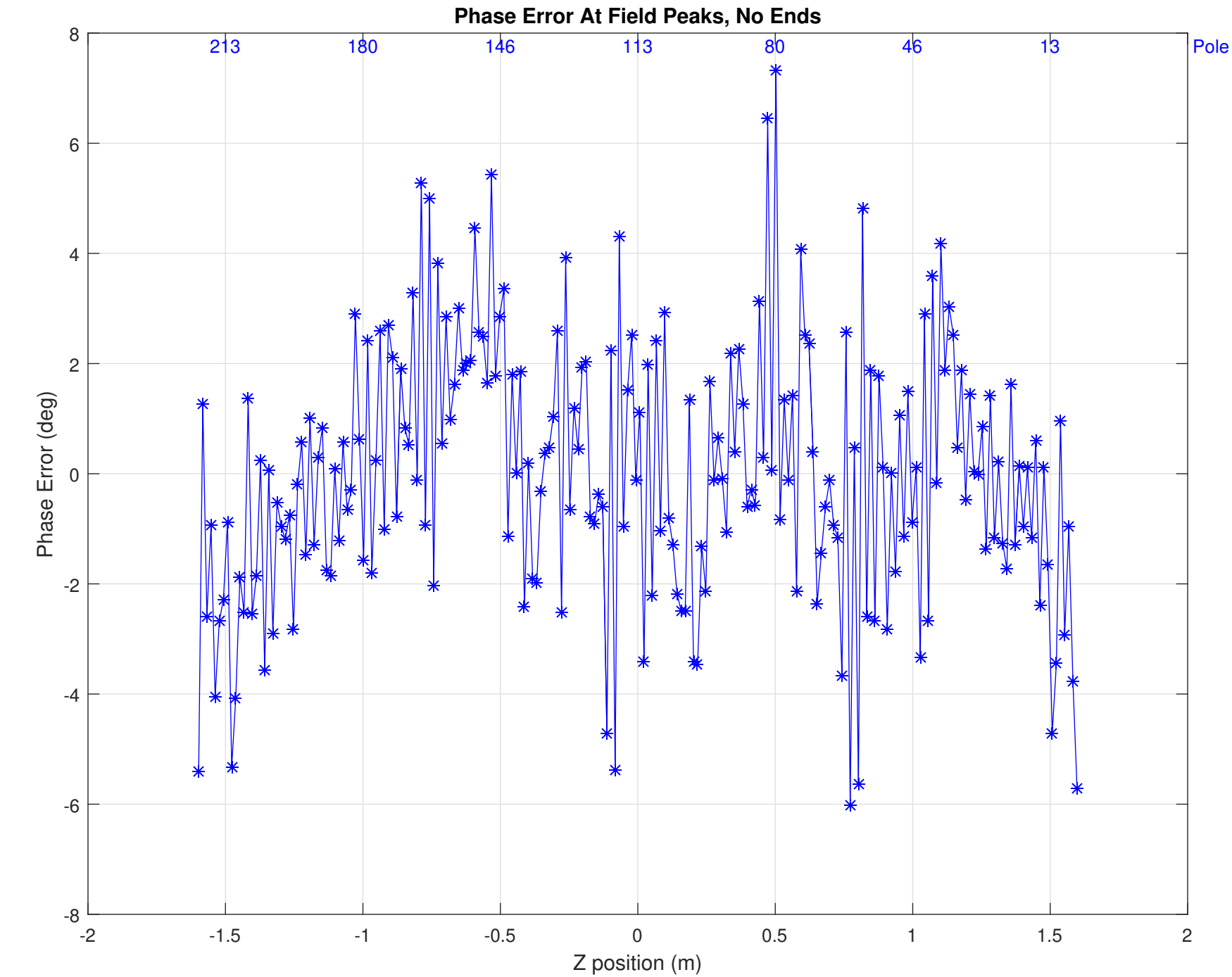

s s Bx dz dz and s s By dz dz
# 10^-5
I2x
I2x Filt
I2y
I2y Filt
s s B dz dz (Tm**2)
Z (m)
4
3
2
1
0
-1
-2
-3
-4
-5
-2.5
-2
-1.5
-1
-0.5
0
0.5
1
1.5
2
2.5


X Trajectory
# 10^-6
213
180
146
113
80
46
13
Pole
2
1.5
1
0.5
0
-0.5
-1
-1.5
-2
X (m)
-2.5
-2
-1.5
-1
-0.5
0
0.5
1
1.5
2
2.5
Z position (m)

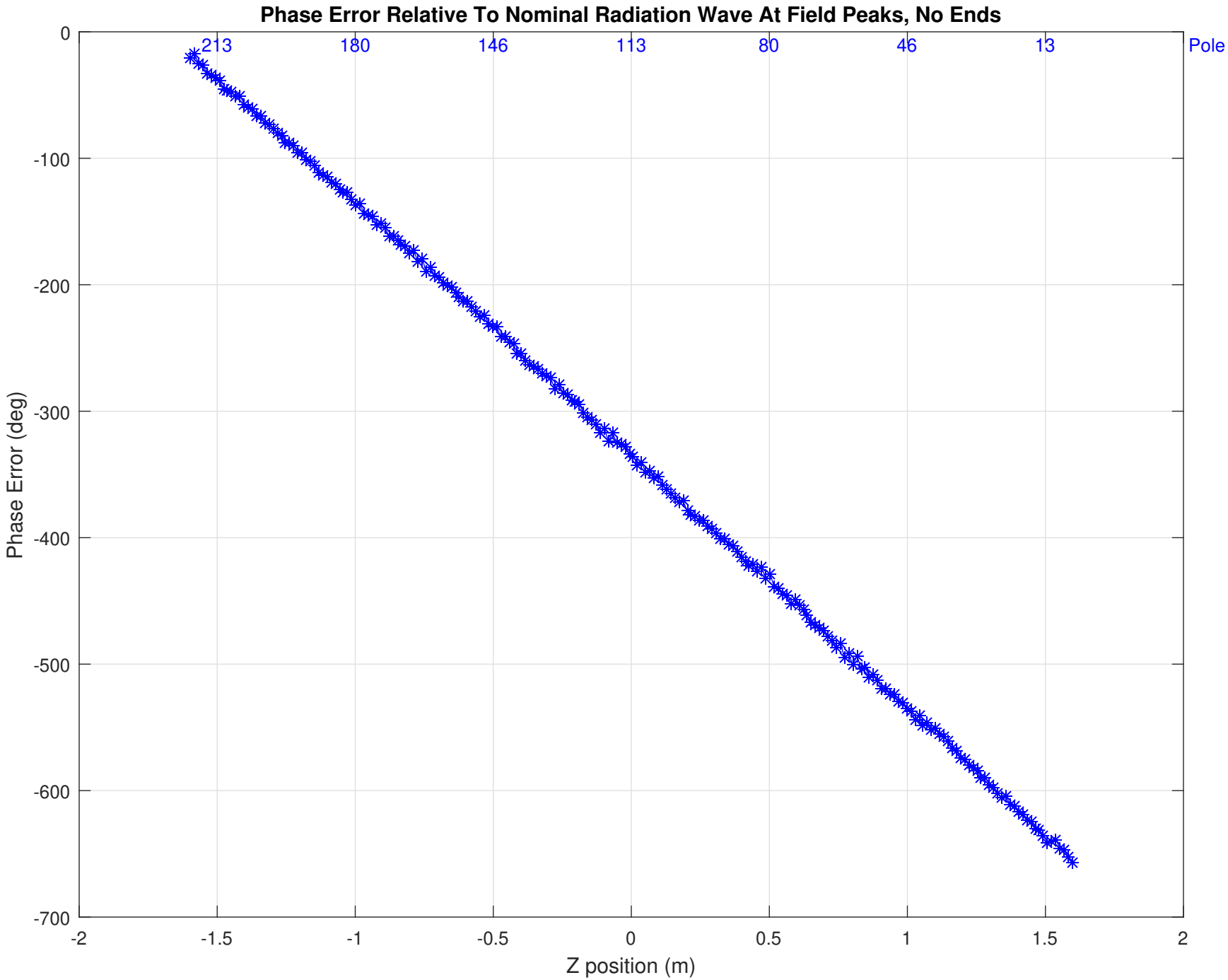

Y Trajectory
# 10^-6
213
180
146
113
80
46
13
Pole
2
1.5
1
0.5
0
-0.5
-1
-1.5
-2
Y (m)
-2.5
-2
-1.5
-1
-0.5
0
0.5
1
1.5
2
2.5
Z position (m)


X Trajectory, Slope Corrected
# 10^-7
213
180
146
113
80
46
13
Pole
8
6
4
2
0
-2
-4
-6
-8
-10
-12
X Trajectory, Corrected (m)
-2.5
-2
-1.5
-1
-0.5
0
0.5
1
1.5
2
2.5
Z position (m)


Y Trajectory, Slope Corrected
# 10^-7
6
5
4
3
2
1
0
213
180
146
113
80
46
13
Pole
Y Trajectory, Corrected (m)
-2.5
-2
-1.5
-1
-0.5
0
0.5
1
1.5
2
2.5
Z position (m)




Phase Error: Ave = -0.000000 deg, RMS = 2.357837 deg


Phase Error Relative To Nominal Radiation Wave At Field Peaks, No Ends
213
180
146
113
80
46
13
Pole
0
-100
-200
-300
-400
-500
-600
-700
Phase Error (deg)
-2
-1.5
-1
-0.5
0
0.5
1
1.5
2
Z position (m)