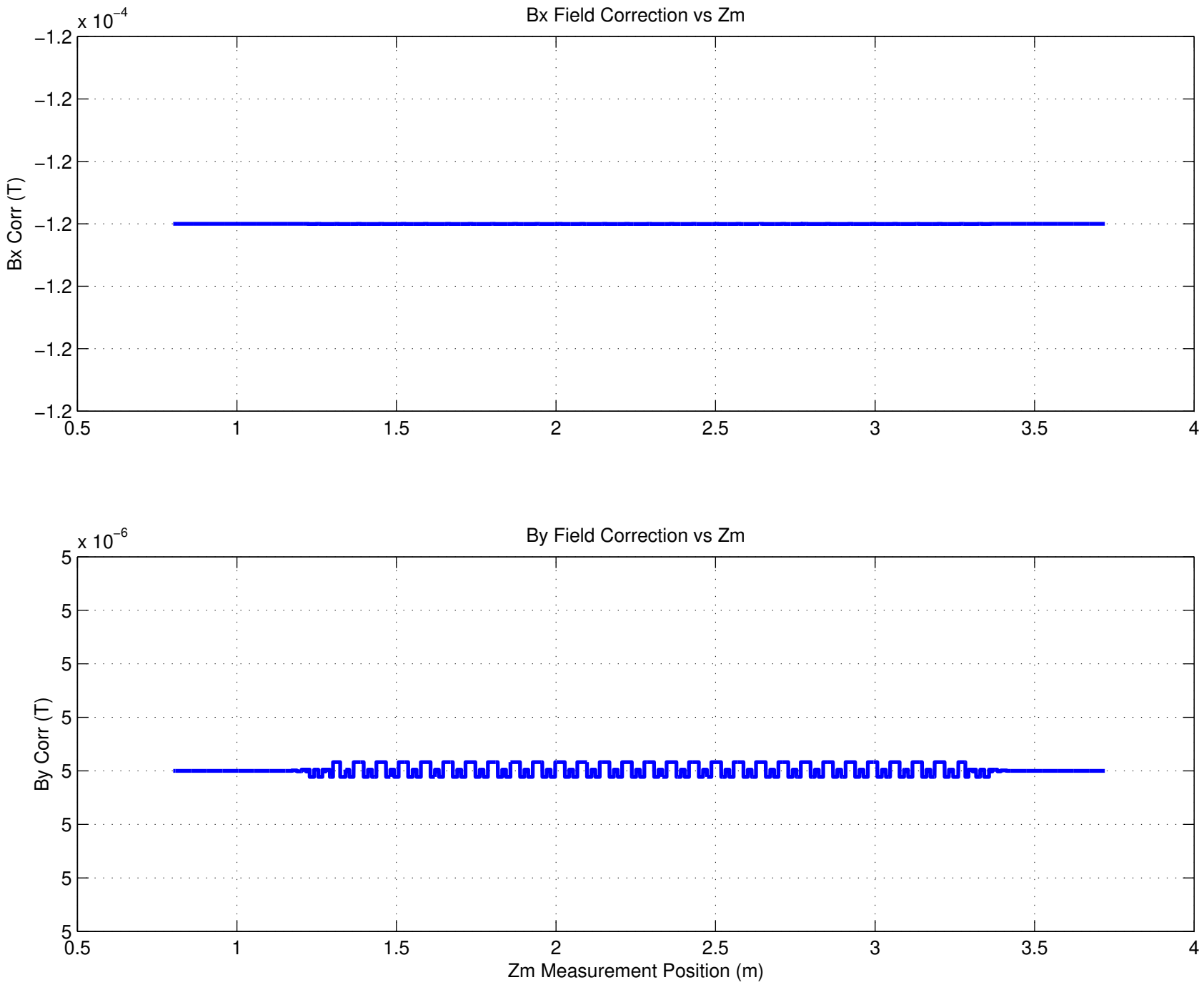
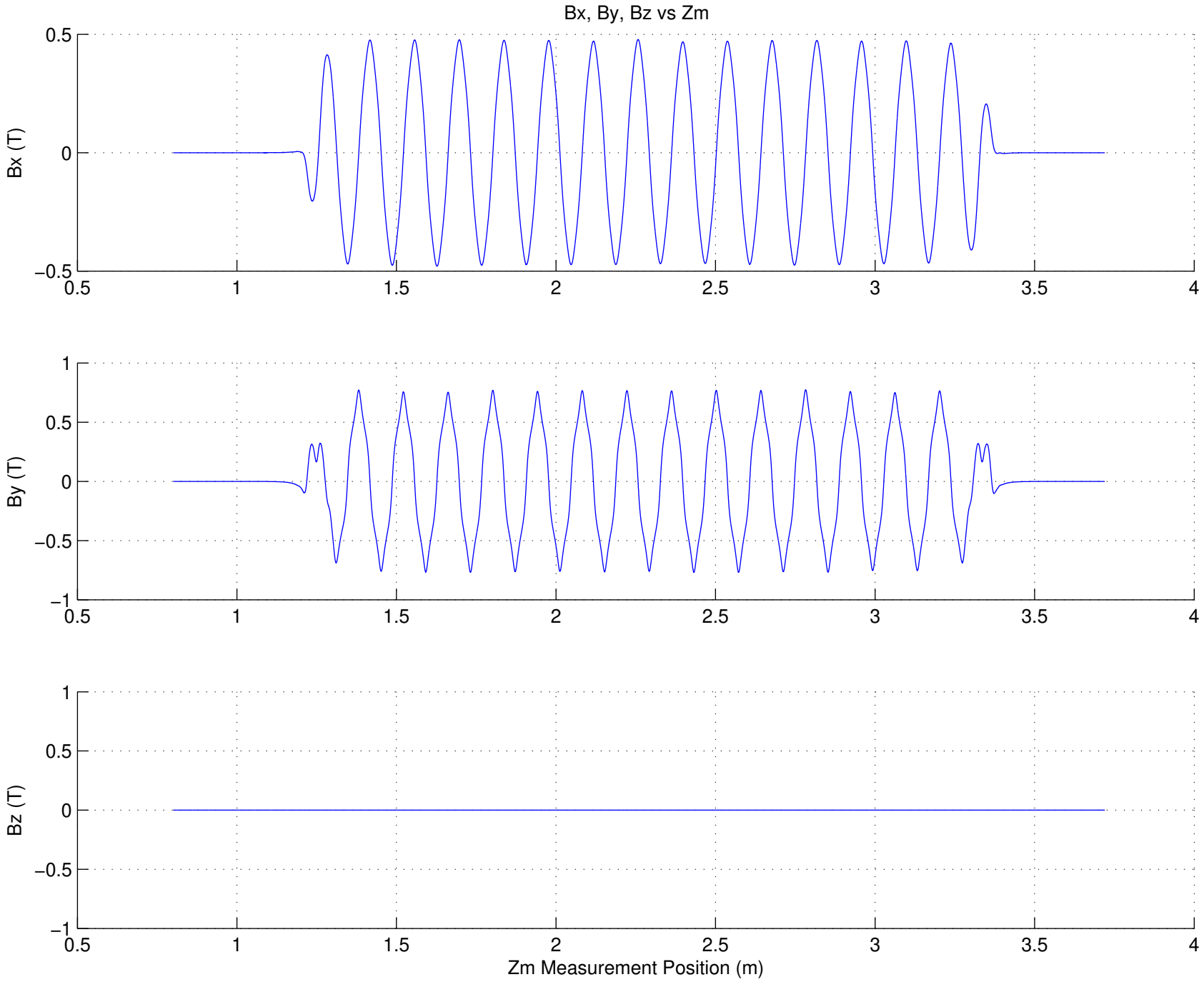
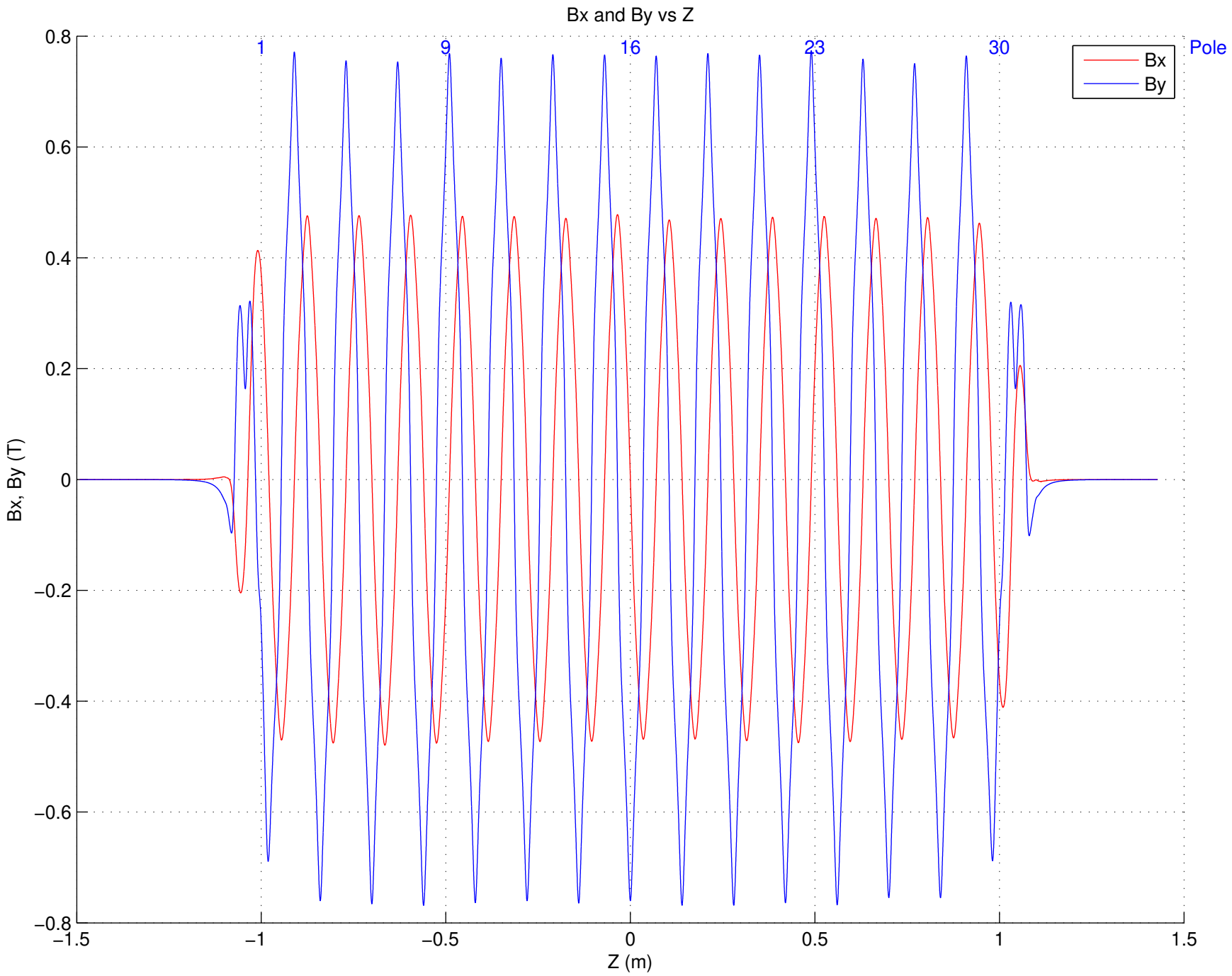
SLAC Magnetic Measurements

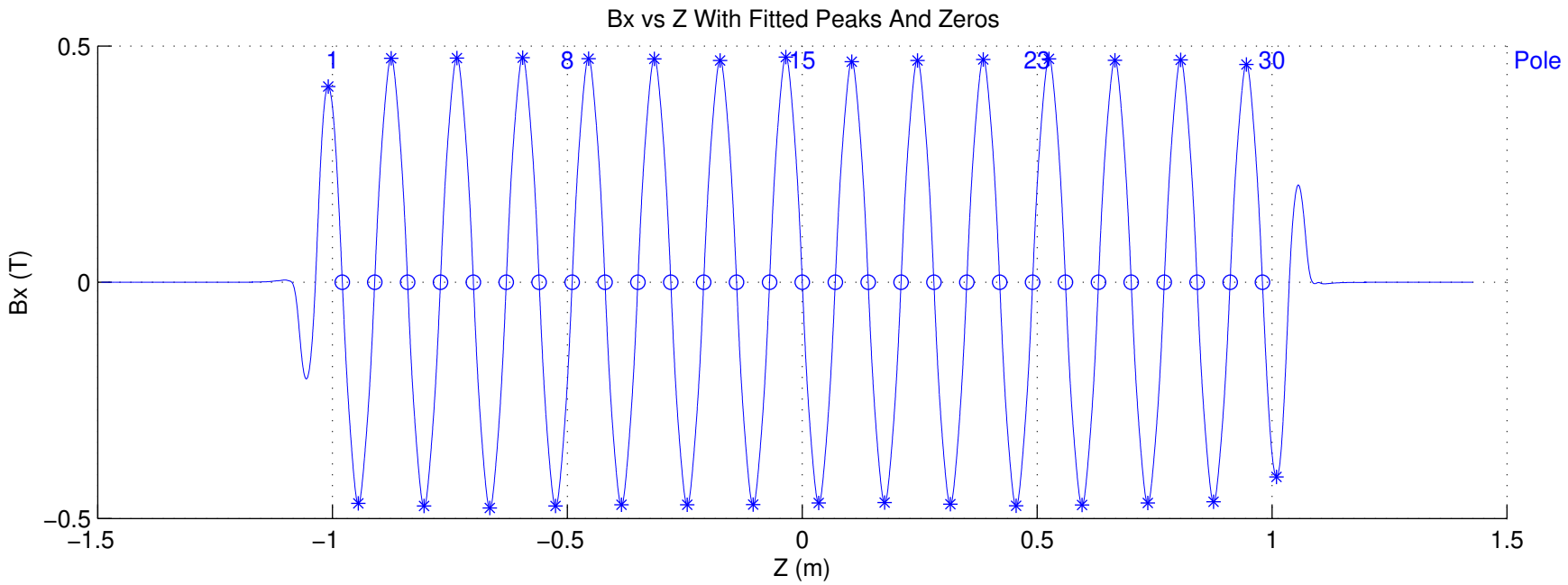
EPU Analysis
−−−−−−−−−−−

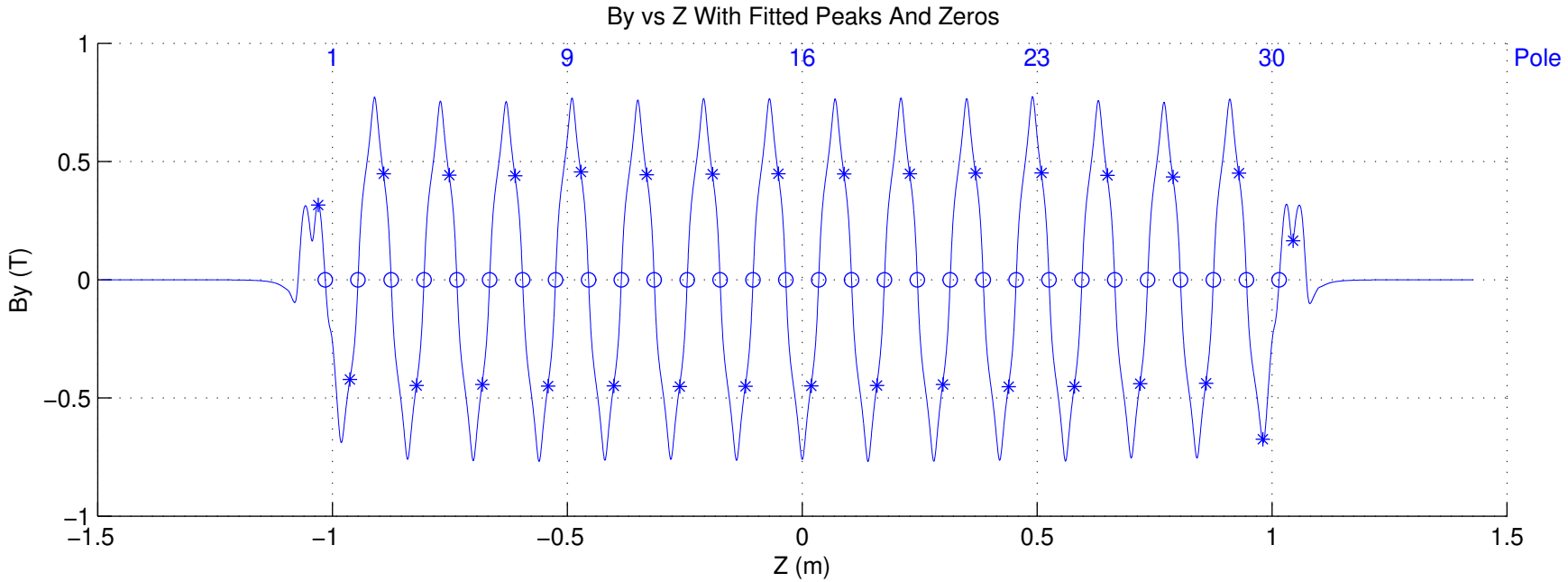
Parameters:
INPUT−FILE−DIR =S:\MagData\LCLS\Undulator\SSRL−BL5−EPU\DATASET0001\Rough Tuning\Z Scans\Run 020\
INPUT−FILE−NAME =x+10000−y+000−bscanz.dat
INPUT−FILE−TYPE =ZVXYBXYH
CORR−REQUIRED =1
GAMMA =5878
NOM−LAMBDA−U =140
NOM−K−VALUE =9
NOM−LAMBDA−R =0
NUM−POLES =31
NUM−END−POLES =4
CELL−LENGTH =3.126

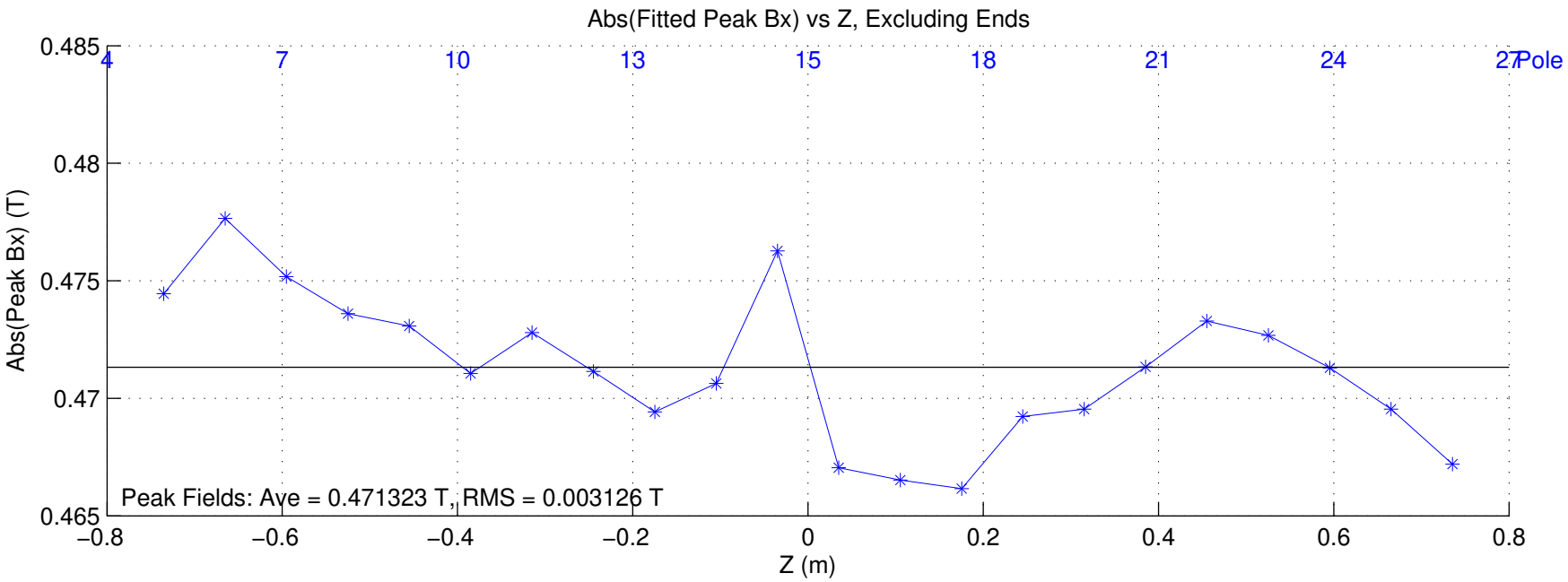

Bx Field Correction vs Zm
x 10^-4
−1.2
−1.2
−1.2
−1.2
−1.2
−1.2
Bx Corr (T)
0.5
1
1.5
2
2.5
3
3.5
4
By Field Correction vs Zm
x 10^-6
5
5
5
5
5
5
5
By Corr (T)
0.5
1
1.5
2
2.5
3
3.5
4
Zm Measurement Position (m)

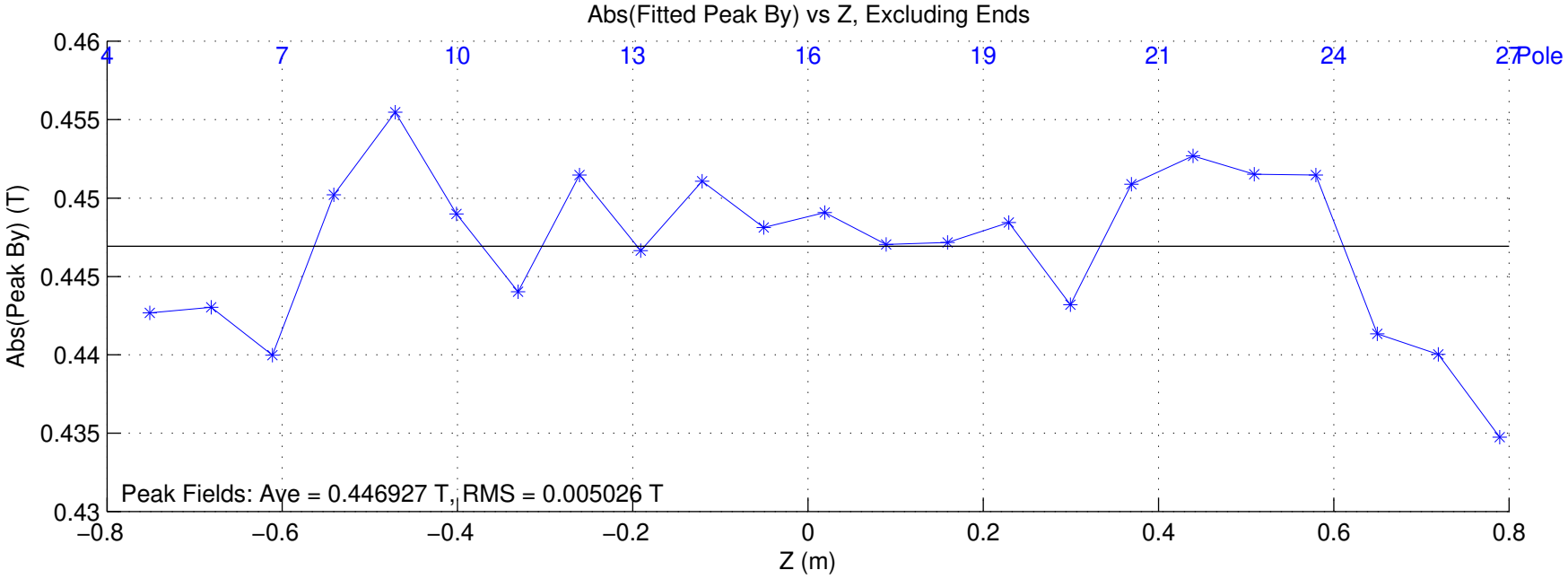

Bx, By, Bz vs Zm
Bx (T)
By (T)
Bz (T)
0.5
0
−0.5
1
−1
0.5
1
1.5
2
2.5
3
3.5
4
Zm Measurement Position (m)

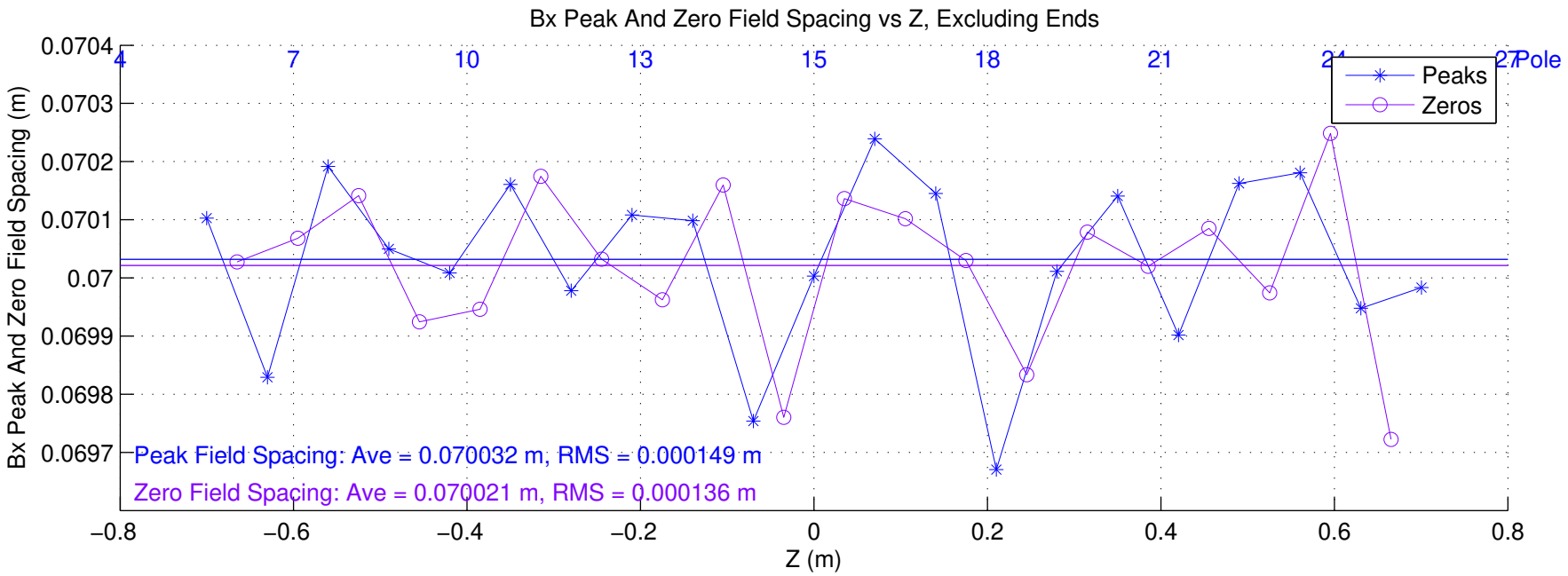

Bx and By vs Z
1
9
16
23
30
Pole
Bx
By
0.8
0.6
0.4
0.2
0
−0.2
−0.4
−0.6
−0.8
Bx, By (T)
−1.5
−1
−0.5
0
0.5
1
1.5
Z (m)

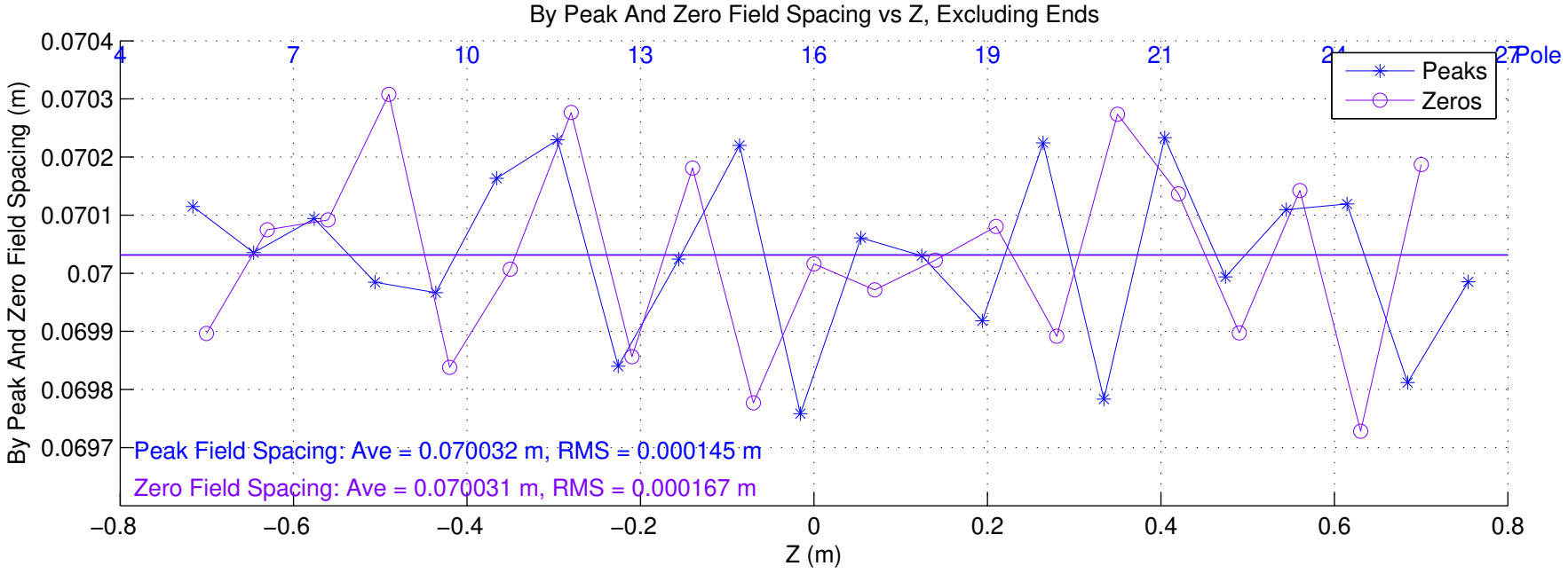

Bx vs Z With Fitted Peaks And Zeros
0.5
0
−0.5
Bx (T)
1
8
15
23
30
Pole
−1.5
−1
−0.5
0
0.5
1
1.5
Z (m)

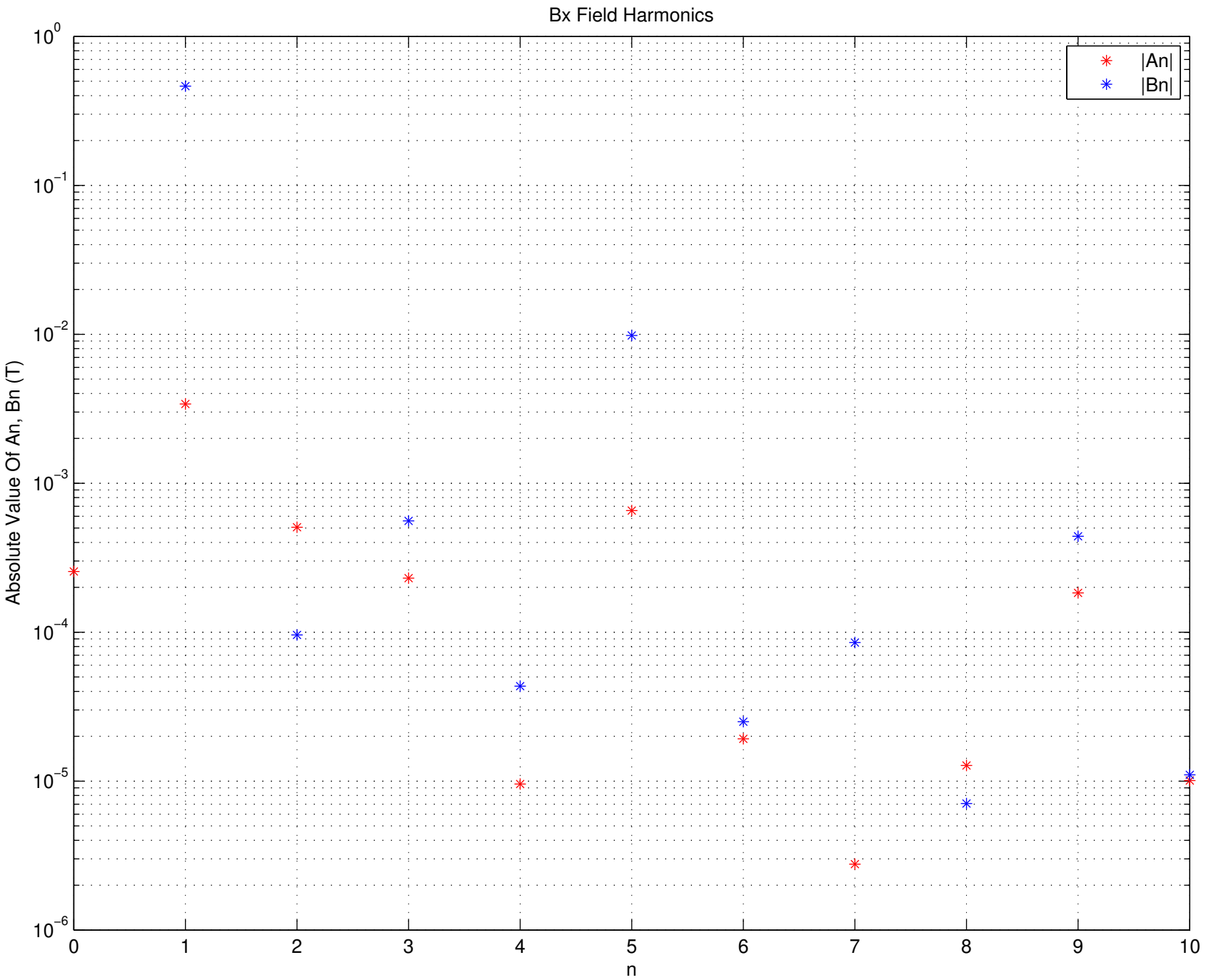

By vs Z With Fitted Peaks And Zeros
1
0.5
0
−0.5
−1
By (T)
1
9
16
23
30
Pole
−1.5
−1
−0.5
0
0.5
1
1.5
Z (m)

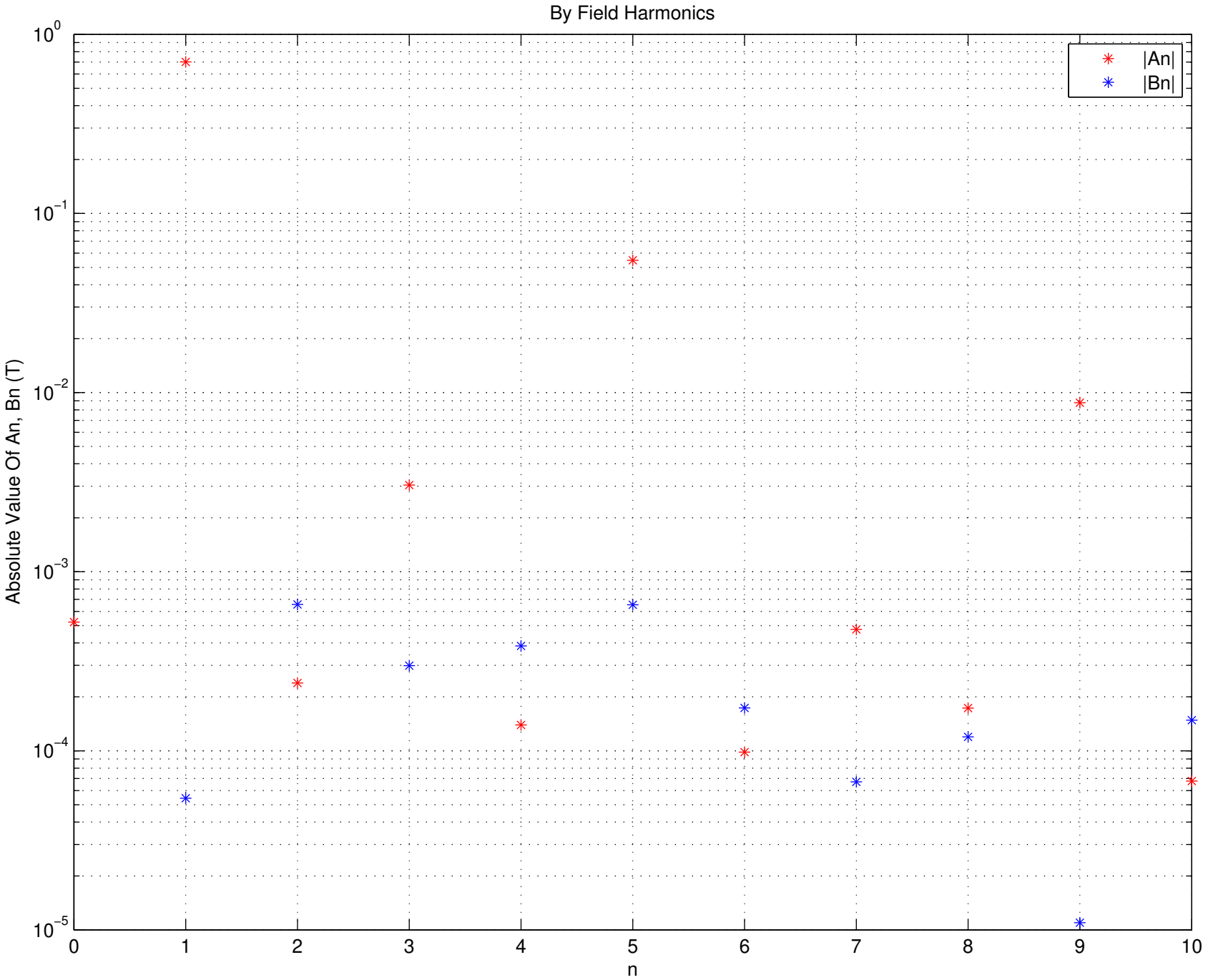

Abs(Fitted Peak Bx) vs Z, Excluding Ends
4
7
10
13
15
18
21
24
27
Pole
0.485
0.48
0.475
0.47
0.465
Abs(Peak Bx) (T)
Peak Fields: Ave = 0.471323 T, RMS = 0.003126 T
−0.8
−0.6
−0.4
−0.2
0
0.2
0.4
0.6
0.8
Z (m)

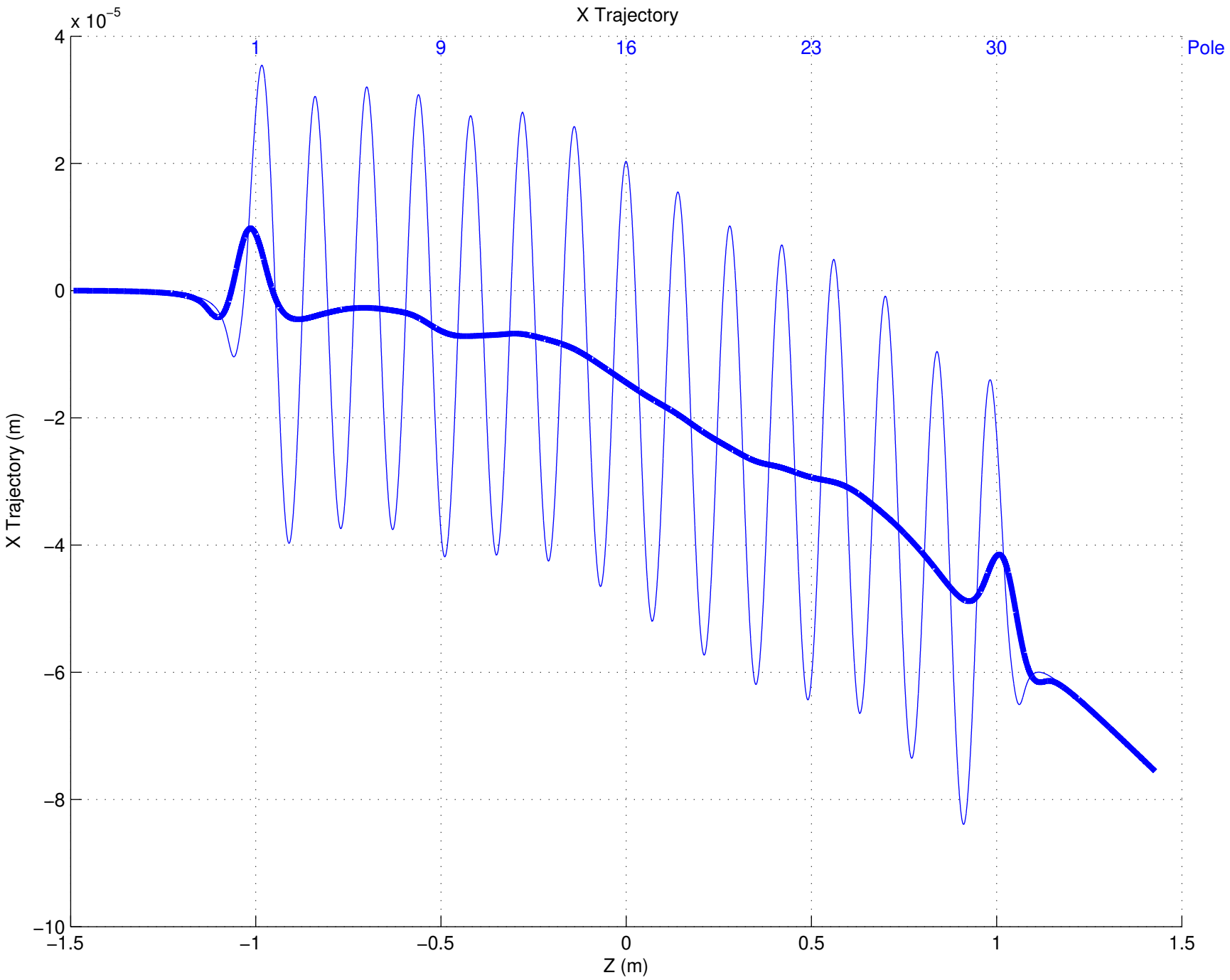

Abs(Fitted Peak By) vs Z, Excluding Ends
4
7
10
13
16
19
21
24
27
Pole
0.46
0.455
0.45
0.445
0.44
0.435
0.43
Abs(Peak By) (T)
Peak Fields: Ave = 0.446927 T, RMS = 0.005026 T
−0.8
−0.6
−0.4
−0.2
0
0.2
0.4
0.6
0.8
Z (m)

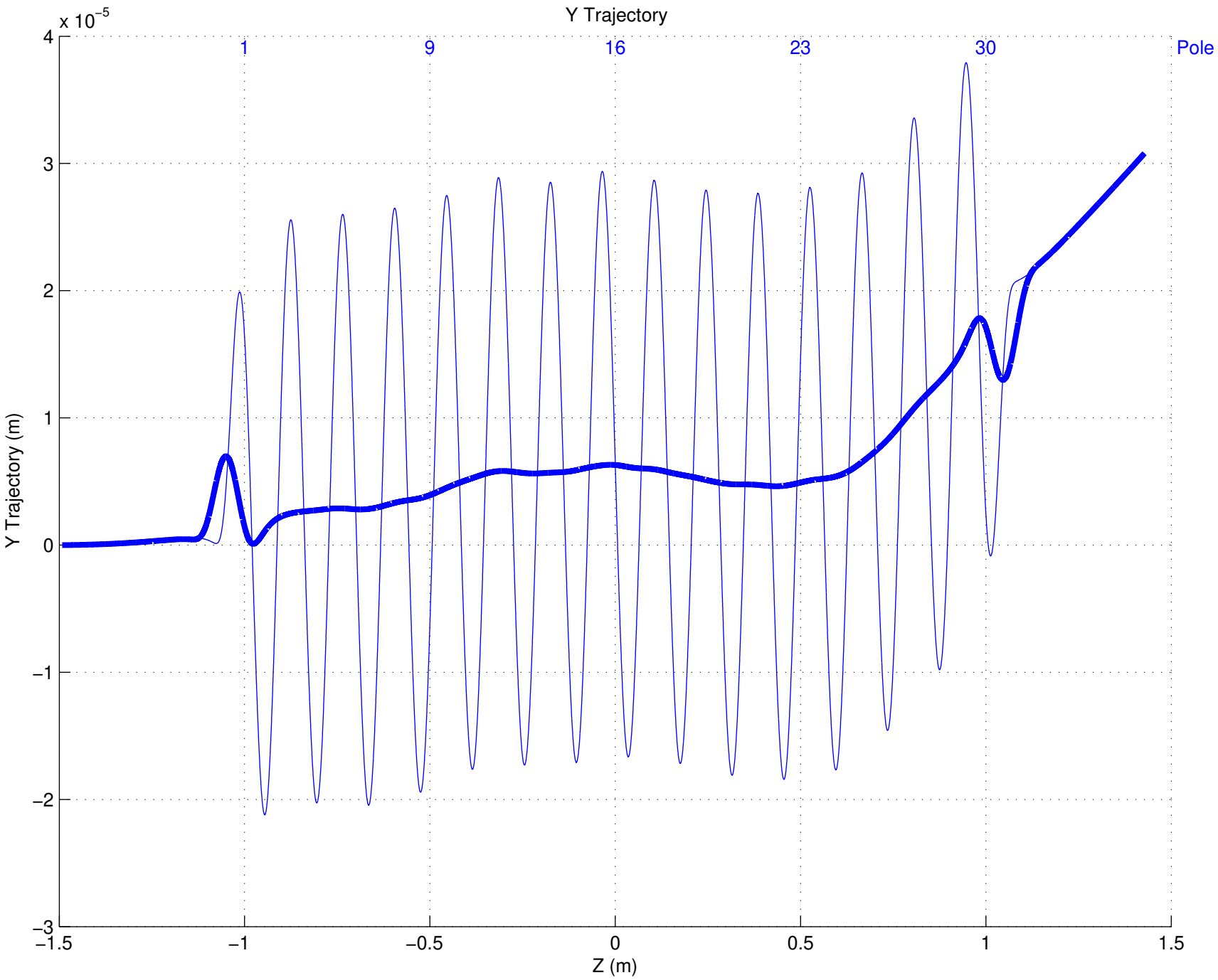

Bx Peak And Zero Field Spacing vs Z, Excluding Ends
Bx Peak And Zero Field Spacing (m)
Z (m)
Pole
Peaks
Zeros
Peak Field Spacing: Ave = 0.070032 m, RMS = 0.000149 m
Zero Field Spacing: Ave = 0.070021 m, RMS = 0.000136 m

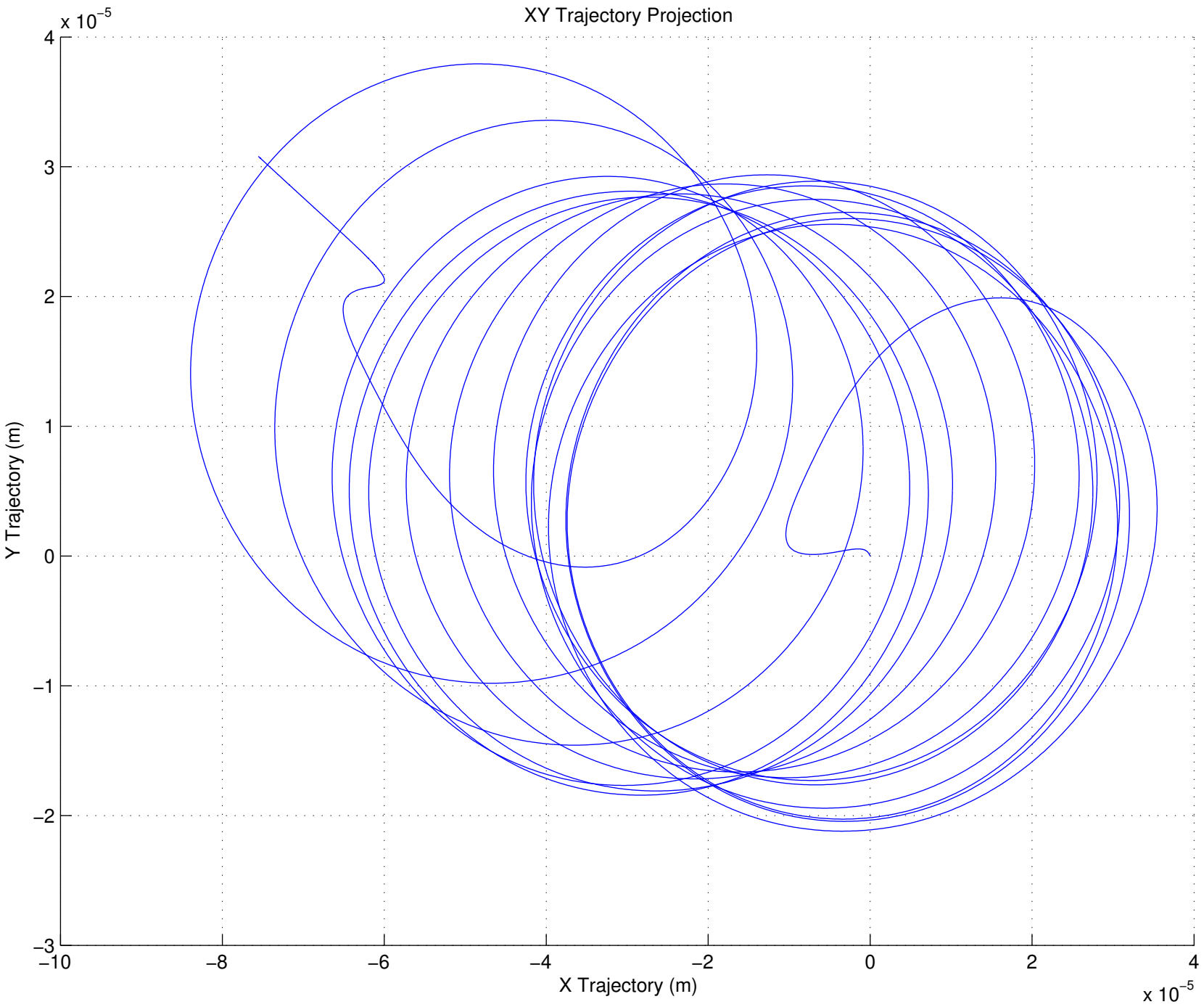

By Peak And Zero Field Spacing vs Z, Excluding Ends
By Peak And Zero Field Spacing (m)
Z (m)
Pole
Peaks
Zeros
Peak Field Spacing: Ave = 0.070032 m, RMS = 0.000145 m
Zero Field Spacing: Ave = 0.070031 m, RMS = 0.000167 m


Bx Field Harmonics
|An|
|Bn|
Absolute Value Of An, Bn (T)
n
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
0
1
2
3
4
5
6
7
8
9
10


By Field Harmonics
|An|
|Bn|
Absolute Value Of An, Bn (T)
n
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
0
1
2
3
4
5
6
7
8
9
10


X Trajectory
x 10^-5
4
2
0
−2
−4
−6
−8
−10
1
9
16
23
30
Pole
X Trajectory (m)
−1.5
−1
−0.5
0
0.5
1
1.5
Z (m)


Y Trajectory
x 10^-5
4
3
2
1
0
−1
−2
−3
1
9
16
23
30
Pole
Y Trajectory (m)
−1.5
−1
−0.5
0
0.5
1
1.5
Z (m)


XY Trajectory Projection
x 10^-5
4
3
2
1
0
−1
−2
−3
Y Trajectory (m)
−10
−8
−6
−4
−2
0
2
4
X Trajectory (m)
x 10^-5