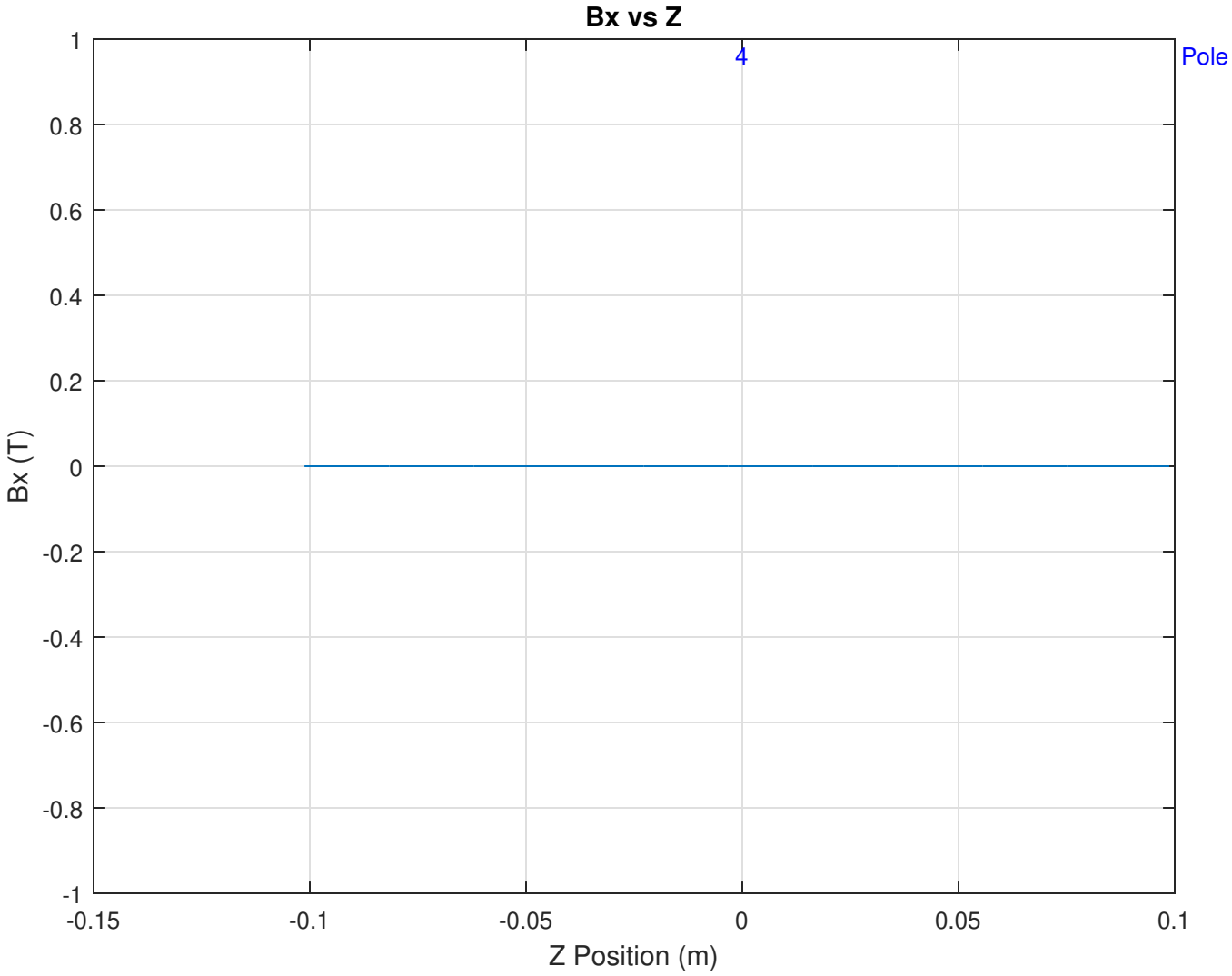
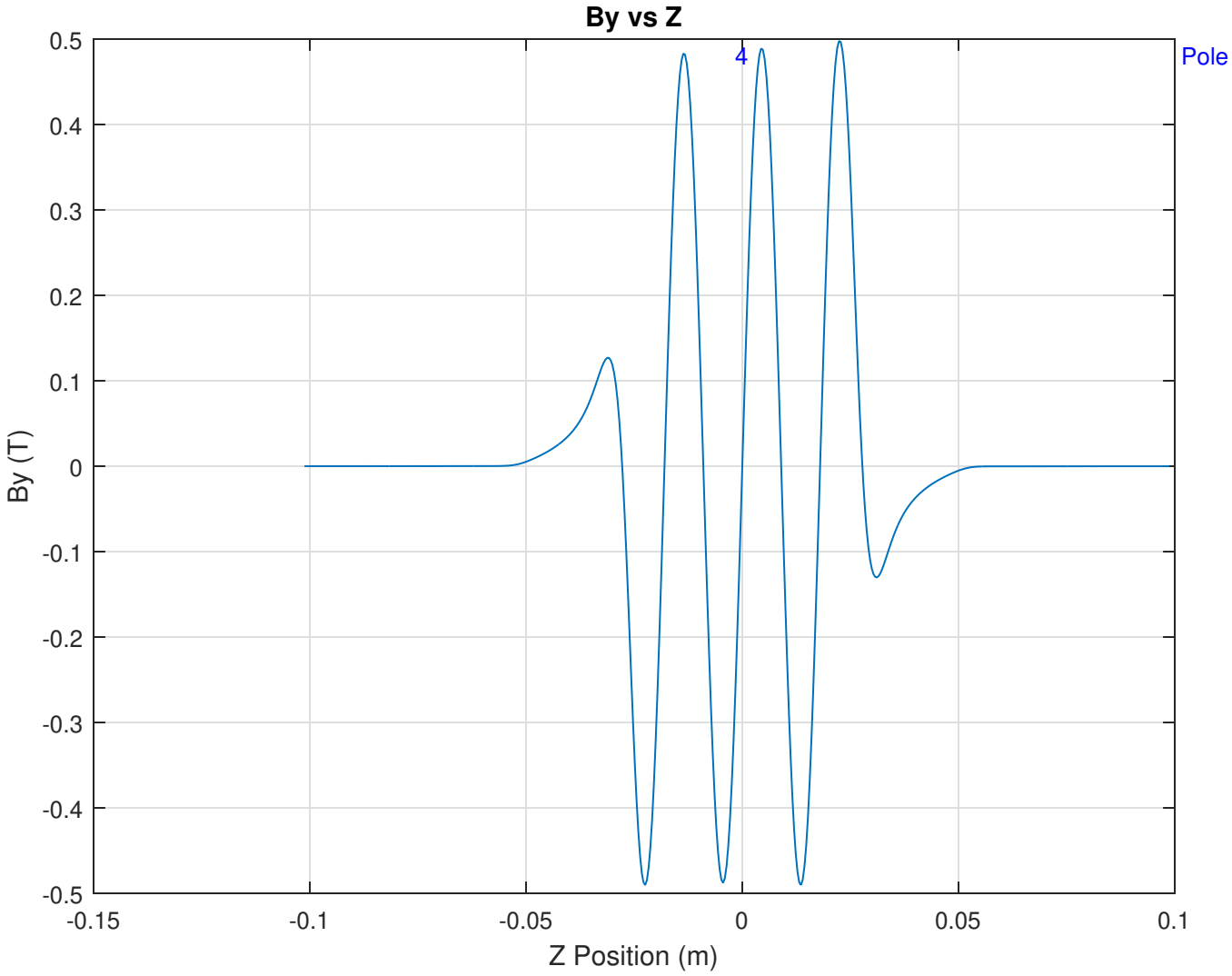
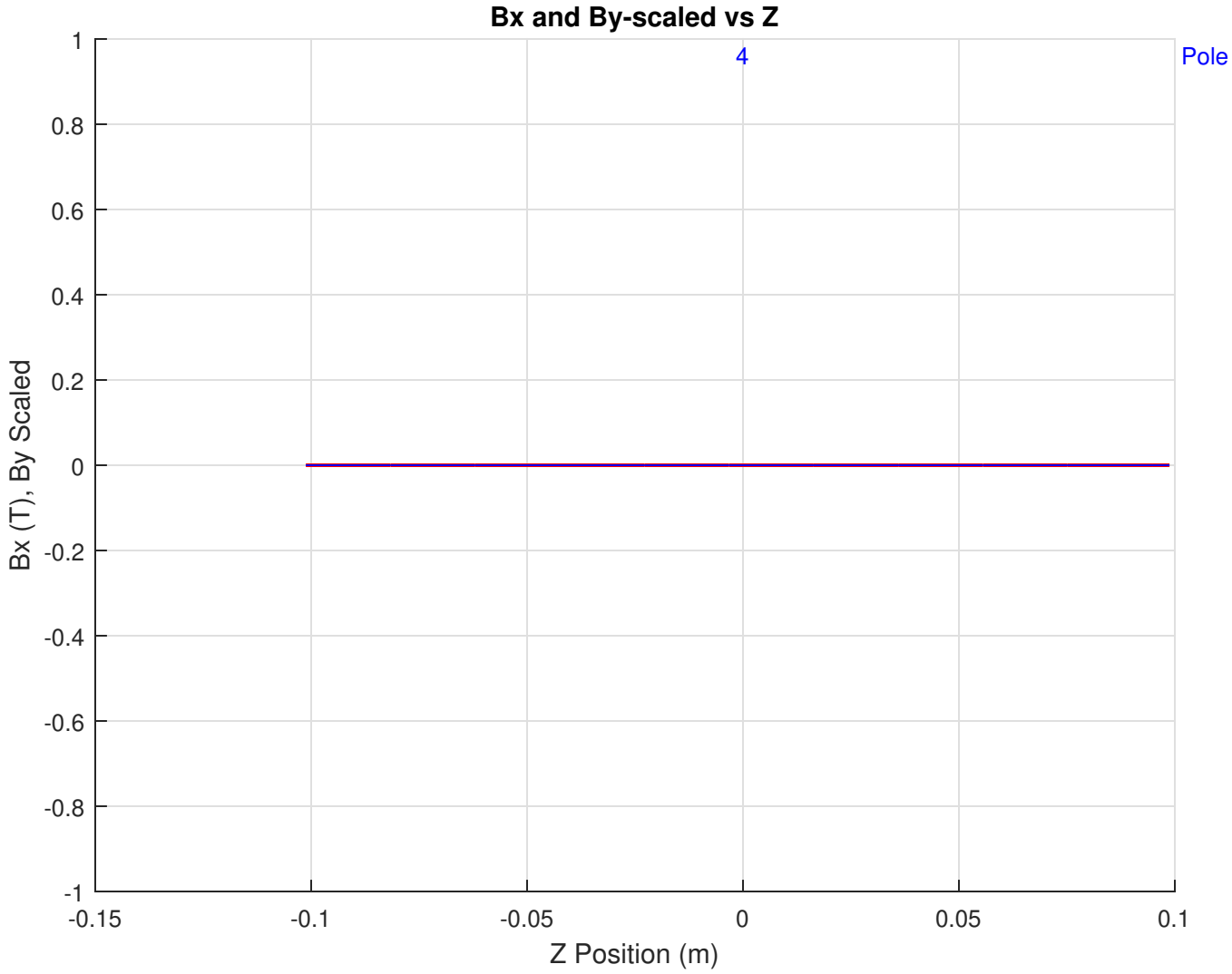
SLAC Magnetic Measurements

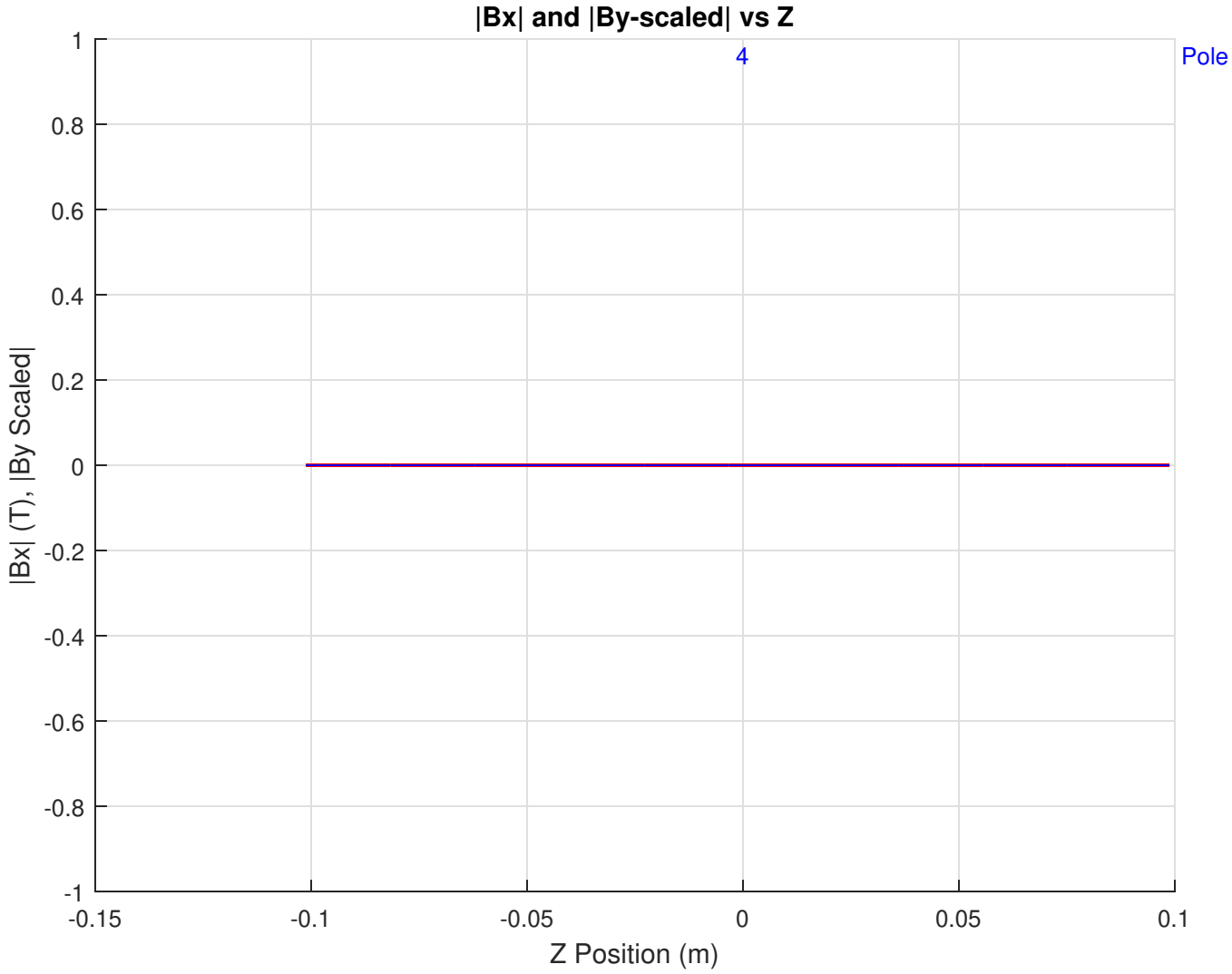
Planar Insertion Device Analysis

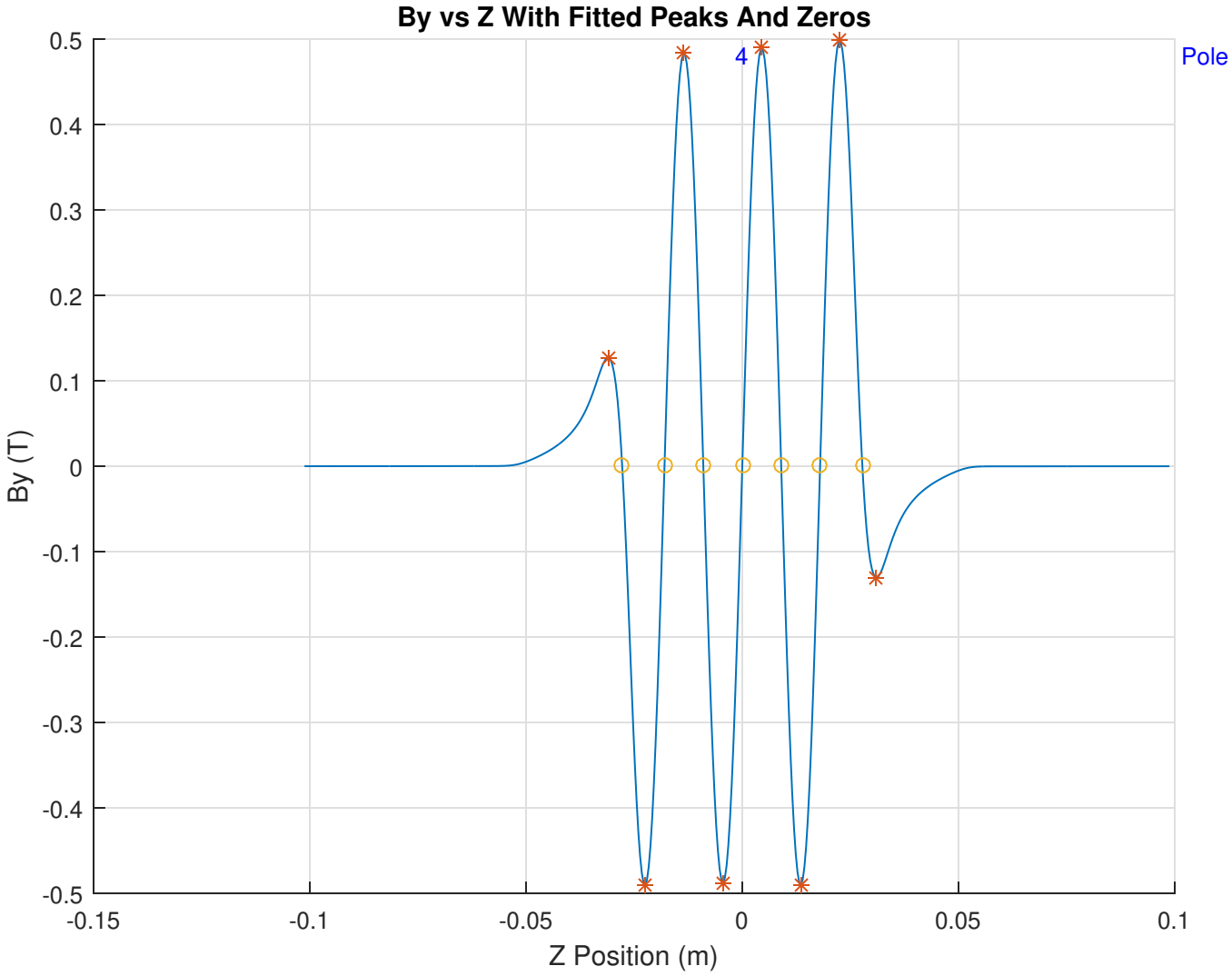
Parameters:
INPUT-FILE-DIR =C:\Magnet-Data\NLCTA\Undulator\IFEL\
INPUT-FILE-NAME =bhvsxyplt.ru5
INPUT-FILE-TYPE =Bhvsxyplt
CORR-REQUIRED =0
GAMMA =117.417
NOM-LAMBDA-U =0.018
NOM-K-VALUE =0.9
NOM-LAMBDA-R =9.1718e-07
NUM-POLES =8
NUM-END-POLES =1
CELL-LENGTH =0.153

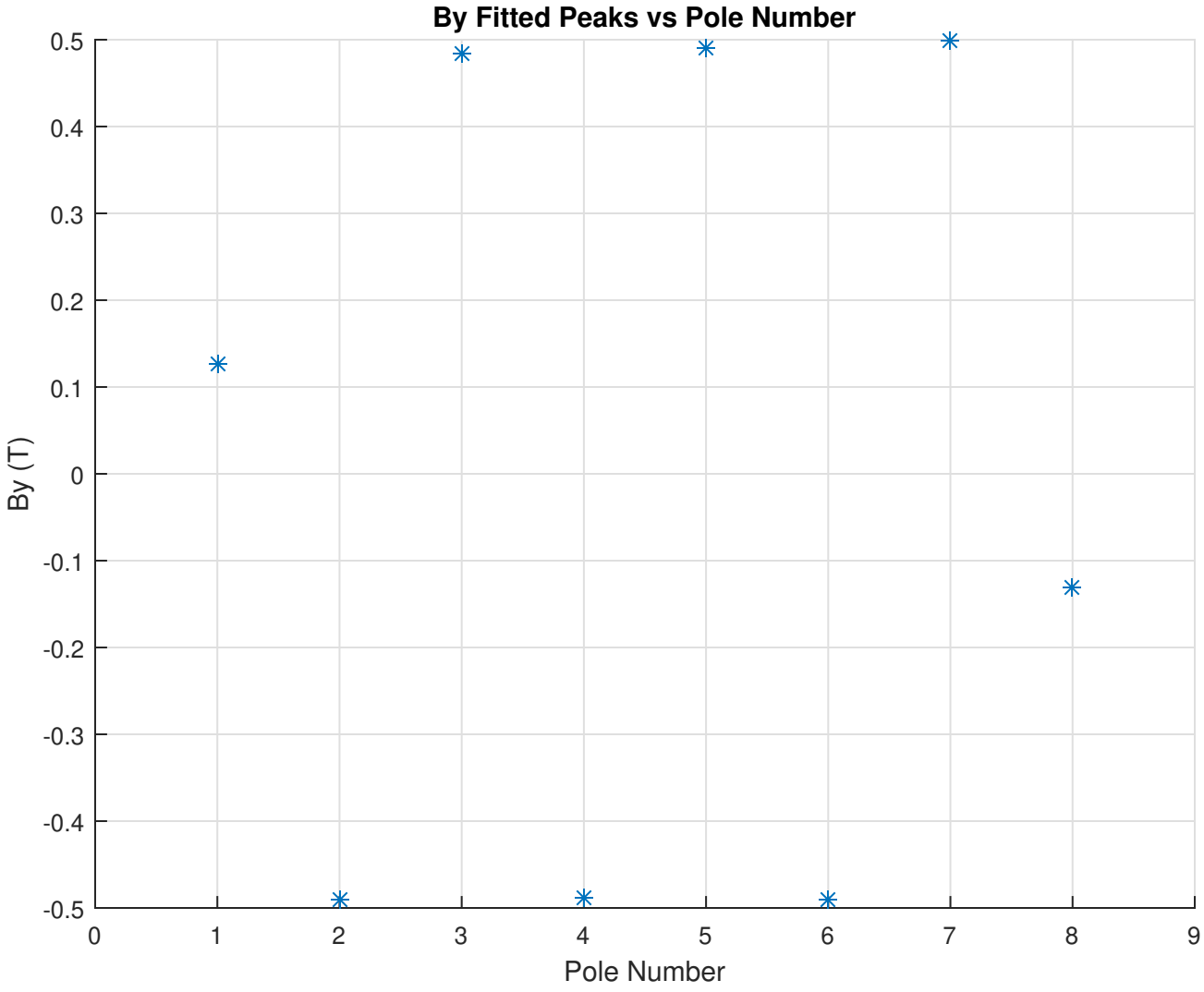

Bx vs Z
4
Pole
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
Bx (T)
-0.15
-0.1
-0.05
0
0.05
0.1
Z Position (m)

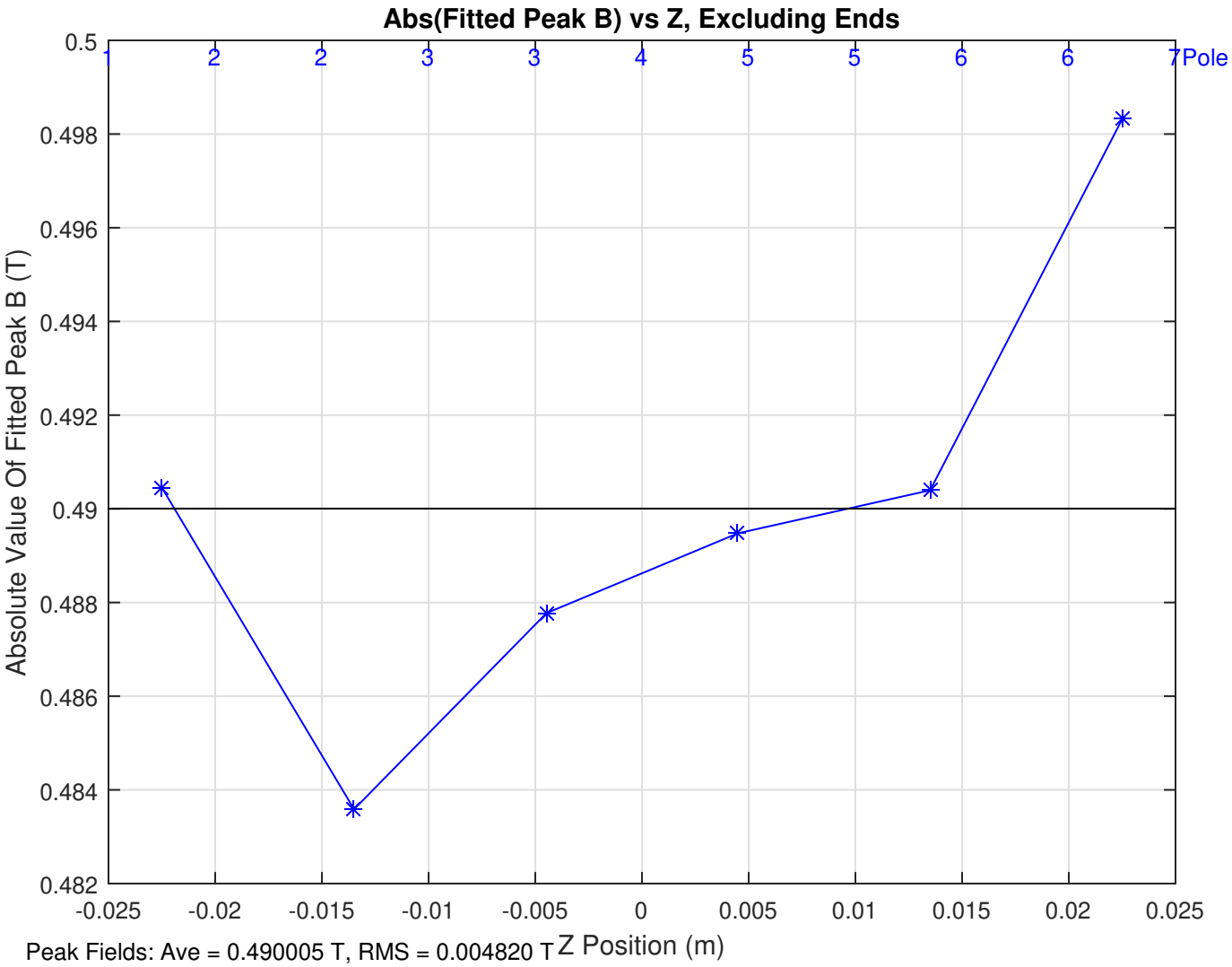

By vs Z
4
Pole
0.5
0.4
0.3
0.2
0.1
0
-0.1
-0.2
-0.3
-0.4
-0.5
By (T)
-0.15
-0.1
-0.05
0
0.05
0.1
Z Position (m)


Bx and By-scaled vs Z
4
Pole
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
Bx (T), By Scaled
-0.15
-0.1
-0.05
0
0.05
0.1
Z Position (m)

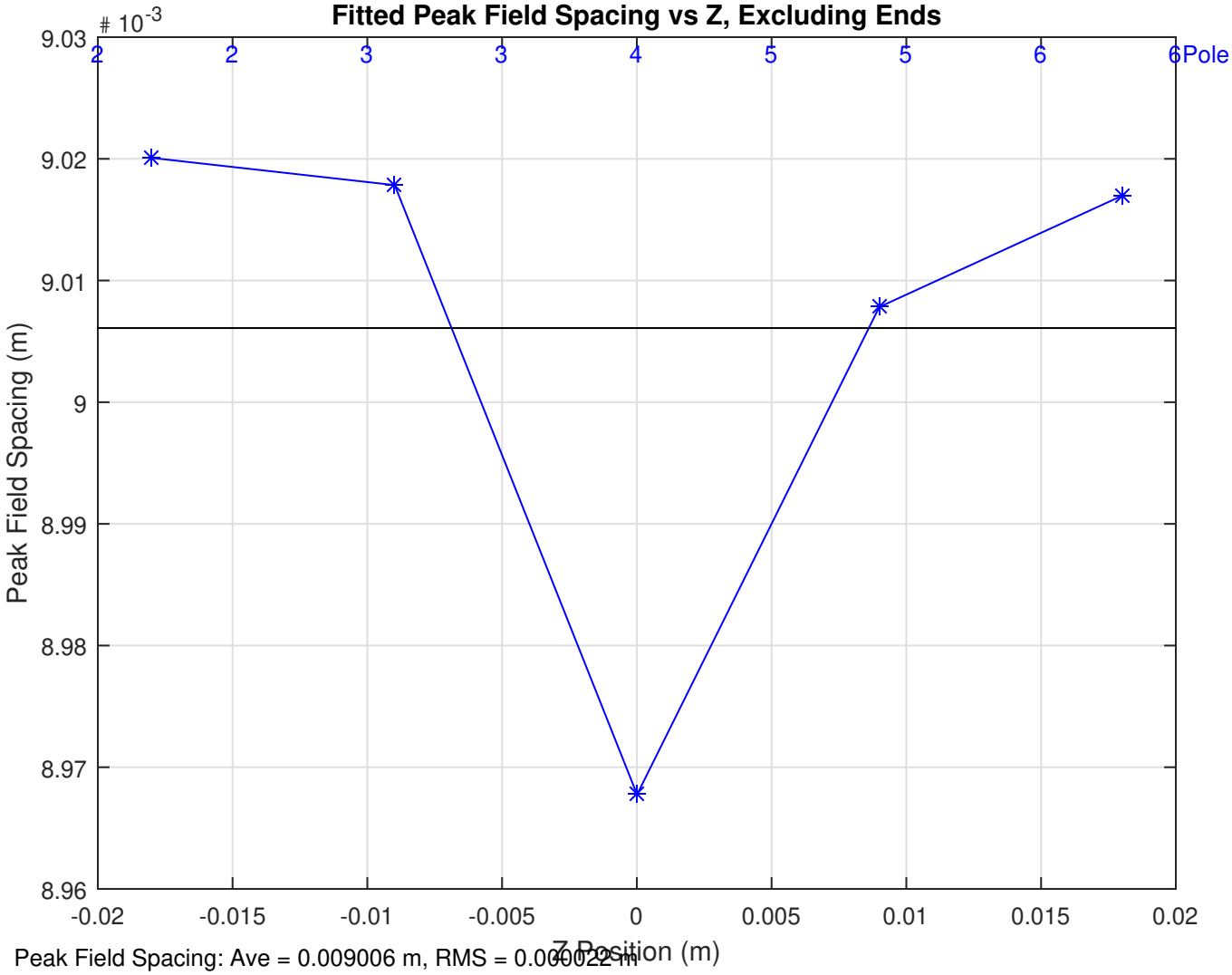

|Bx| and |By-scaled| vs Z
4
Pole
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
|Bx| (T), |By Scaled|
-0.15
-0.1
-0.05
0
0.05
0.1
Z Position (m)


By vs Z With Fitted Peaks And Zeros
By (T)
Z Position (m)
0.5
0.4
0.3
0.2
0.1
0
-0.1
-0.2
-0.3
-0.4
-0.5
-0.15
-0.1
-0.05
0
0.05
0.1
4
Pole

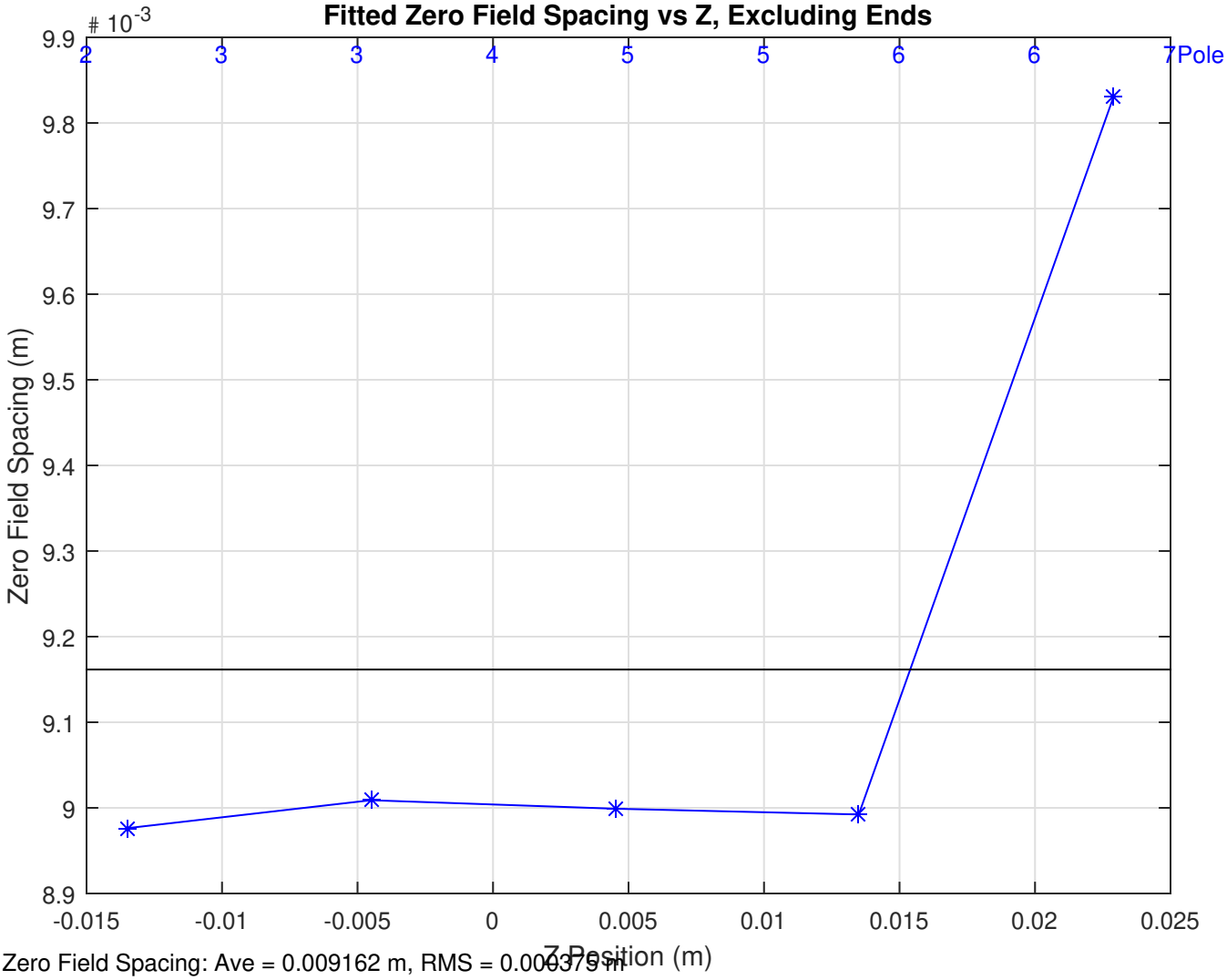

By Fitted Peaks vs Pole Number
By (T)
Pole Number
0.5
0.4
0.3
0.2
0.1
0
-0.1
-0.2
-0.3
-0.4
-0.5
0
1
2
3
4
5
6
7
8
9



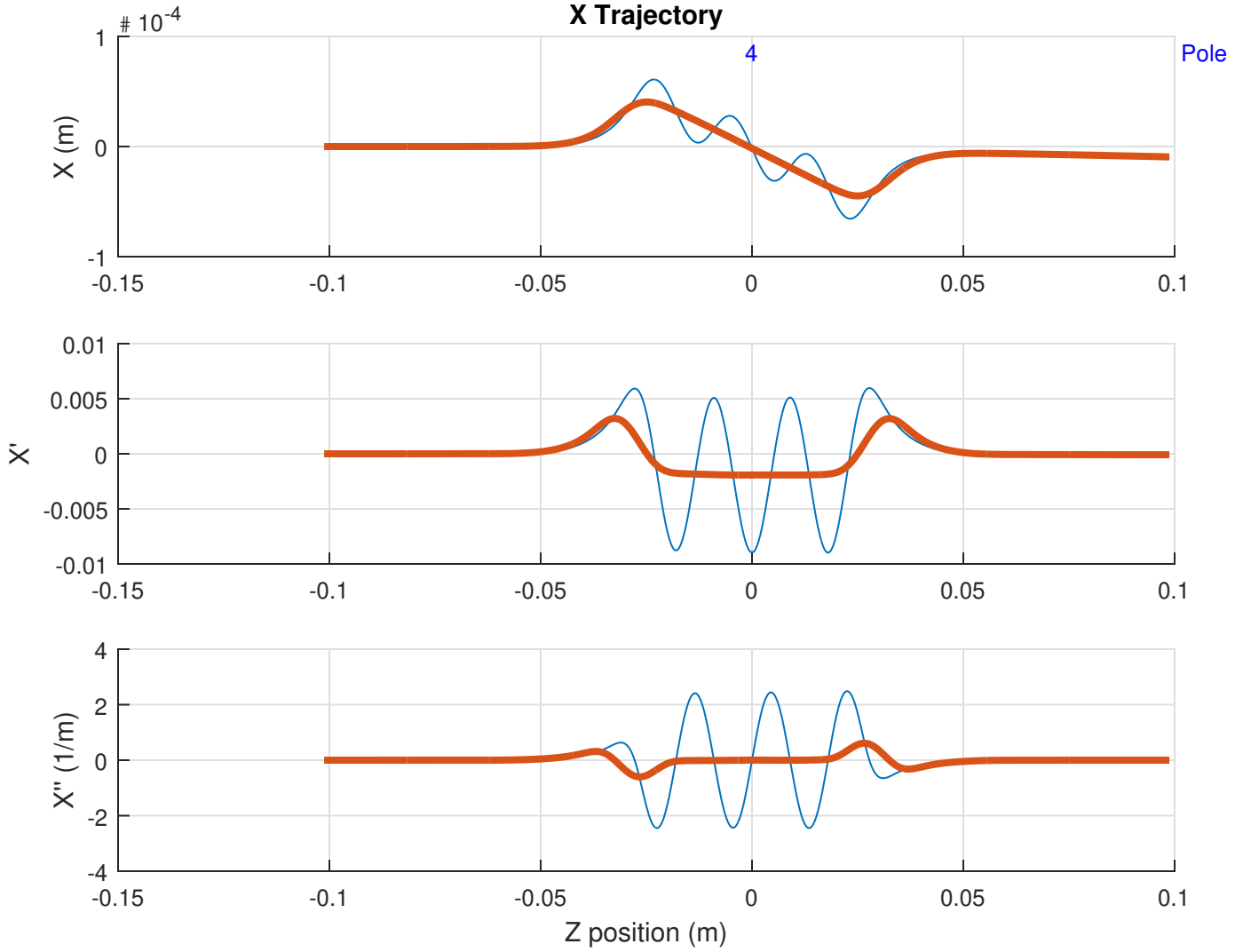
Peak Fields: Ave = 0.490005 T, RMS = 0.004820 T

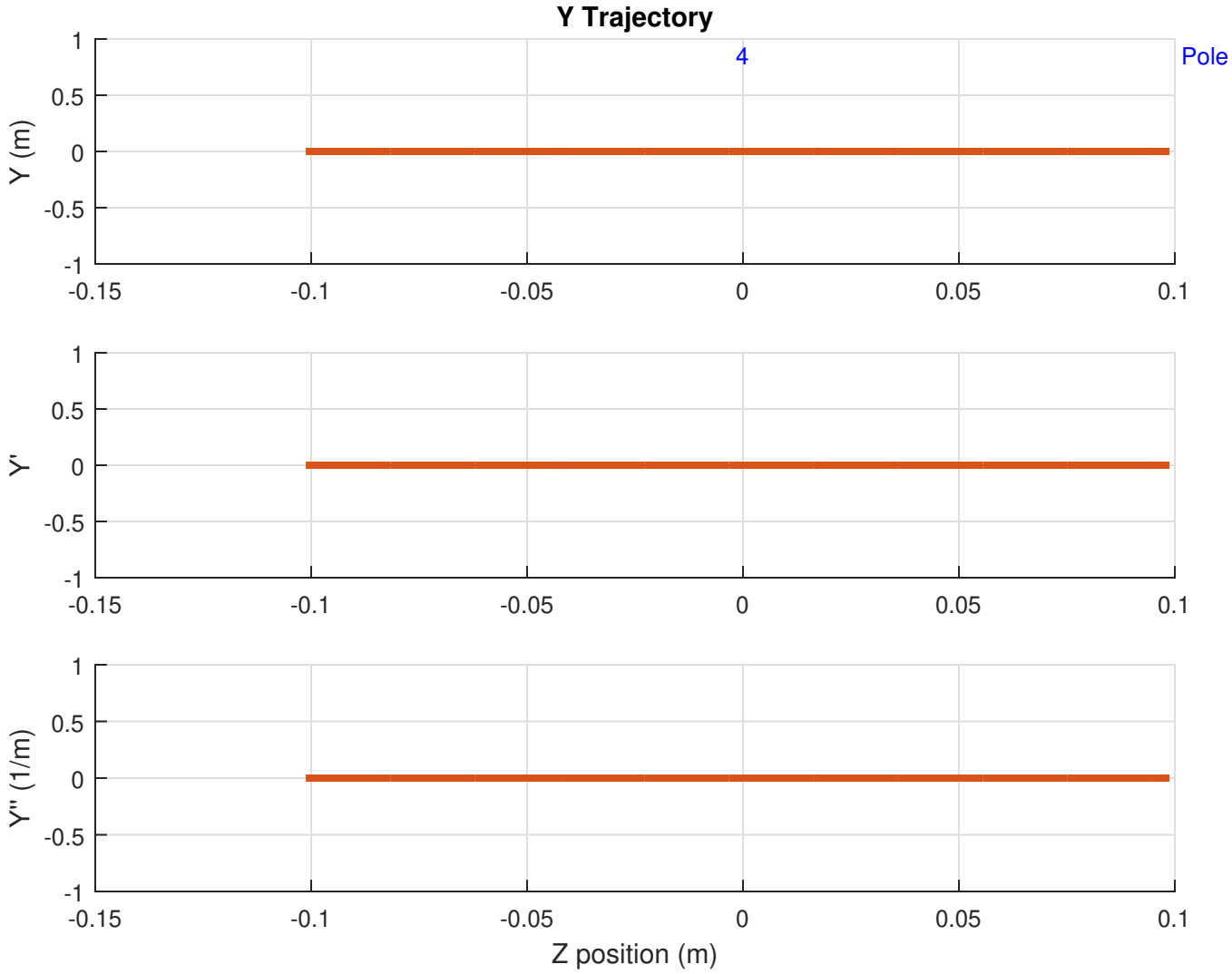


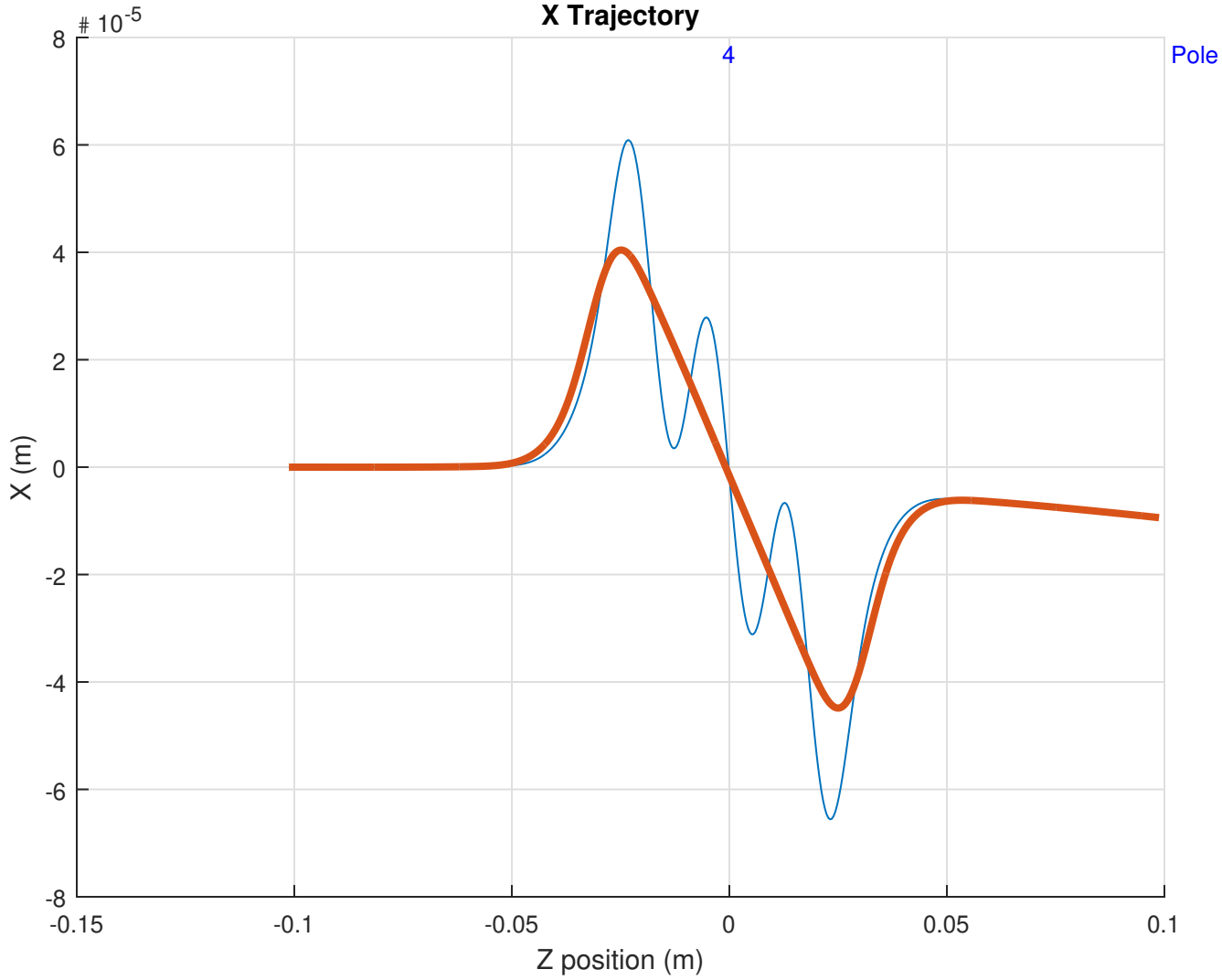
Peak Field Spacing: Ave = 0.009006 m, RMS = 0.000022 m

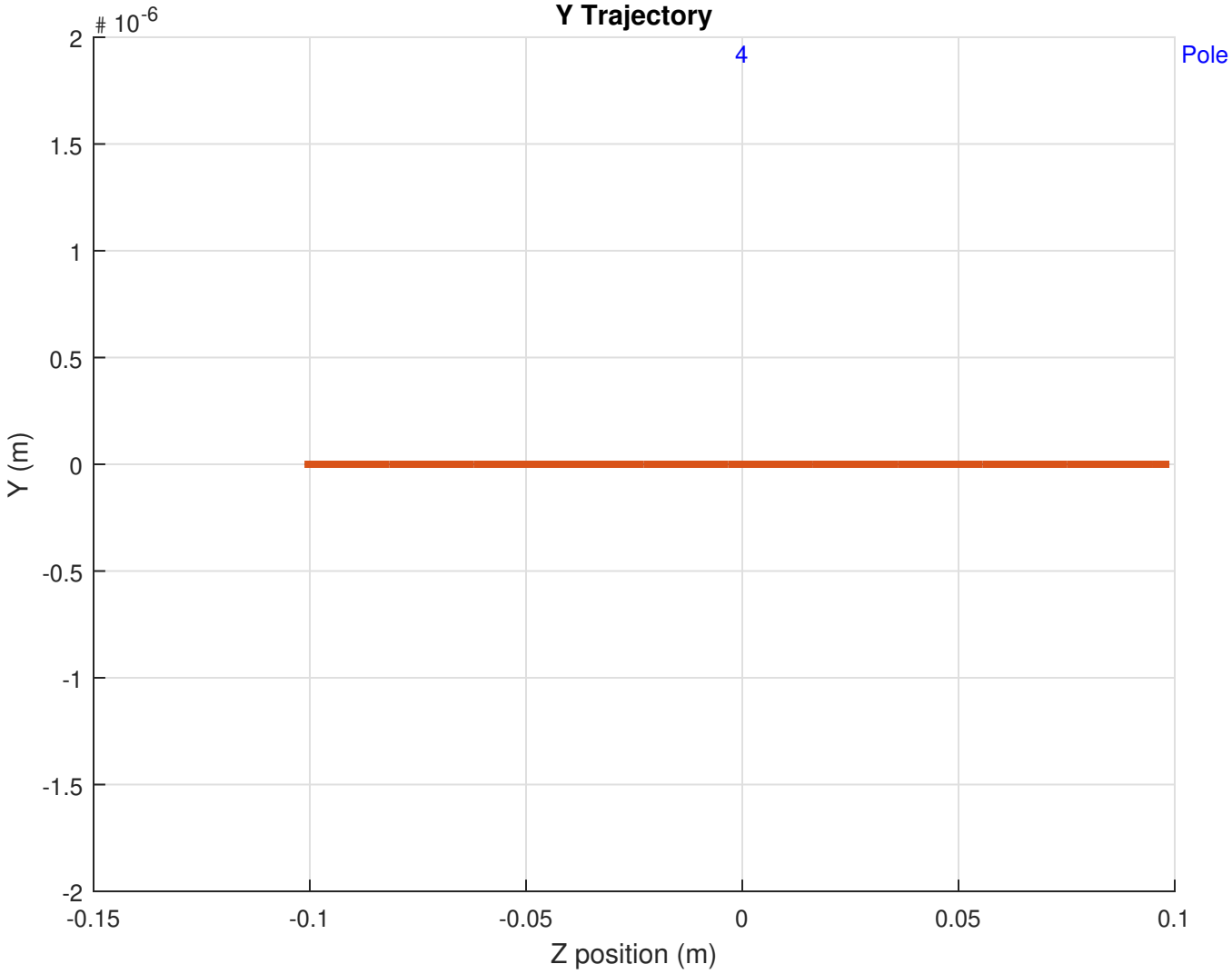


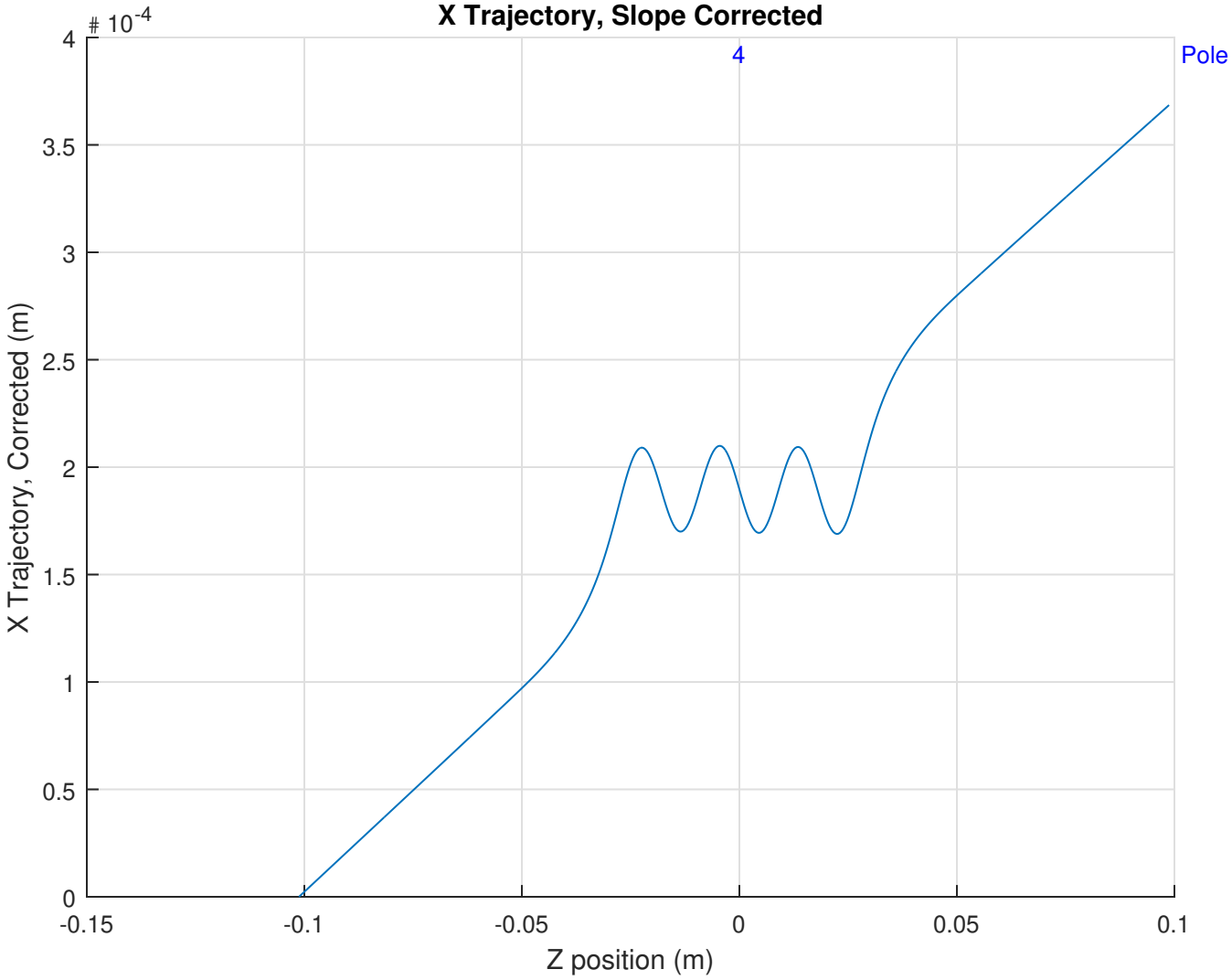
Zero Field Spacing: Ave = 0.009162 m, RMS = 0.000379 m

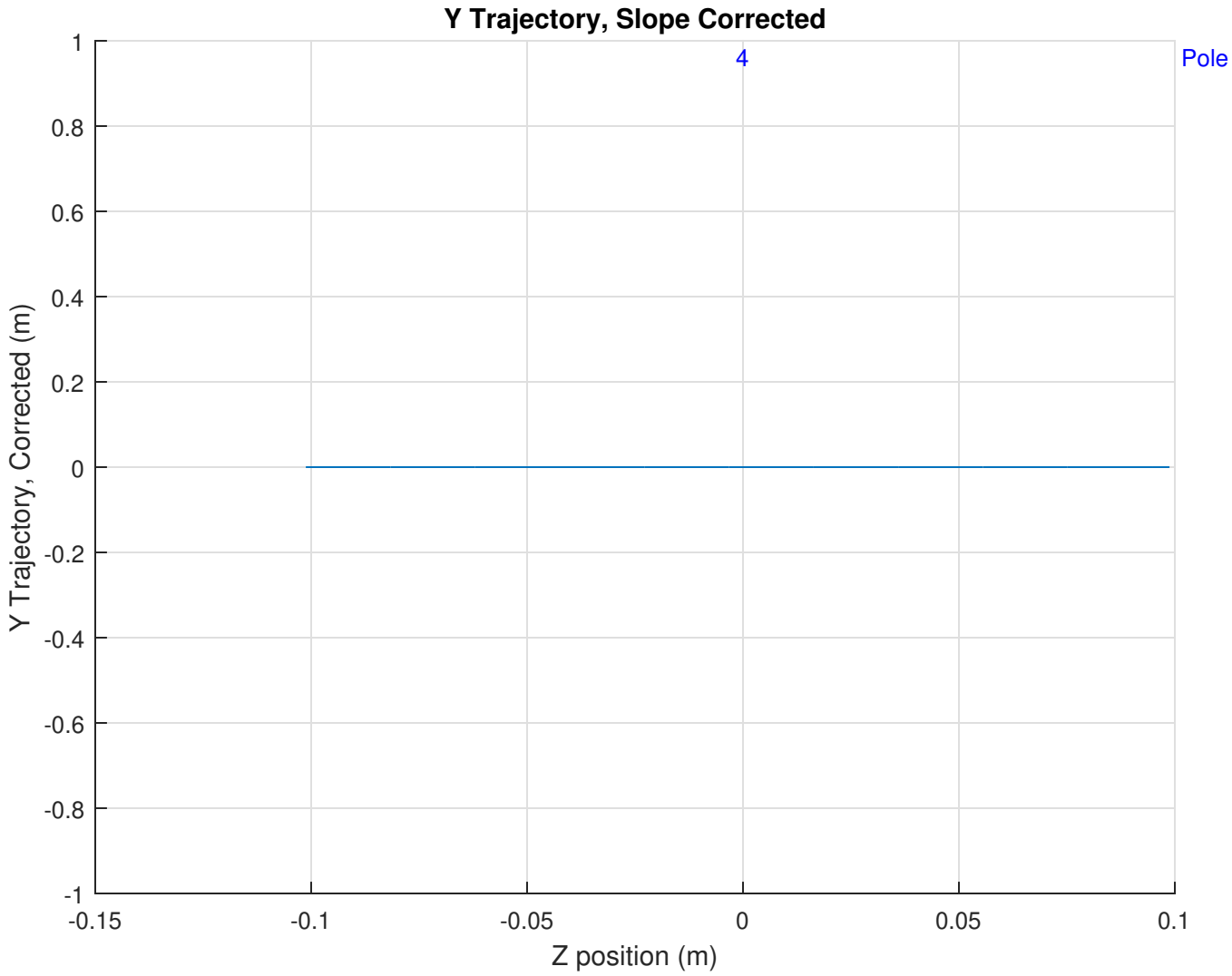

X Trajectory
10^-4
1
0
-1
X (m)
4
Pole
-0.15
-0.1
-0.05
0
0.05
0.1
0.01
0.005
0
-0.005
-0.01
X'
4
2
0
-2
-4
X'' (1/m)
Z position (m)

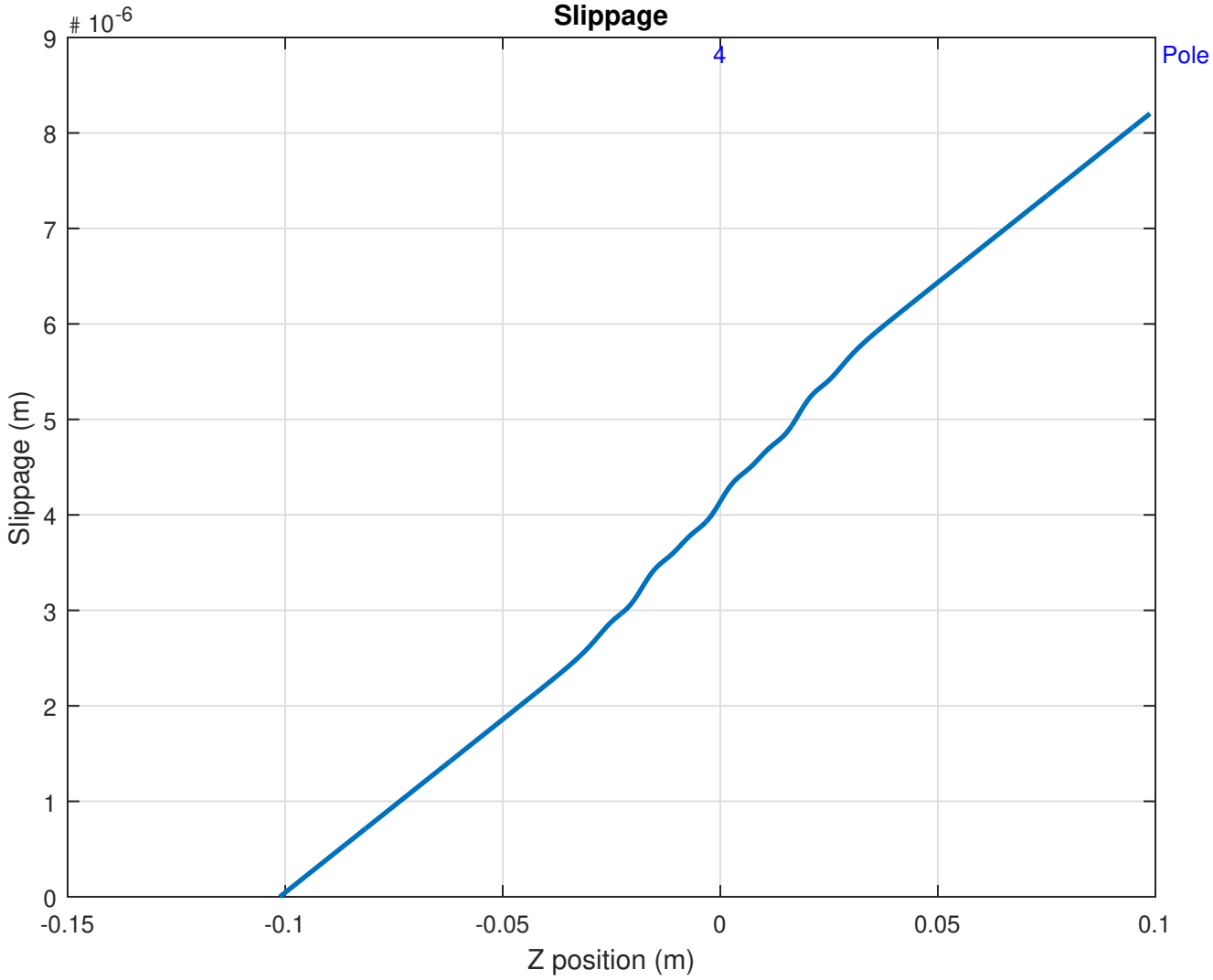

Y Trajectory
4
Pole
Y (m)
Y'
Y'' (1/m)
Z position (m)
1
0.5
0
-0.5
-1
-0.15
-0.1
-0.05
0
0.05
0.1

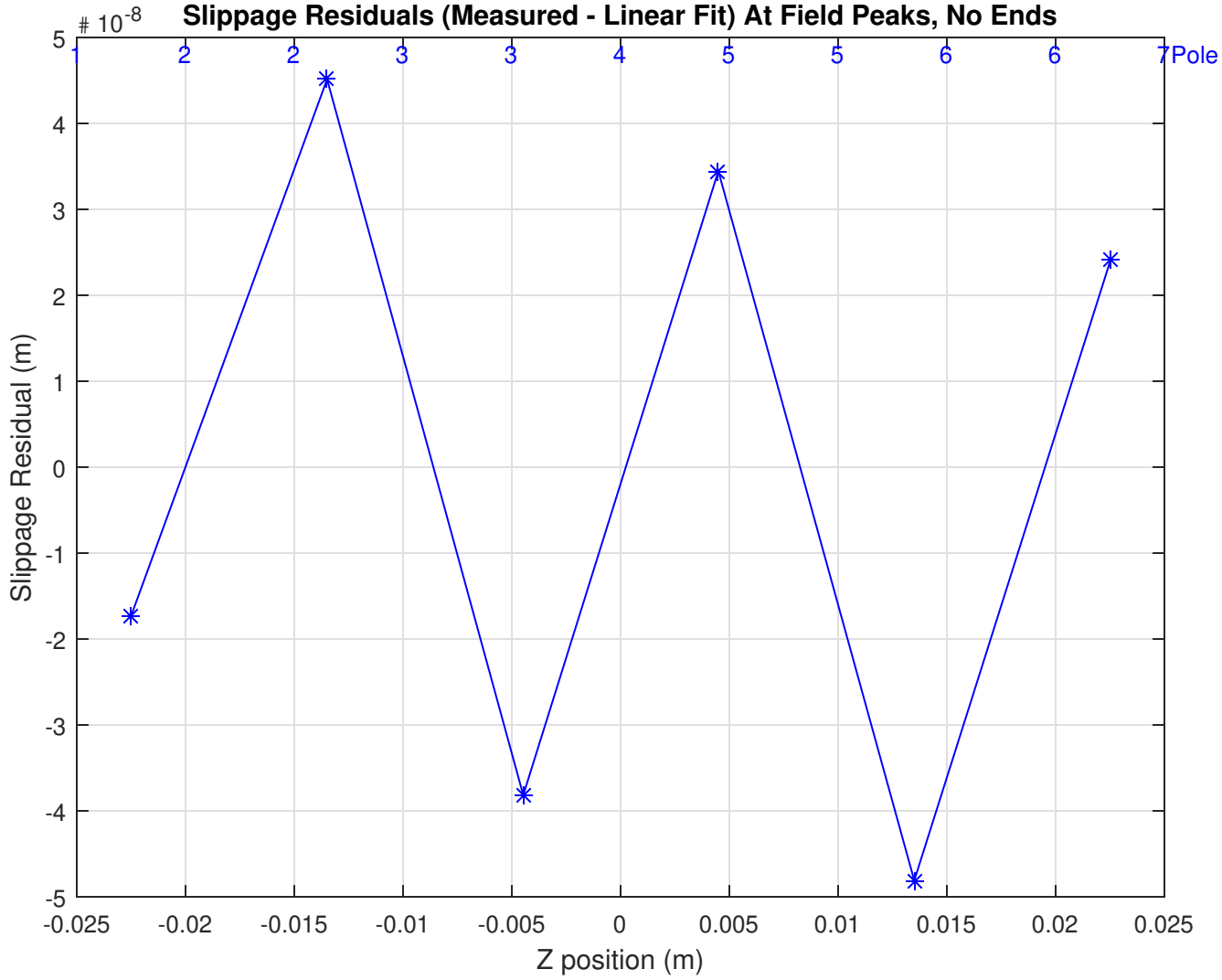

X Trajectory
10^-5
8
6
4
2
0
-2
-4
-6
-8
X (m)
-0.15
-0.1
-0.05
0
0.05
0.1
Z position (m)
4
Pole

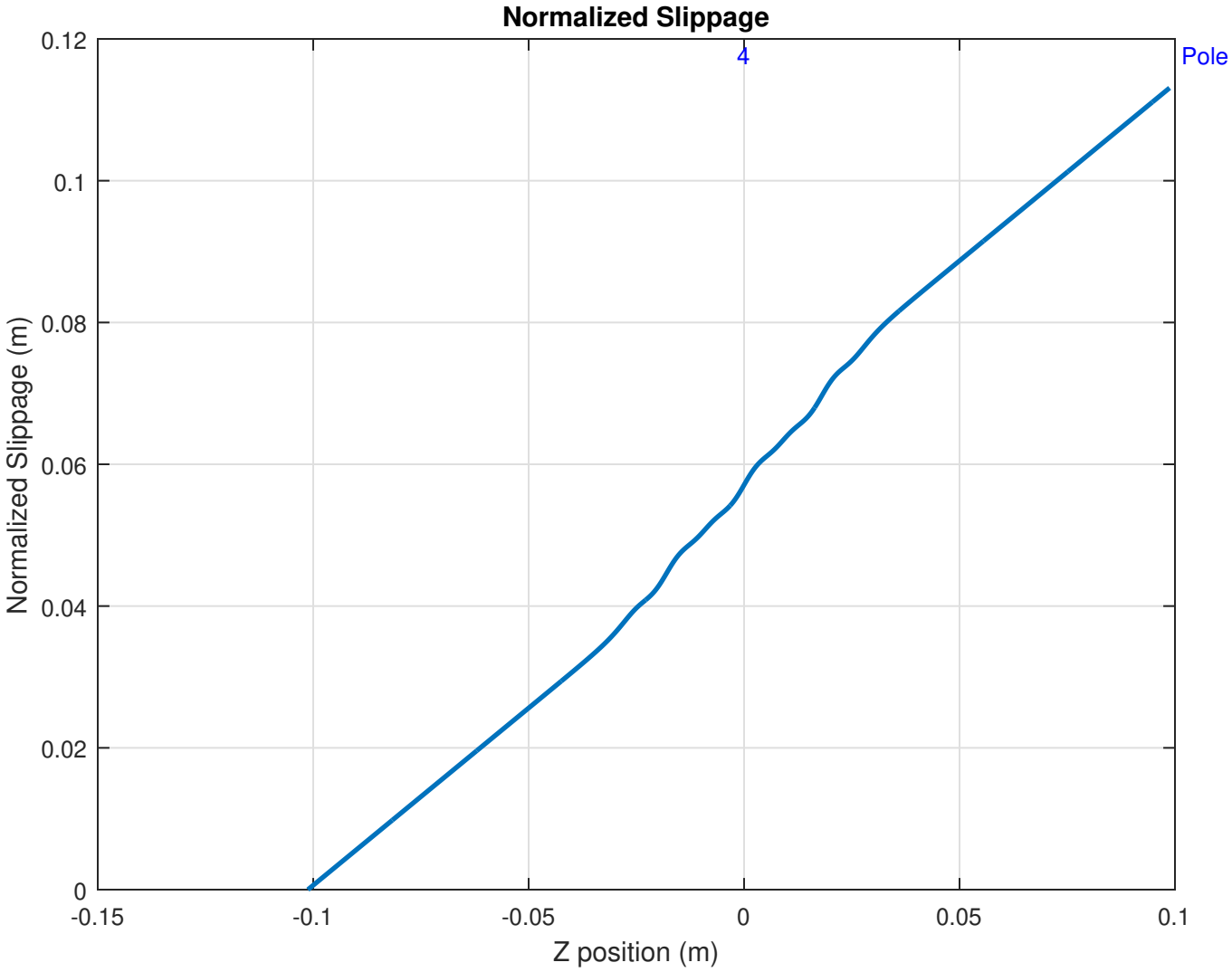

Y Trajectory
10^-6
2
1.5
1
0.5
0
-0.5
-1
-1.5
-2
Y (m)
-0.15
-0.1
-0.05
0
0.05
0.1
Z position (m)
4
Pole

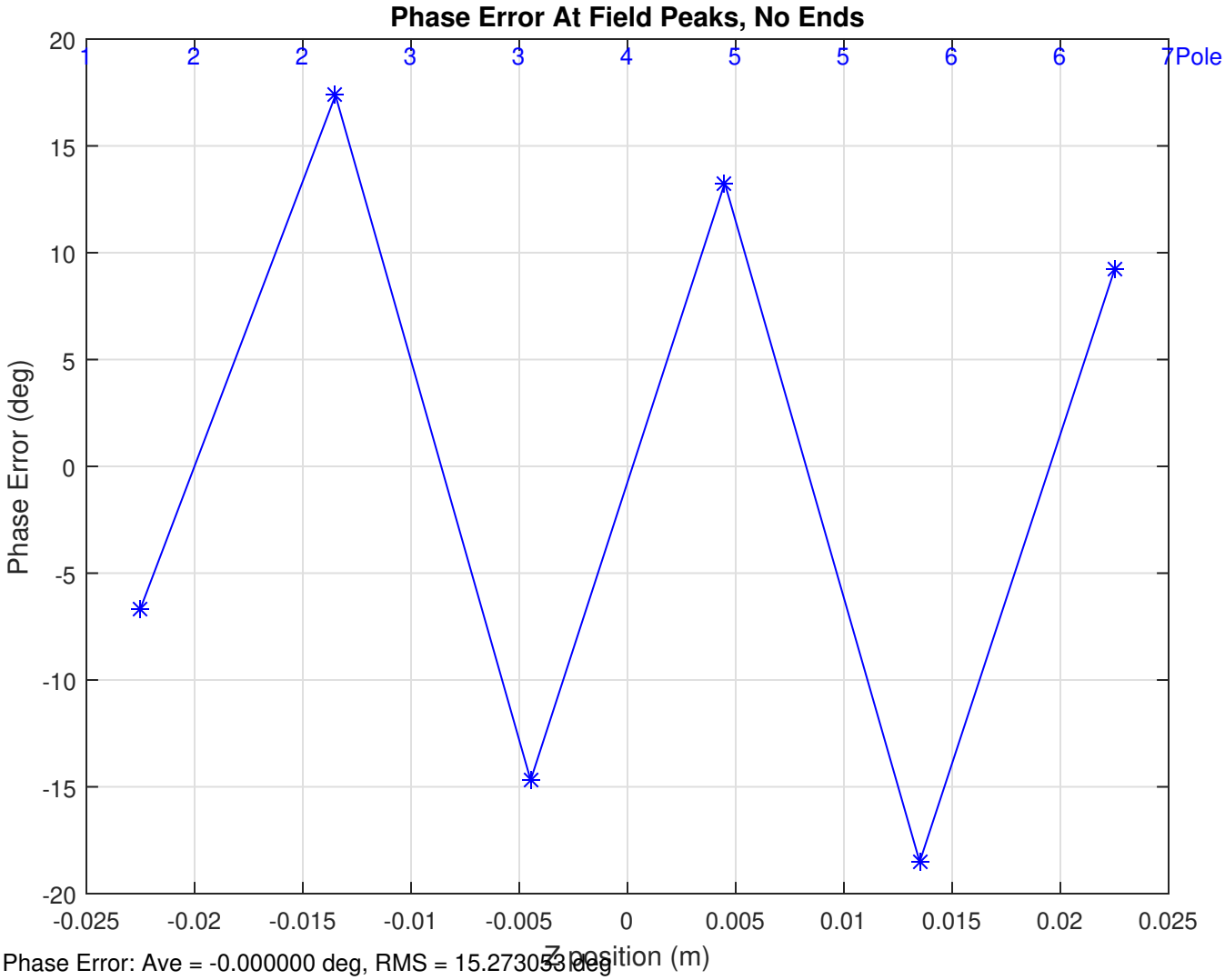

X Trajectory, Slope Corrected
10^-4
4
3.5
3
2.5
2
1.5
1
0.5
0
X Trajectory, Corrected (m)
-0.15
-0.1
-0.05
0
0.05
0.1
Z position (m)
4
Pole


Y Trajectory, Slope Corrected
4
Pole
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
Y Trajectory, Corrected (m)
-0.15
-0.1
-0.05
0
0.05
0.1
Z position (m)

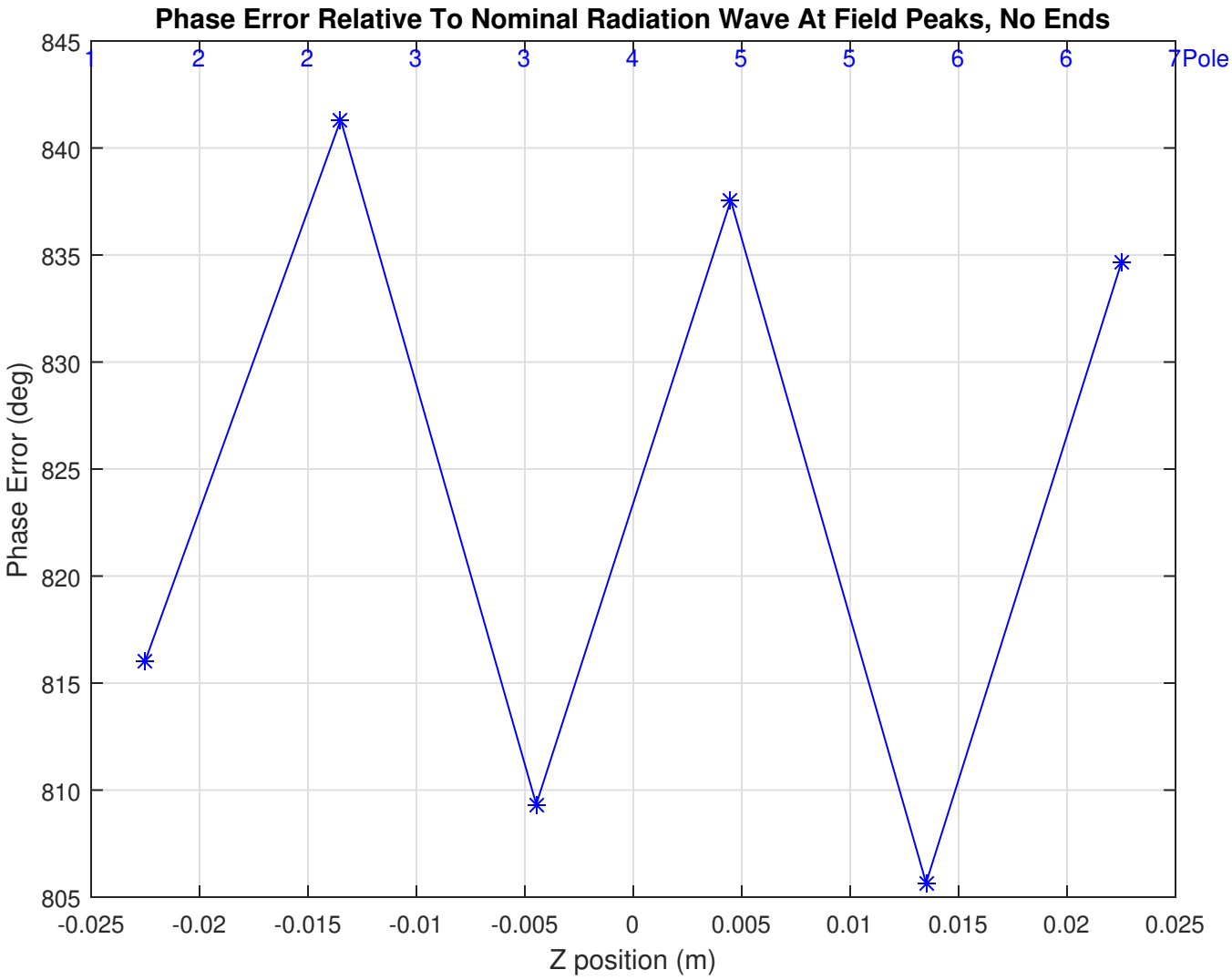

Slippage
10^-6
9
8
7
6
5
4
3
2
1
0
Slippage (m)
4
Pole
-0.15
-0.1
-0.05
0
0.05
0.1
Z position (m)


Slippage Residuals (Measured - Linear Fit) At Field Peaks, No Ends
10^-8
Slippage Residual (m)
Z position (m)
Pole
1
2
2
3
3
4
5
5
6
6
7
5
4
3
2
1
0
-1
-2
-3
-4
-5
-0.025
-0.02
-0.015
-0.01
-0.005
0
0.005
0.01
0.015
0.02
0.025


Normalized Slippage
4
Pole
0.12
0.1
0.08
0.06
0.04
0.02
0
Normalized Slippage (m)
-0.15
-0.1
-0.05
0
0.05
0.1
Z position (m)



Phase Error: Ave = -0.000000 deg, RMS = 15.273053 deg


Phase Error Relative To Nominal Radiation Wave At Field Peaks, No Ends
Phase Error (deg)
Z position (m)
Pole
845
840
835
830
825
820
815
810
805
1
2
2
3
3
4
5
5
6
6
7
-0.025
-0.02
-0.015
-0.01
-0.005
0
0.005
0.01
0.015
0.02
0.025