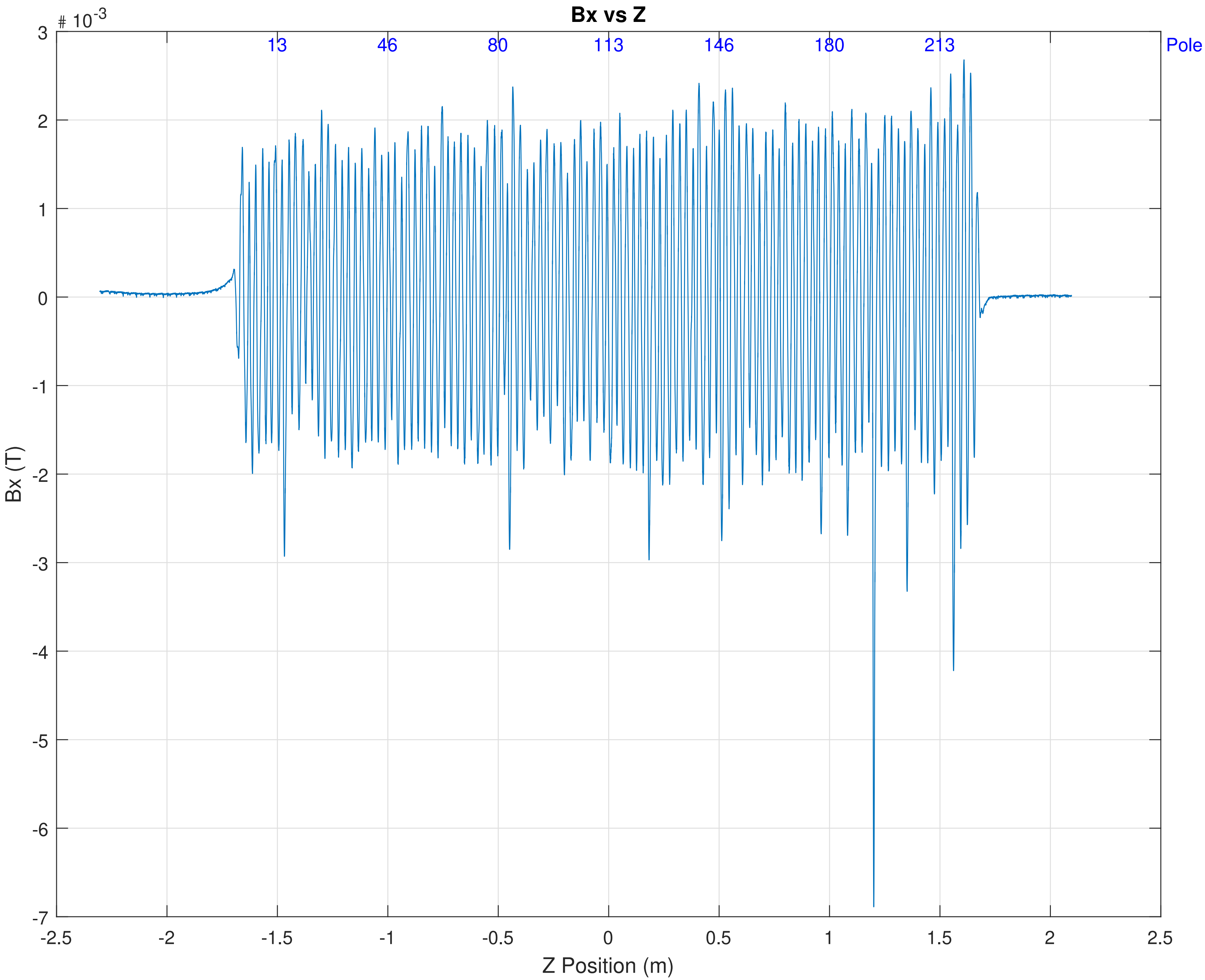
SLAC Magnetic Measurements

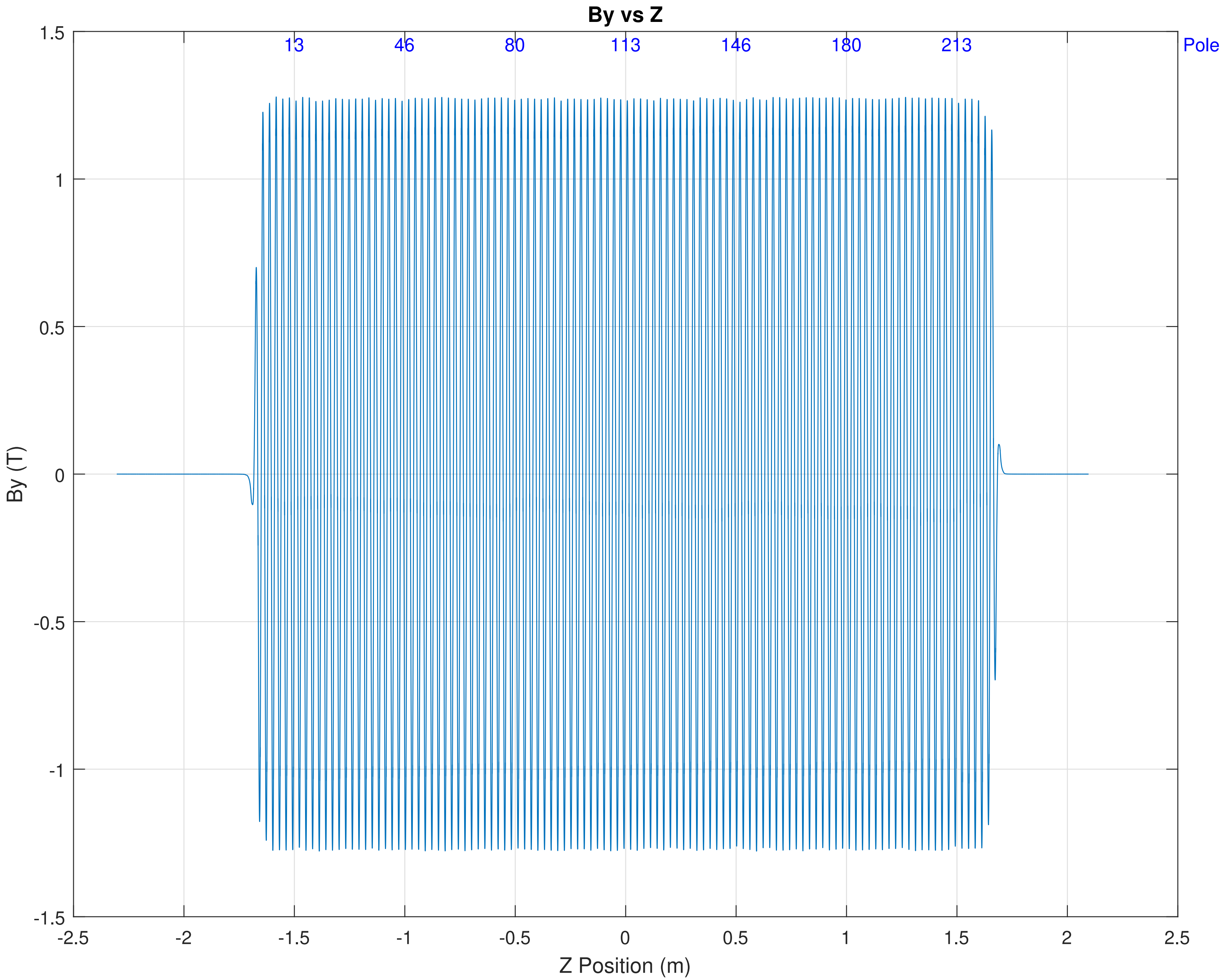
Planar Insertion Device Analysis

Parameters:

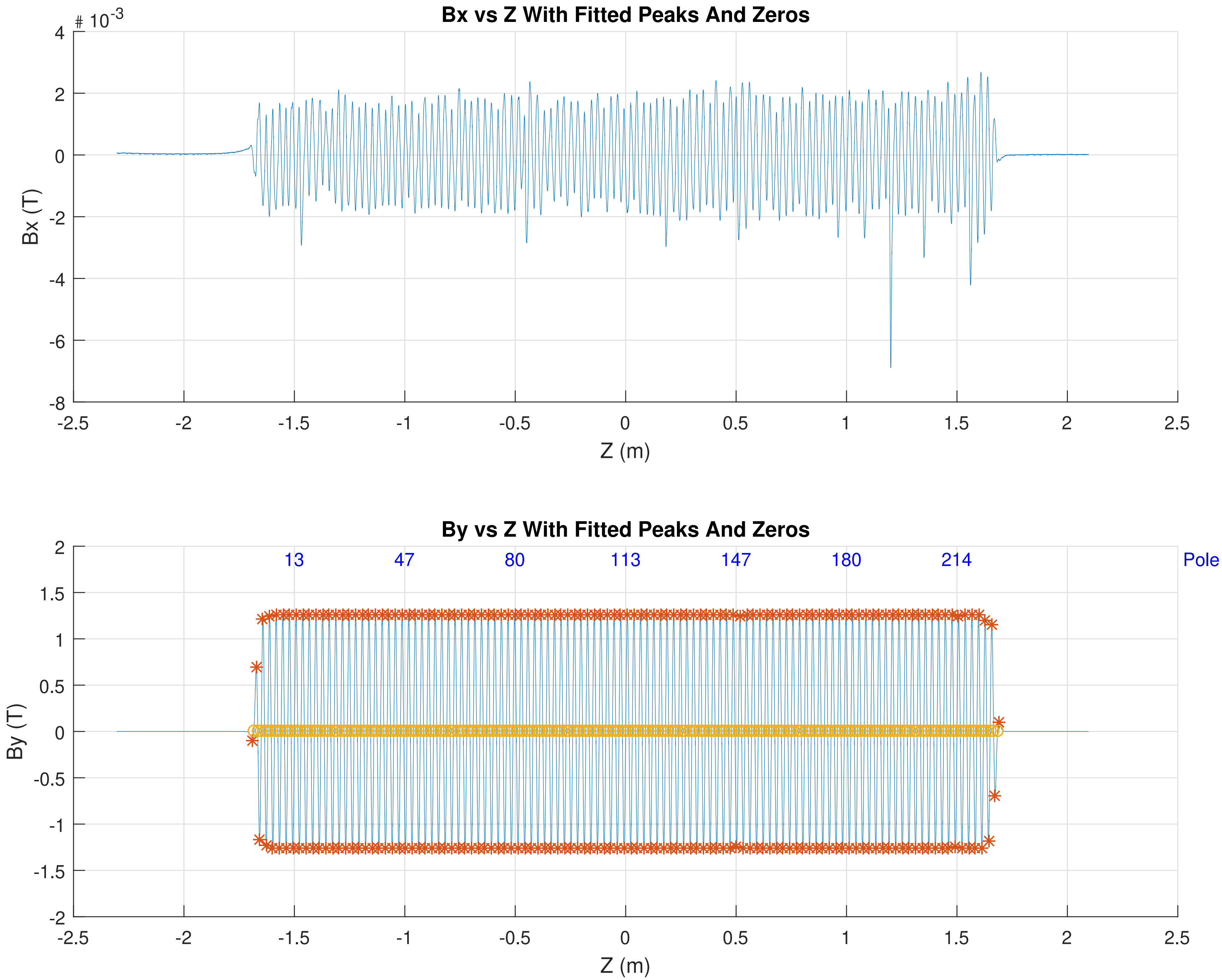
INPUT-FILE-DIR =s:\magdata\LCLS\Undulator\L143-112000-04\DATASET0005\Tuning\Z Scans\Run 002\
INPUT-FILE-NAME =x+00000-y+000-bscanz.dat
INPUT-FILE-TYPE =ZVXYBXYH
CORR-REQUIRED =0
GAMMA =26689
NOM-LAMBDA-U =0.03
NOM-K-VALUE =3.5
NOM-LAMBDA-R =1.5004e-10
NUM-POLES =226
NUM-END-POLES =4
CELL-LENGTH =3.656



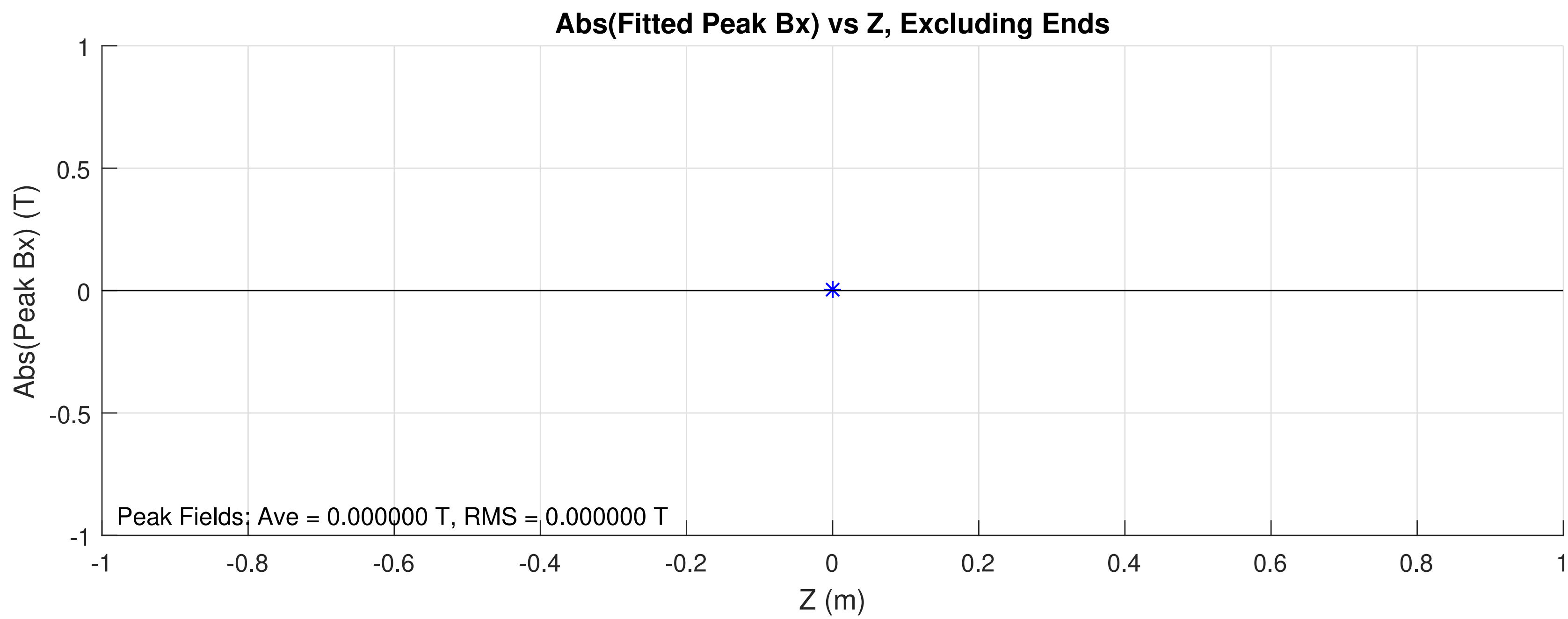
Bx vs Z
10^-3
13
46
80
113
146
180
213
Pole
3
2
1
0
-1
-2
-3
-4
-5
-6
-7
Bx (T)
-2.5
-2
-1.5
-1
-0.5
0
0.5
1
1.5
2
2.5
Z Position (m)

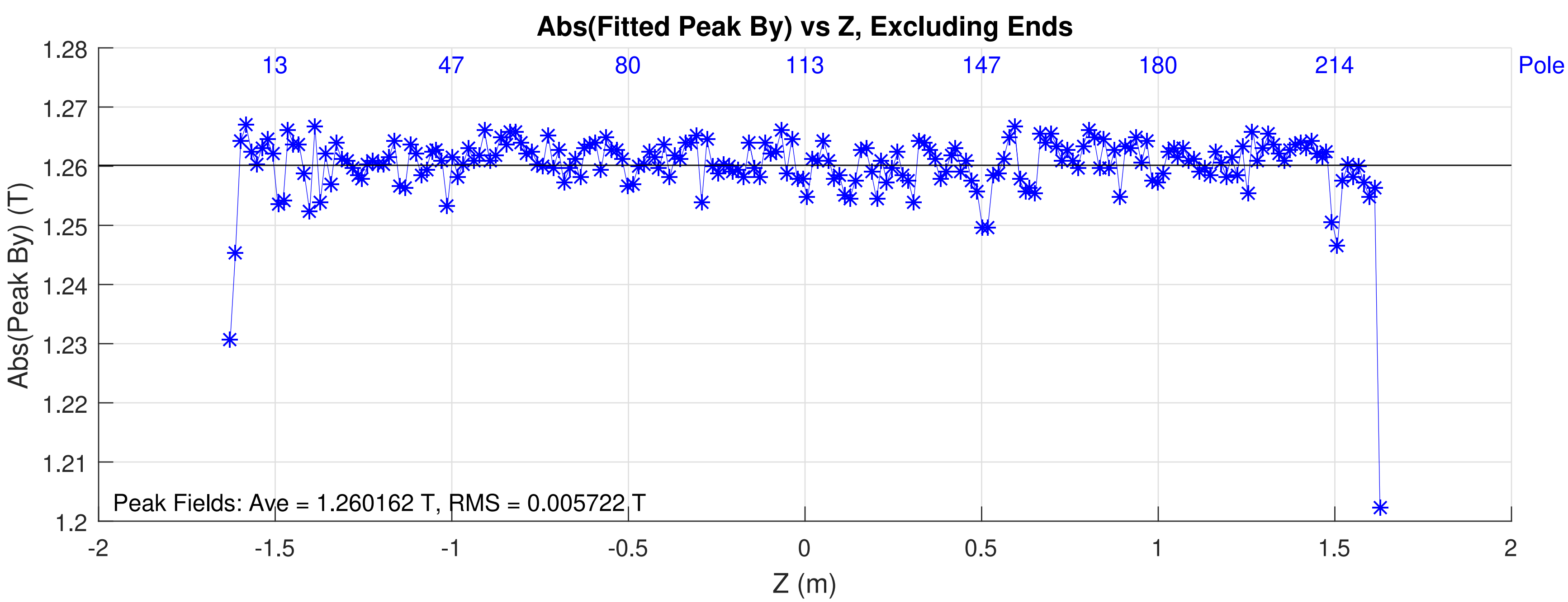


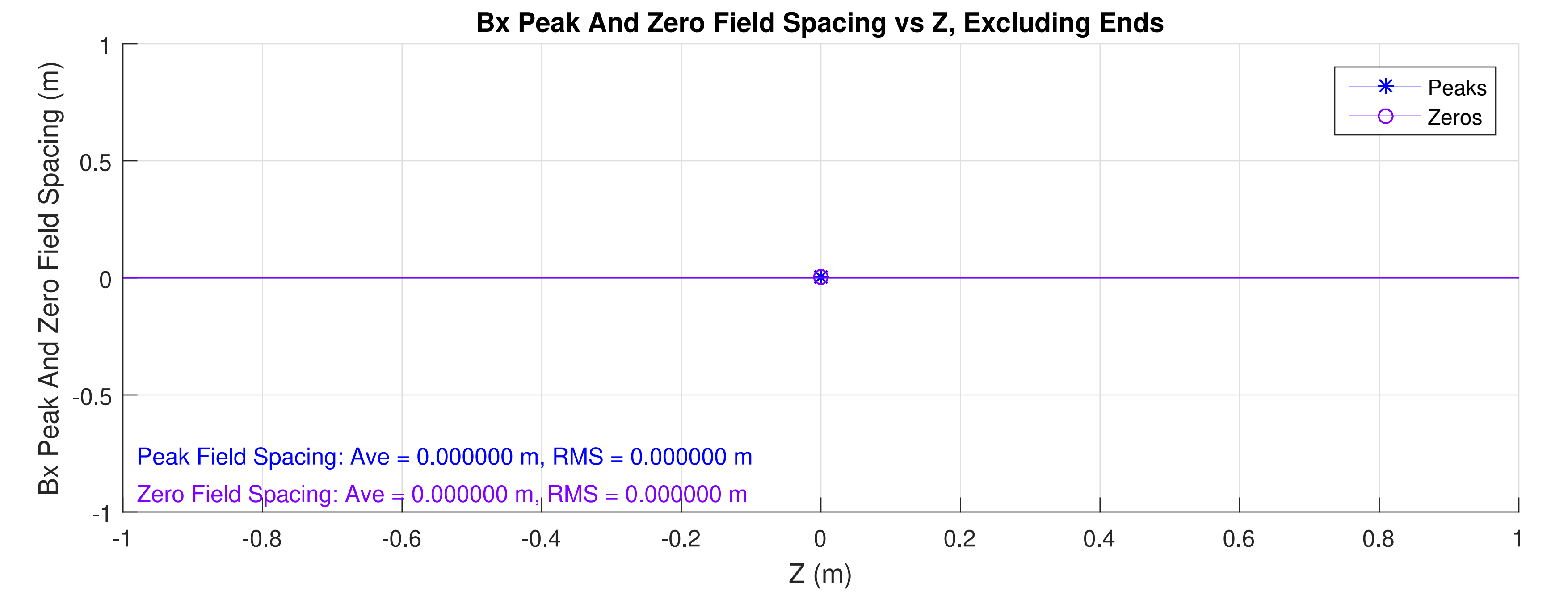
By vs Z
1.5
1
0.5
0
-0.5
-1
-1.5
By (T)
13
46
80
113
146
180
213
Pole
-2.5
-2
-1.5
-1
-0.5
0
0.5
1
1.5
2
2.5
Z Position (m)

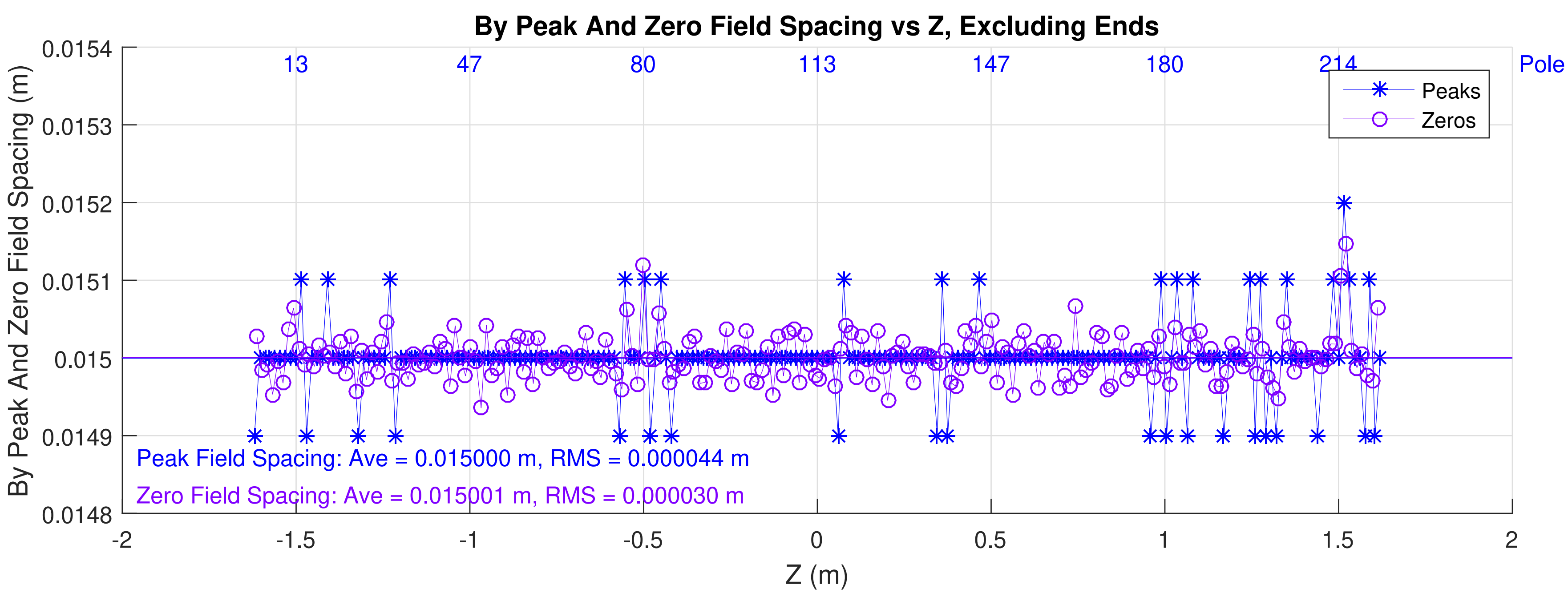


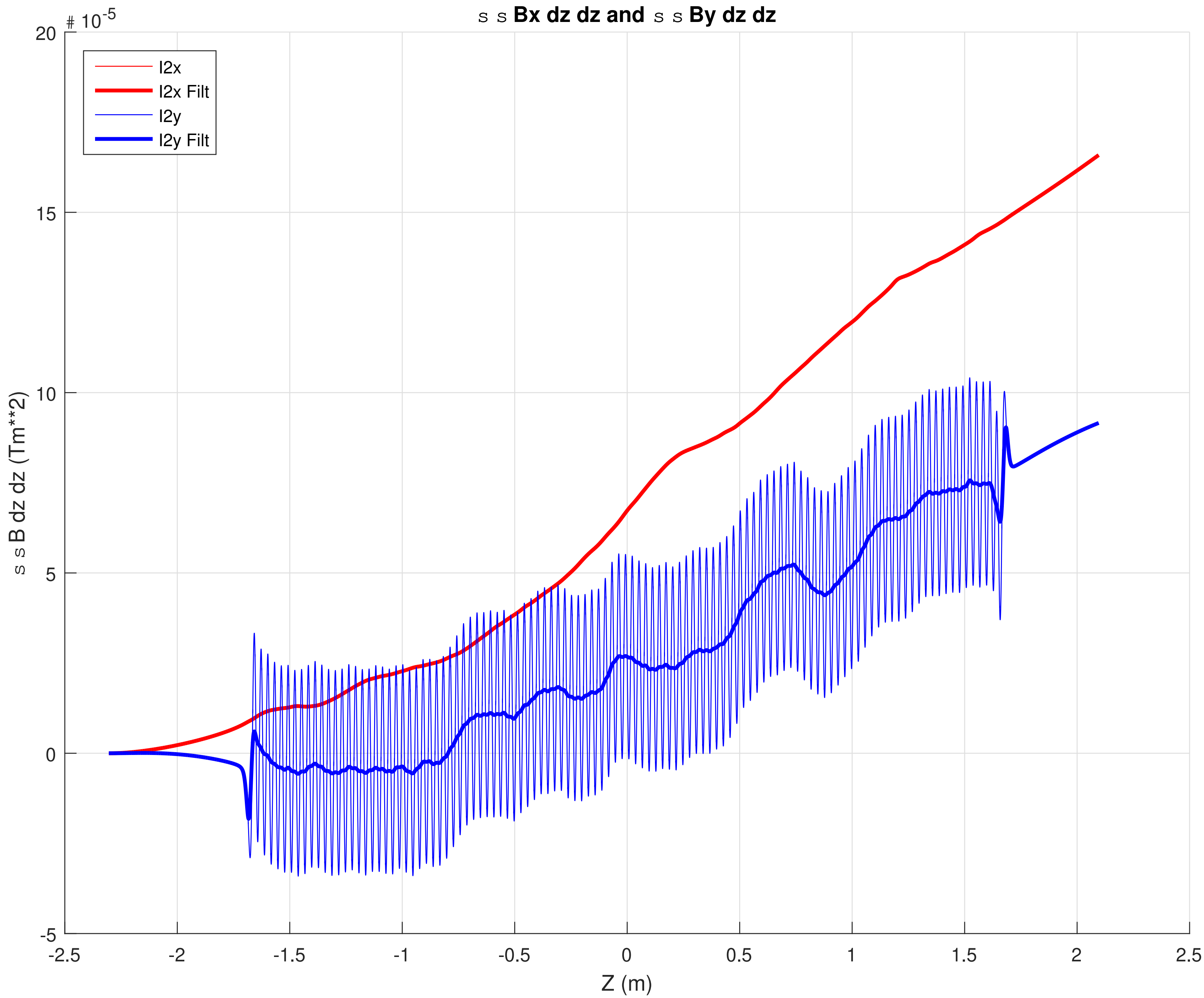
Bx vs Z With Fitted Peaks And Zeros
10-3
Bx (T)
Z (m)
By vs Z With Fitted Peaks And Zeros
13
47
80
113
147
180
214
Pole
By (T)
Z (m)


Abs(Fitted Peak Bx) vs Z, Excluding Ends
Abs(Peak Bx) (T)
Z (m)
Peak Fields: Ave = 0.000000 T, RMS = 0.000000 T

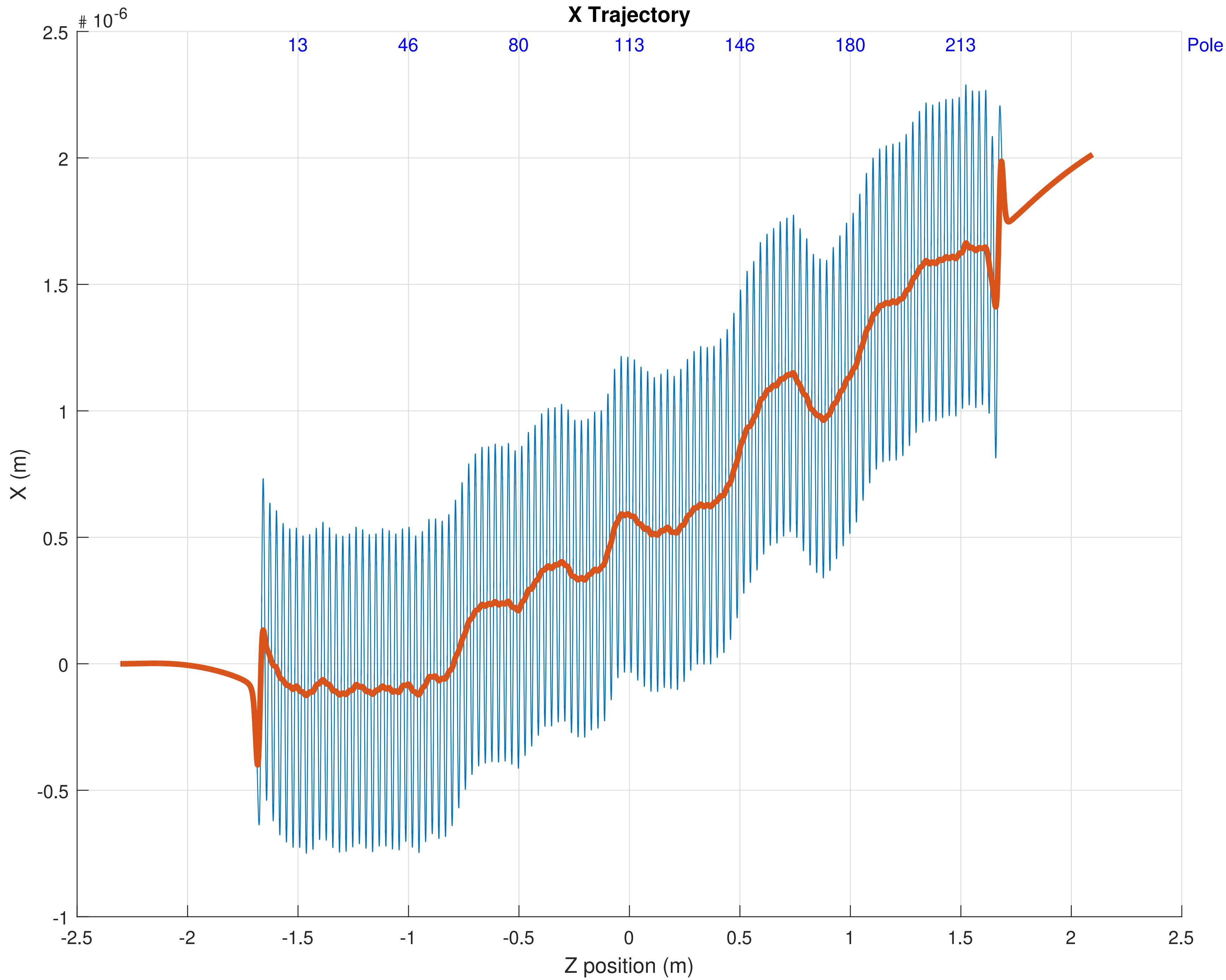

Abs(Fitted Peak By) vs Z, Excluding Ends
13
47
80
113
147
180
214
Pole
Abs(Peak By) (T)
Z (m)
Peak Fields: Ave = 1.260162 T, RMS = 0.005722 T

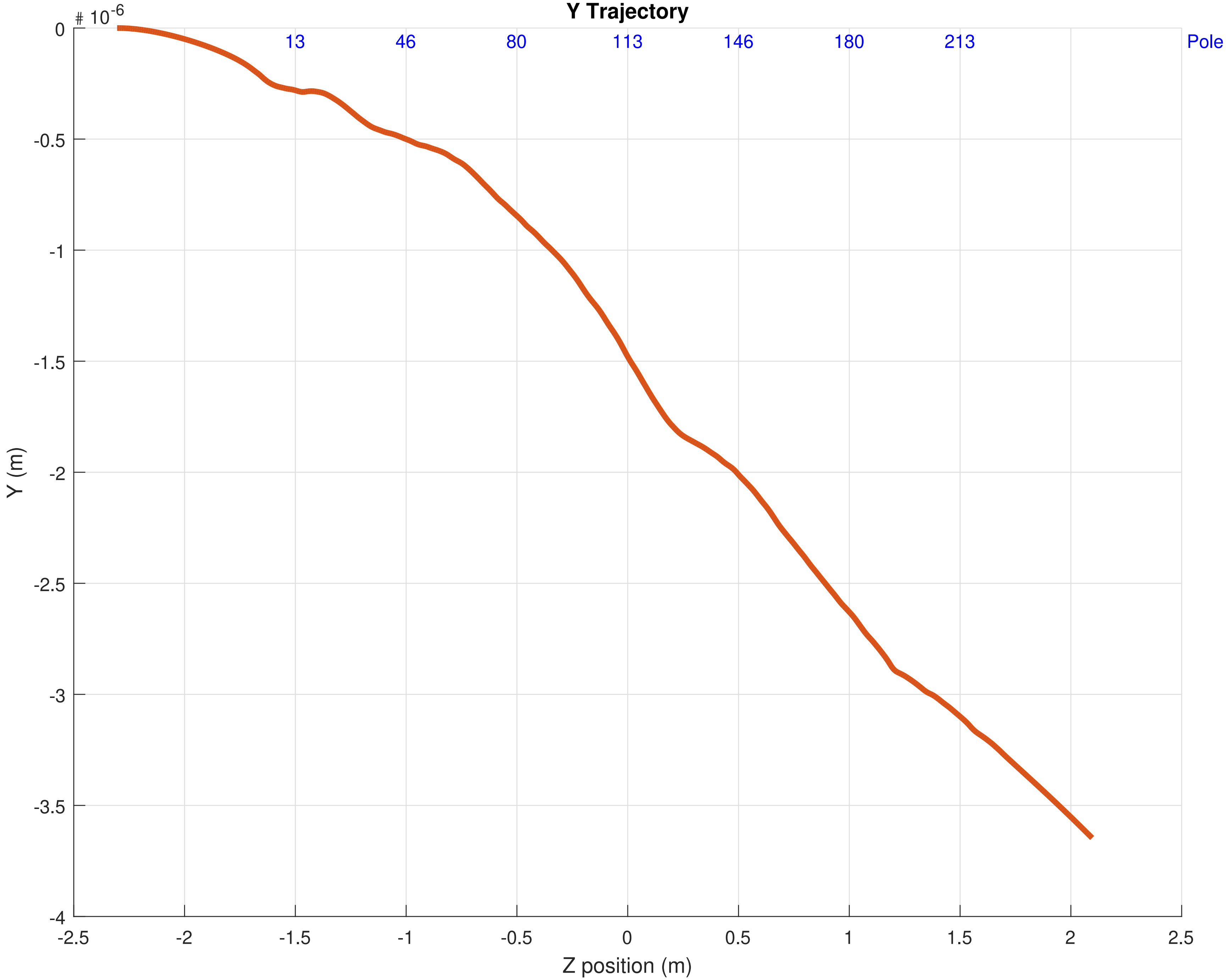

Bx Peak And Zero Field Spacing vs Z, Excluding Ends
Bx Peak And Zero Field Spacing (m)
Z (m)
Peaks
Zeros
Peak Field Spacing: Ave = 0.000000 m, RMS = 0.000000 m
Zero Field Spacing: Ave = 0.000000 m, RMS = 0.000000 m

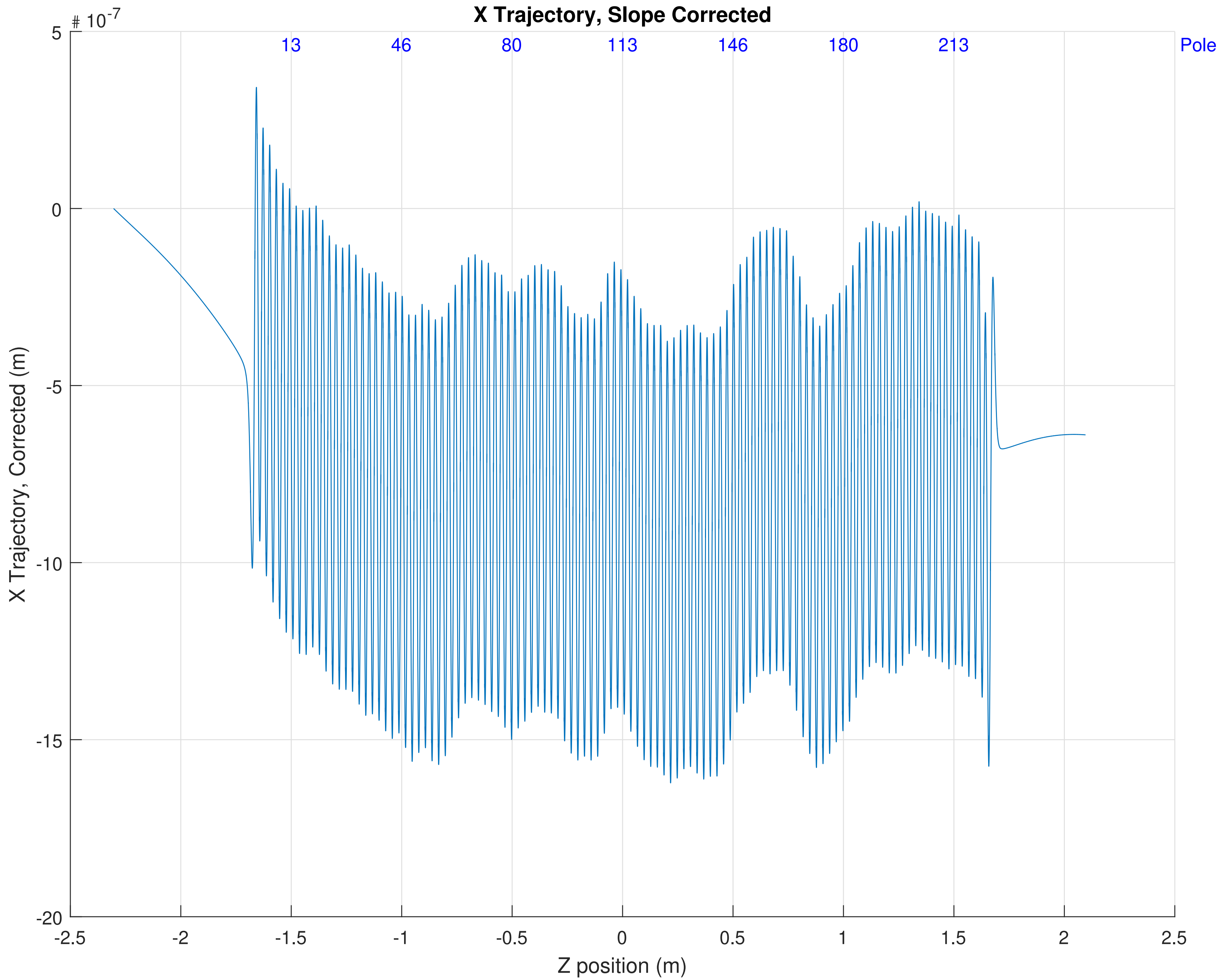

By Peak And Zero Field Spacing vs Z, Excluding Ends
By Peak And Zero Field Spacing (m)
Z (m)
13
47
80
113
147
180
214
Pole
Peaks
Zeros
Peak Field Spacing: Ave = 0.015000 m, RMS = 0.000044 m
Zero Field Spacing: Ave = 0.015001 m, RMS = 0.000030 m

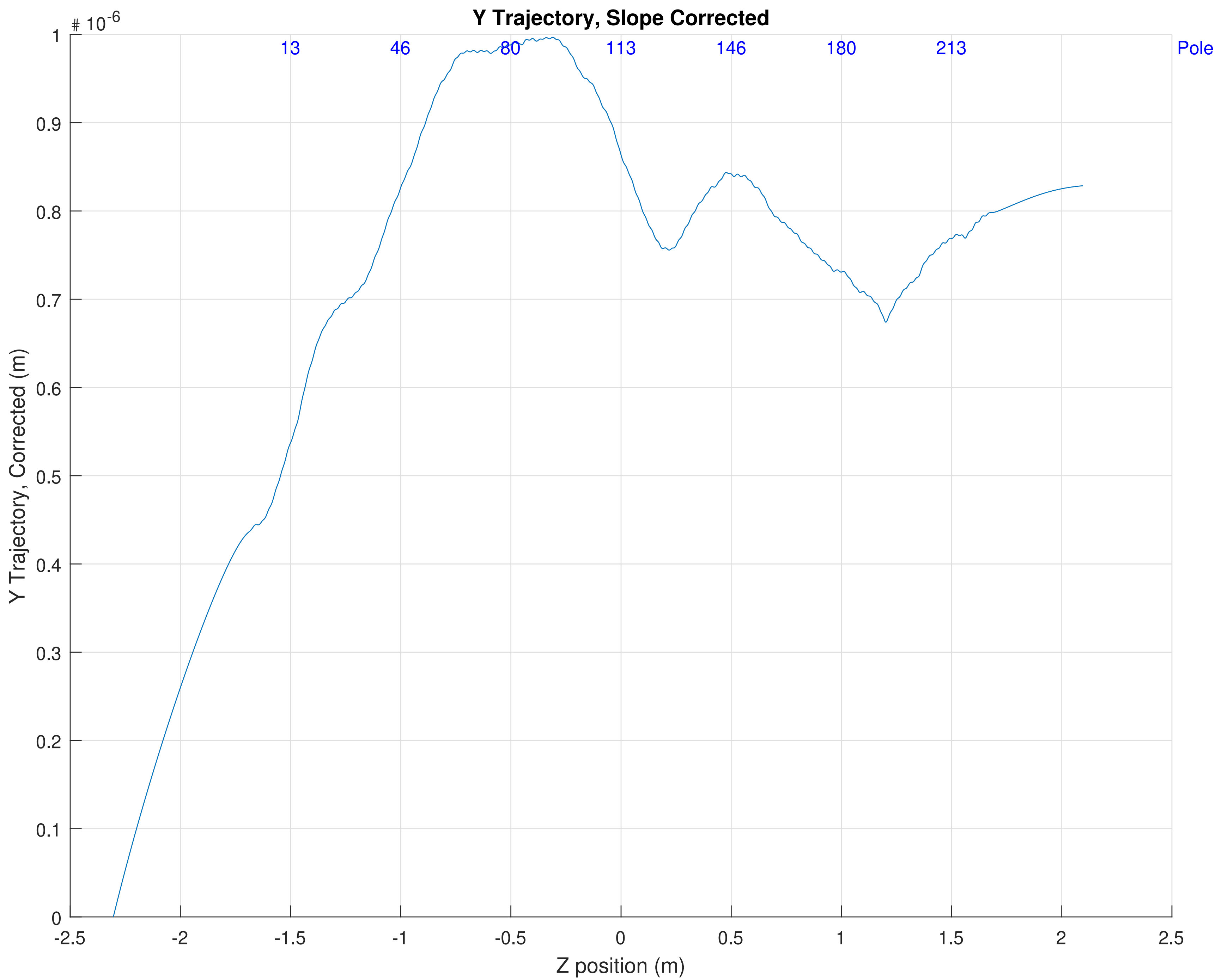


s s Bx dz dz and s s By dz dz
10-5
20
15
10
5
0
-5
s s B dz dz (Tm**2)
-2.5
-2
-1.5
-1
-0.5
0
0.5
1
1.5
2
2.5
Z (m)
I2x
I2x Filt
I2y
I2y Filt

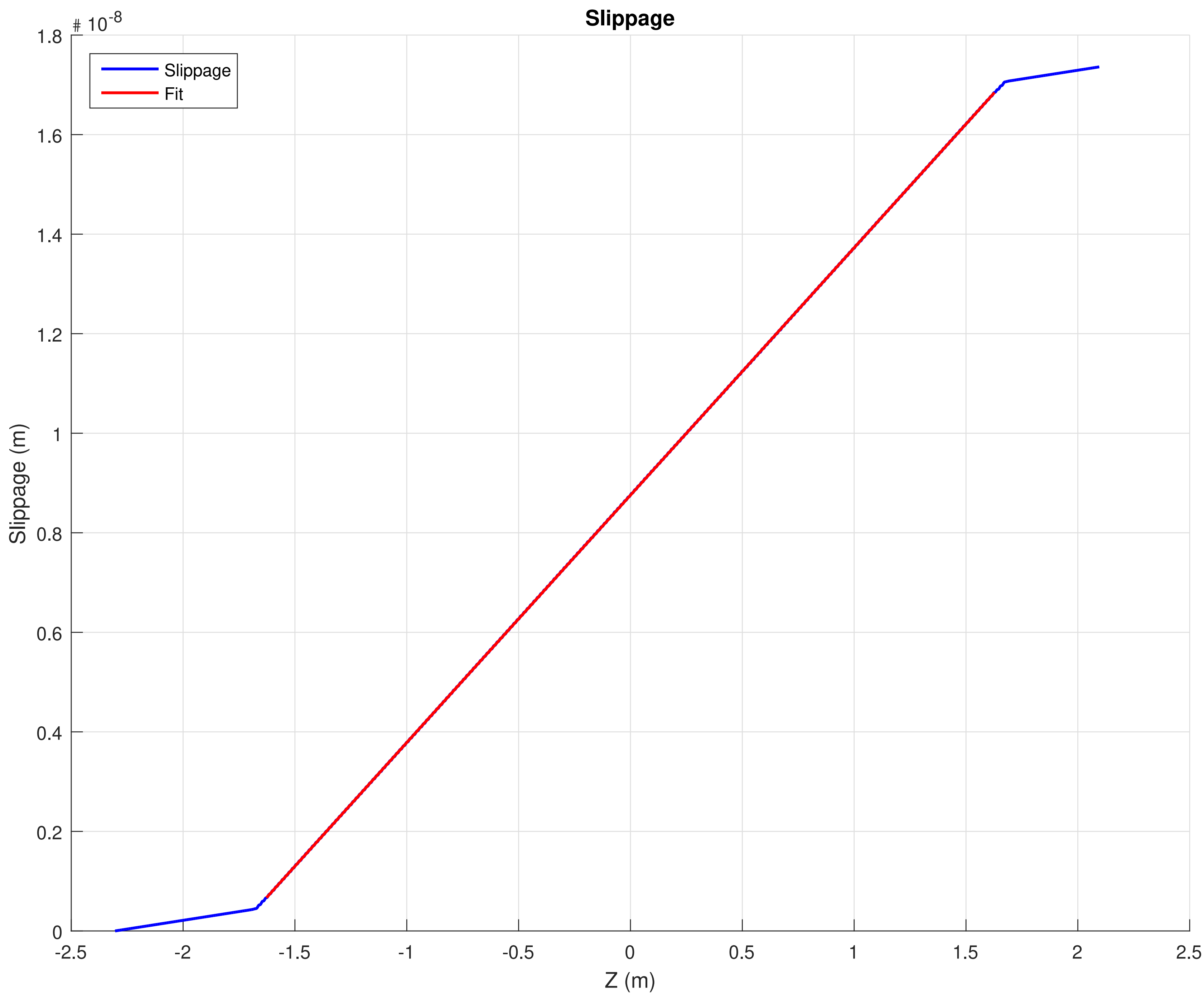

X Trajectory
10^-6
13
46
80
113
146
180
213
Pole
X (m)
Z position (m)
2.5
2
1.5
1
0.5
0
-0.5
-1
-2.5
-2
-1.5
-1
-0.5
0
0.5
1
1.5
2
2.5

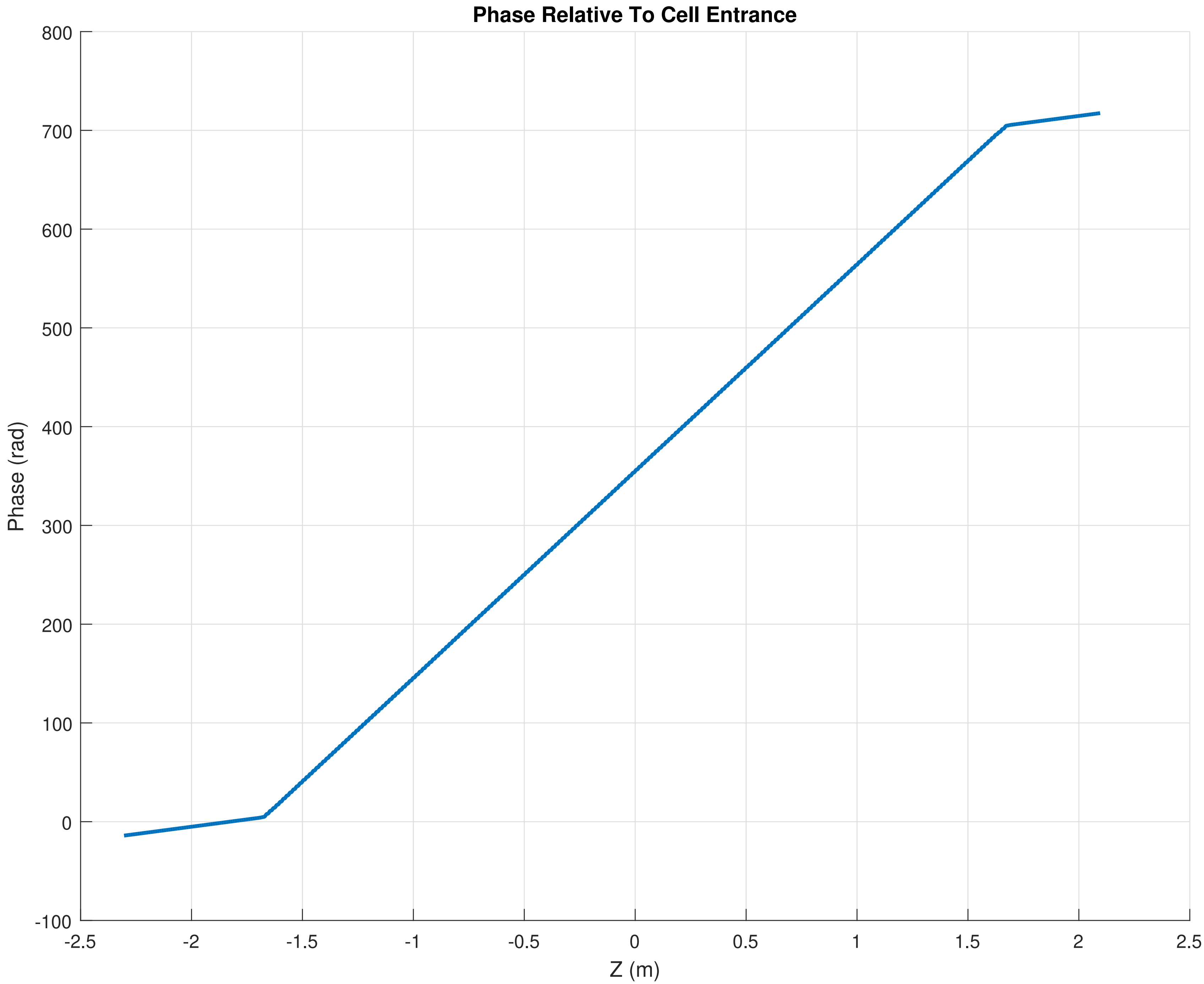

Y Trajectory
10^-6
13
46
80
113
146
180
213
Pole
0
-0.5
-1
-1.5
-2
-2.5
-3
-3.5
-4
Y (m)
-2.5
-2
-1.5
-1
-0.5
0
0.5
1
1.5
2
2.5
Z position (m)

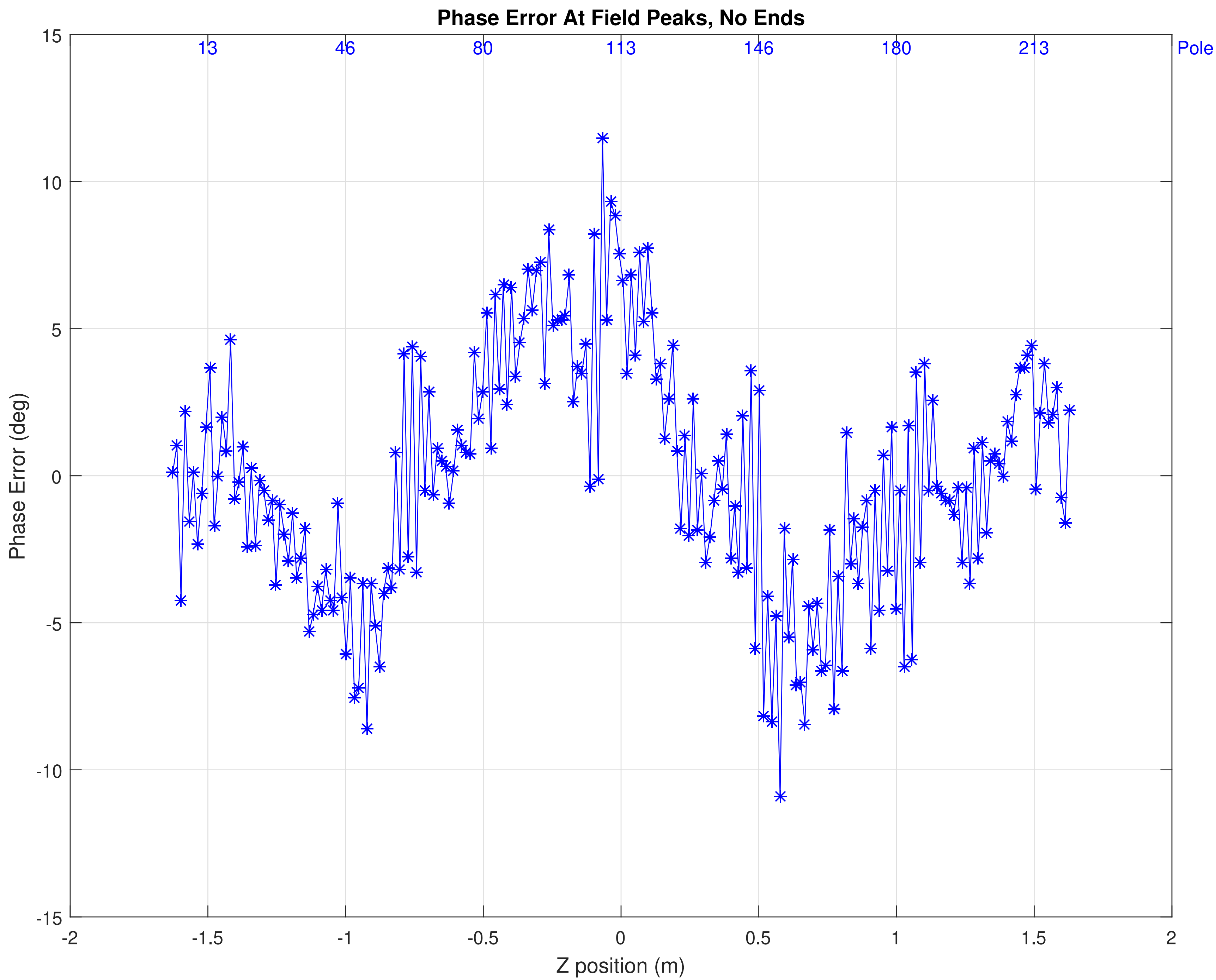

X Trajectory, Slope Corrected
10-7
13
46
80
113
146
180
213
Pole
5
0
-5
-10
-15
-20
-2.5
-2
-1.5
-1
-0.5
0
0.5
1
1.5
2
2.5
Z position (m)
X Trajectory, Corrected (m)



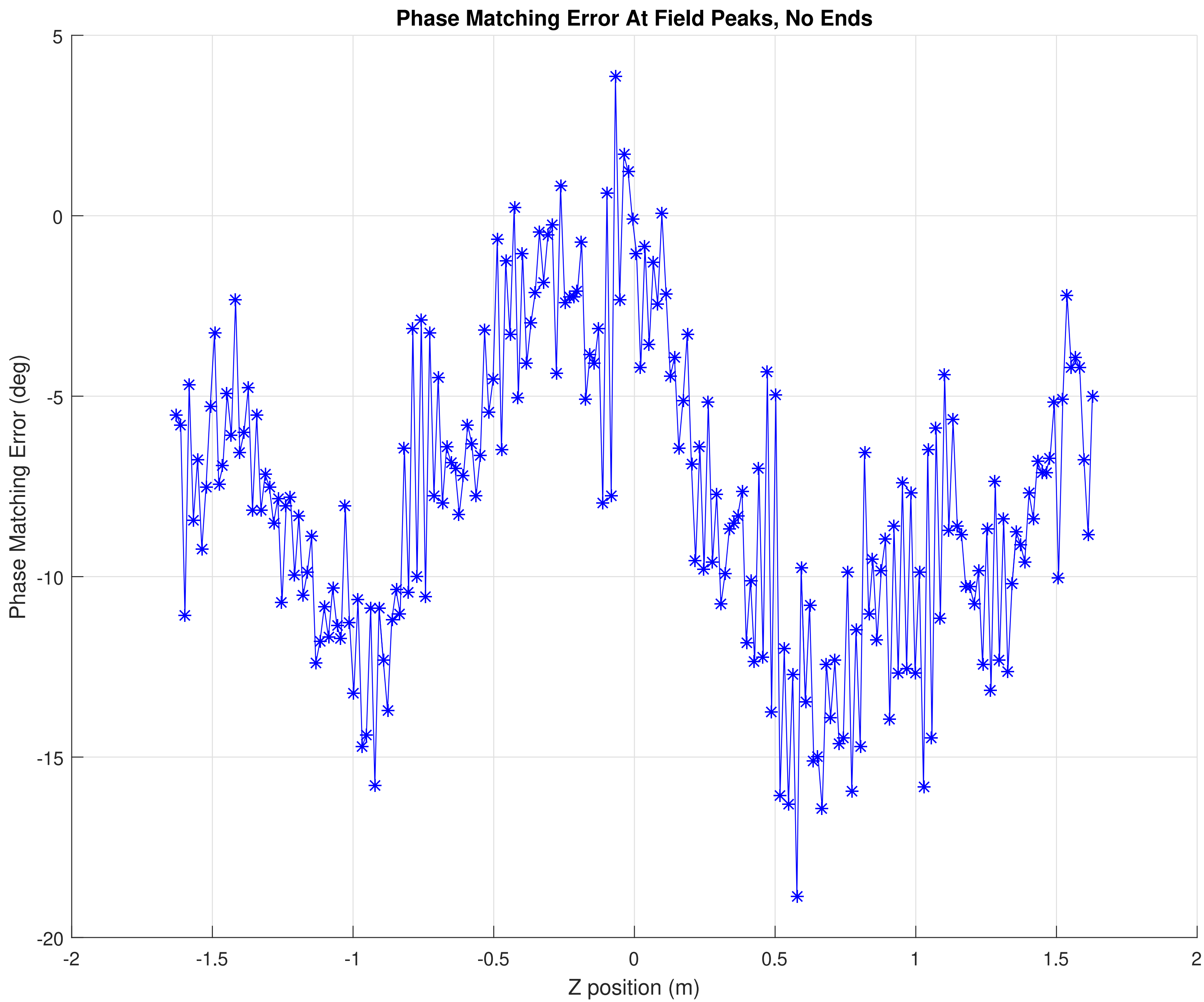
Y Trajectory, Slope Corrected
10^-6
13
46
80
113
146
180
213
Pole
Y Trajectory, Corrected (m)
Z position (m)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-2.5
-2
-1.5
-1
-0.5
0
0.5
1
1.5
2
2.5


Slippage
10-8
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
Slippage (m)
-2.5
-2
-1.5
-1
-0.5
0
0.5
1
1.5
2
2.5
Z (m)
Slippage
Fit


Phase Relative To Cell Entrance
Phase (rad)
Z (m)
800
700
600
500
400
300
200
100
0
-100
-2.5
-2
-1.5
-1
-0.5
0
0.5
1
1.5
2
2.5



Phase Error: Ave = 0.000000 deg, RMS = 4.080650 deg



Phase Match Error: Ave = -7.738554 deg, RMS = 4.211029 deg