SLAC Magnetic Measurements

Planar Insertion Device Analysis

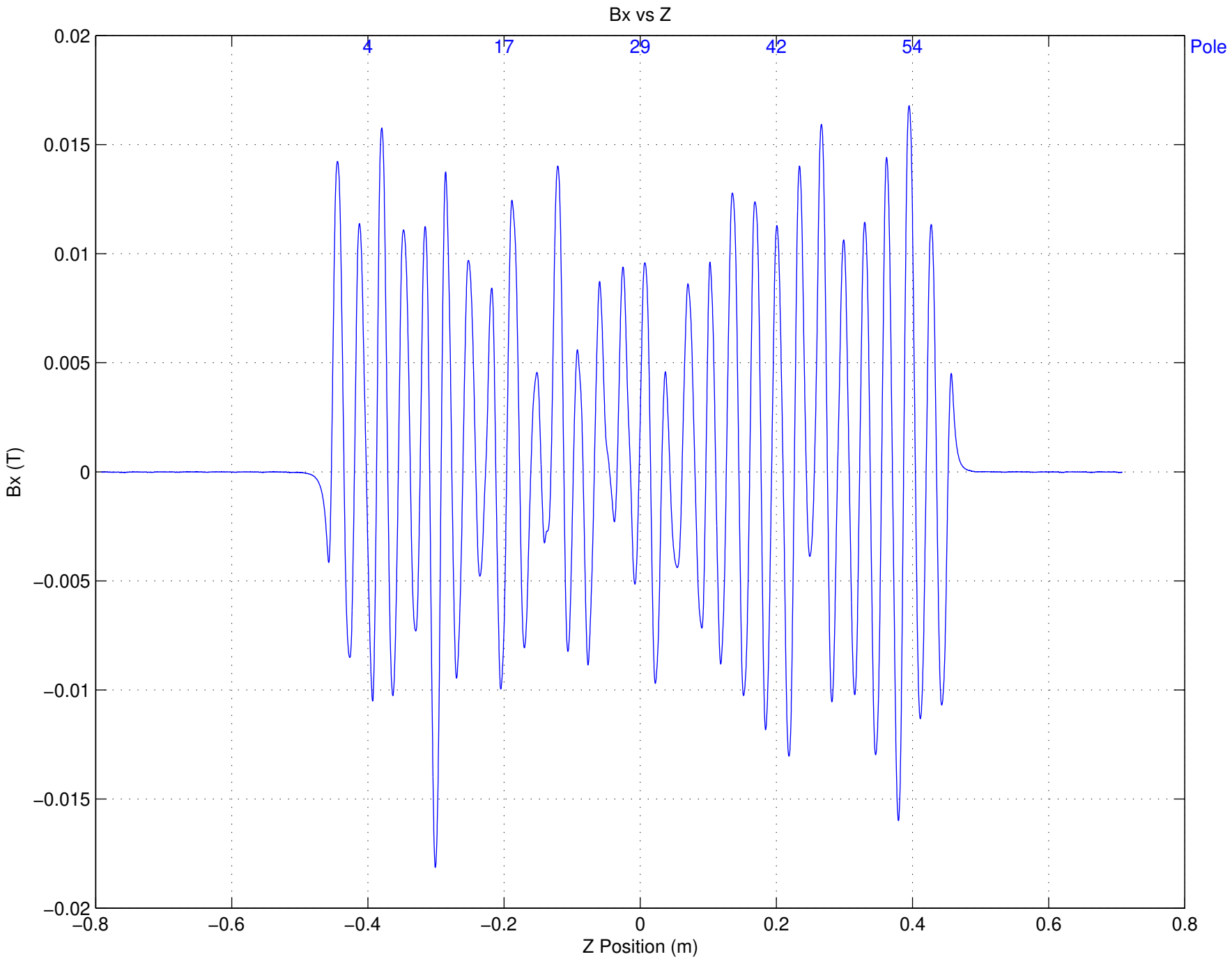
SLAC Magnetic Measurements
Date: 12−12−2012
Time: 09:31:11

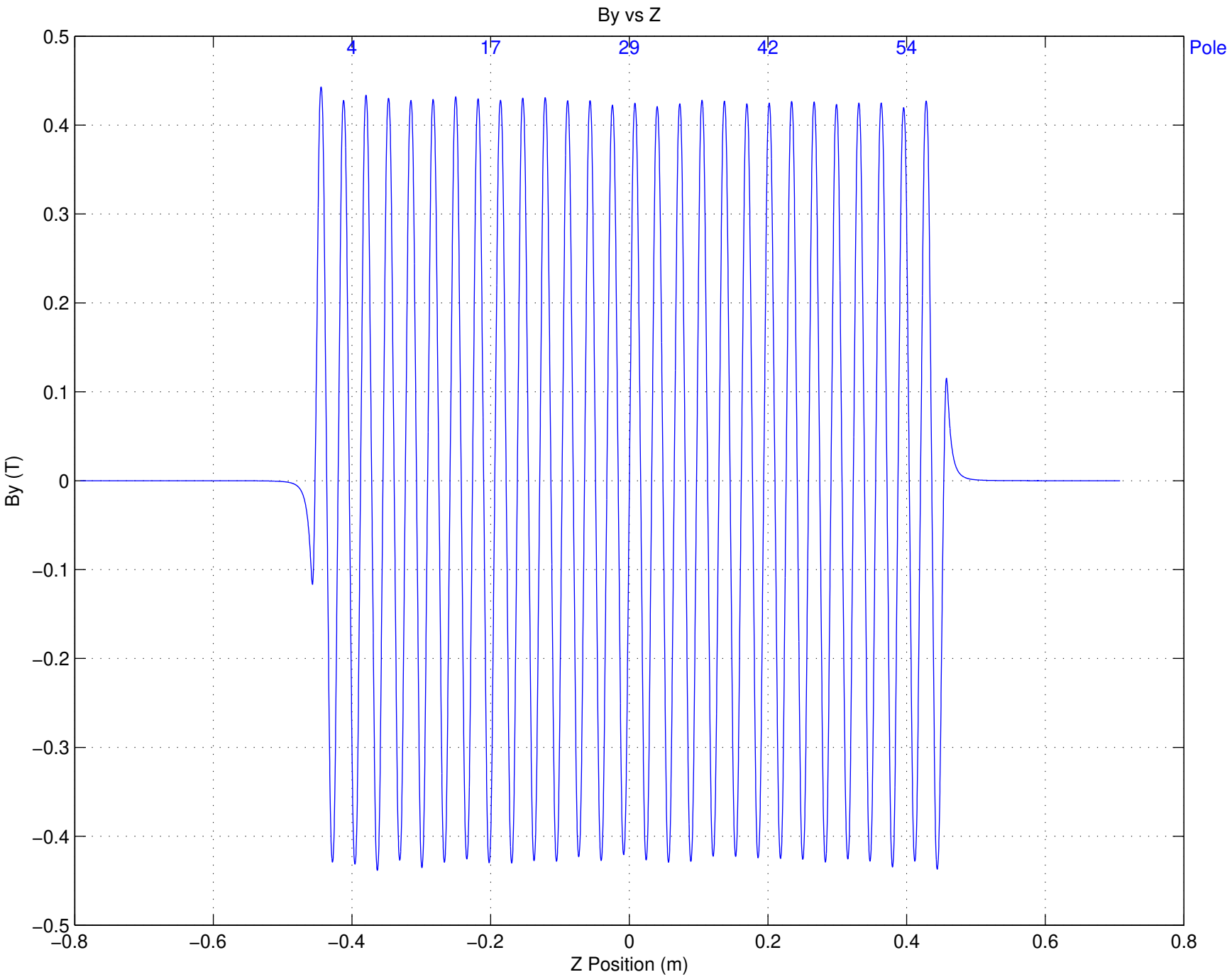
Project: LCLS
Device Type: Undulator
Data Type:
Serial Number: DELTA
DATASET Number: 1
Tuning Stage: Fine Tuning
Run Number: 7
Measurement Type: Z Scans
Operator: YL
Comment: check field magnitude, quadrant 2
Session first run: 7
Measurement Device x:
Measurement Device y: $SENTRON_4$41

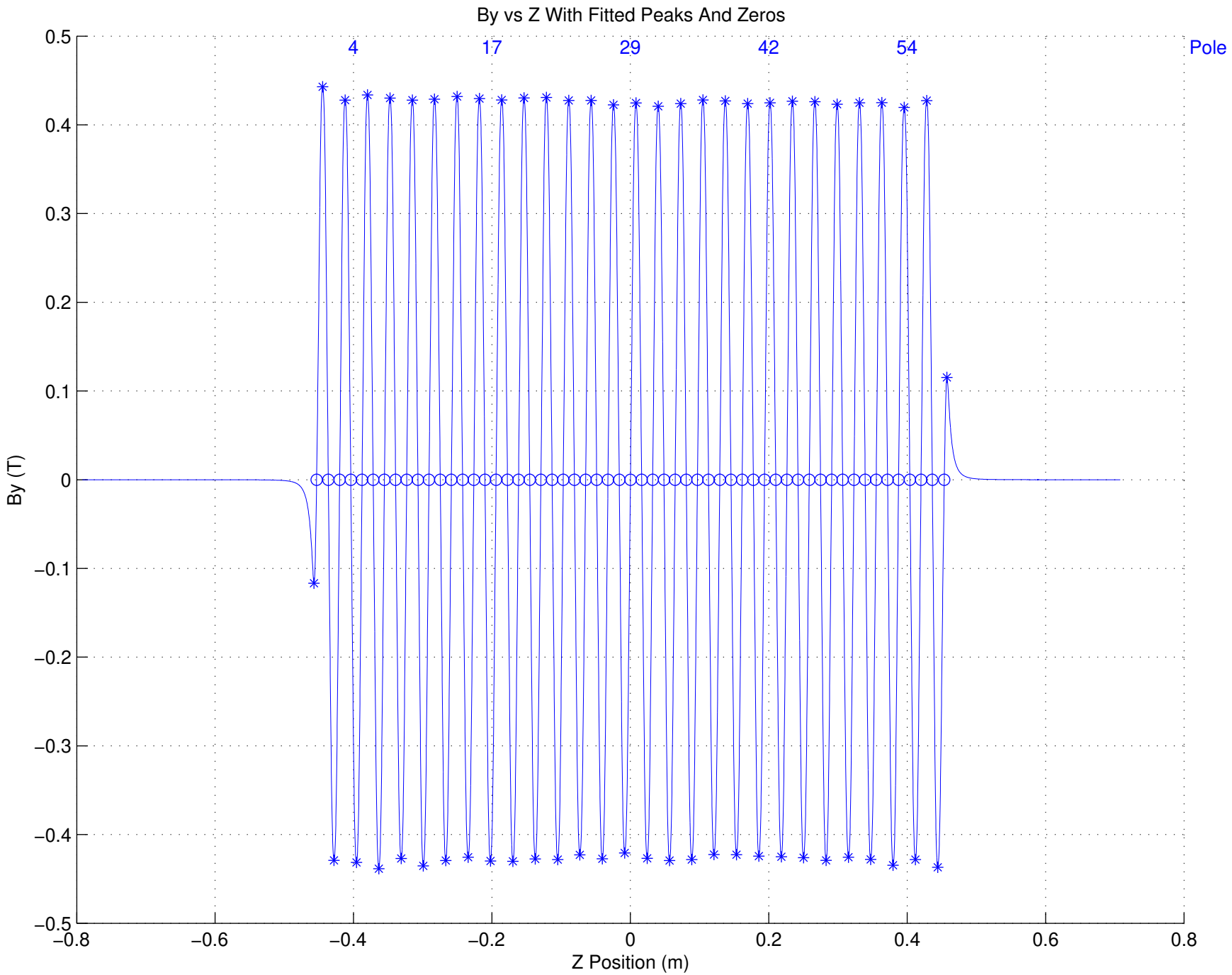
Data File: s:\magdata\LCLS\Undulator\DELTA\DATASET0001\Fine Tuning\Z Scans\Run 007\bscanz.dat

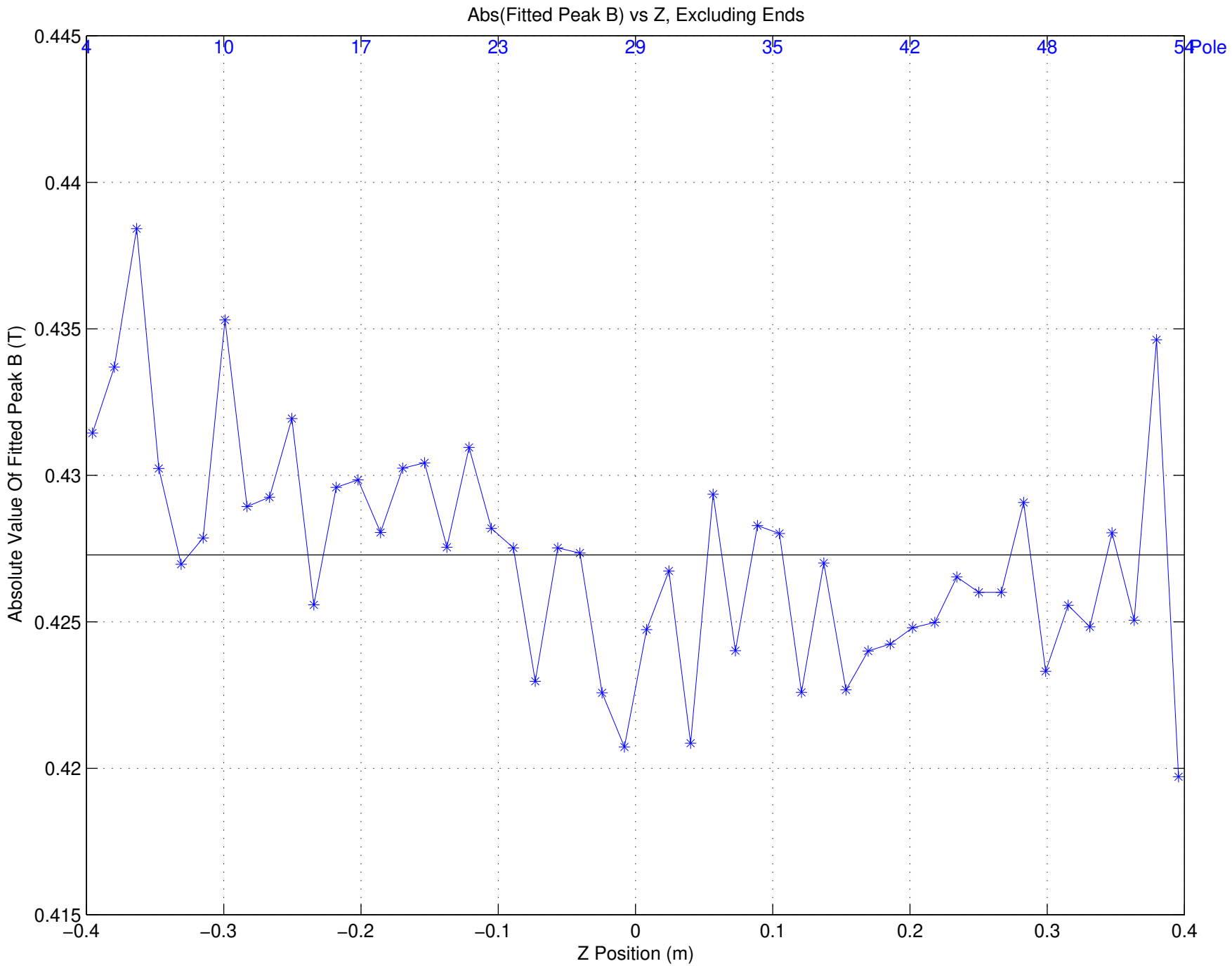
Temperature (C)
DELTA:−−> T1 20.04 −−> T2 19.99 −−> T5 19.91 −−> T3 19.99 −−> Air 19.96 −−> T4 19.90

Axes position (m) X:0.029700 Y:−0.000100
Initial Hall Probe Zero Measurements:
Vx_0i = 0.000960 V
Vy_0i = −0.003519 V

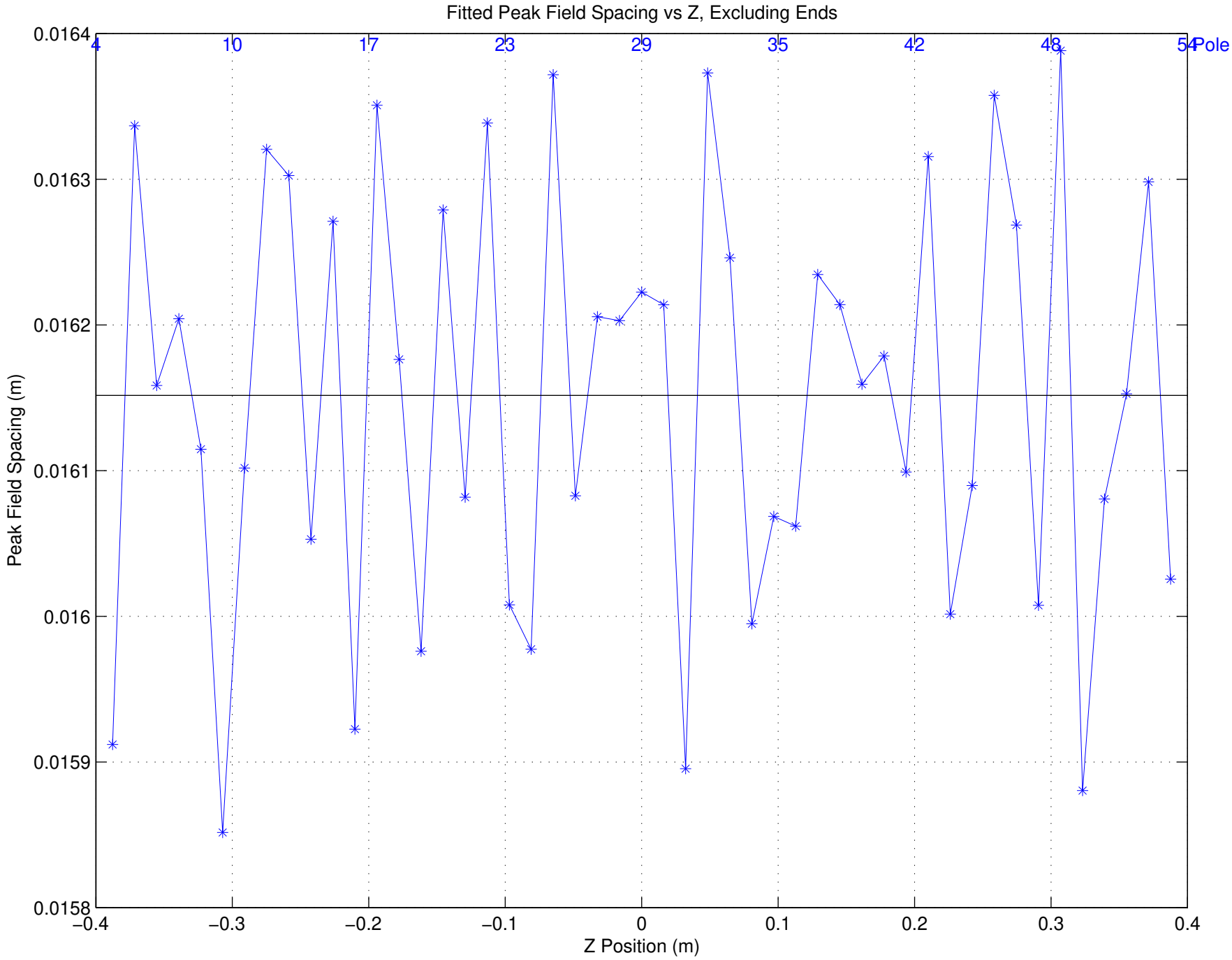

Bx vs Z
Pole
4
17
29
42
54
0.02
0.015
0.01
0.005
0
−0.005
−0.01
−0.015
−0.02
Bx (T)
−0.8
−0.6
−0.4
−0.2
0
0.2
0.4
0.6
0.8
Z Position (m)


By vs Z
4
17
29
42
54
Pole
0.5
0.4
0.3
0.2
0.1
0
−0.1
−0.2
−0.3
−0.4
−0.5
By (T)
−0.8
−0.6
−0.4
−0.2
0
0.2
0.4
0.6
0.8
Z Position (m)

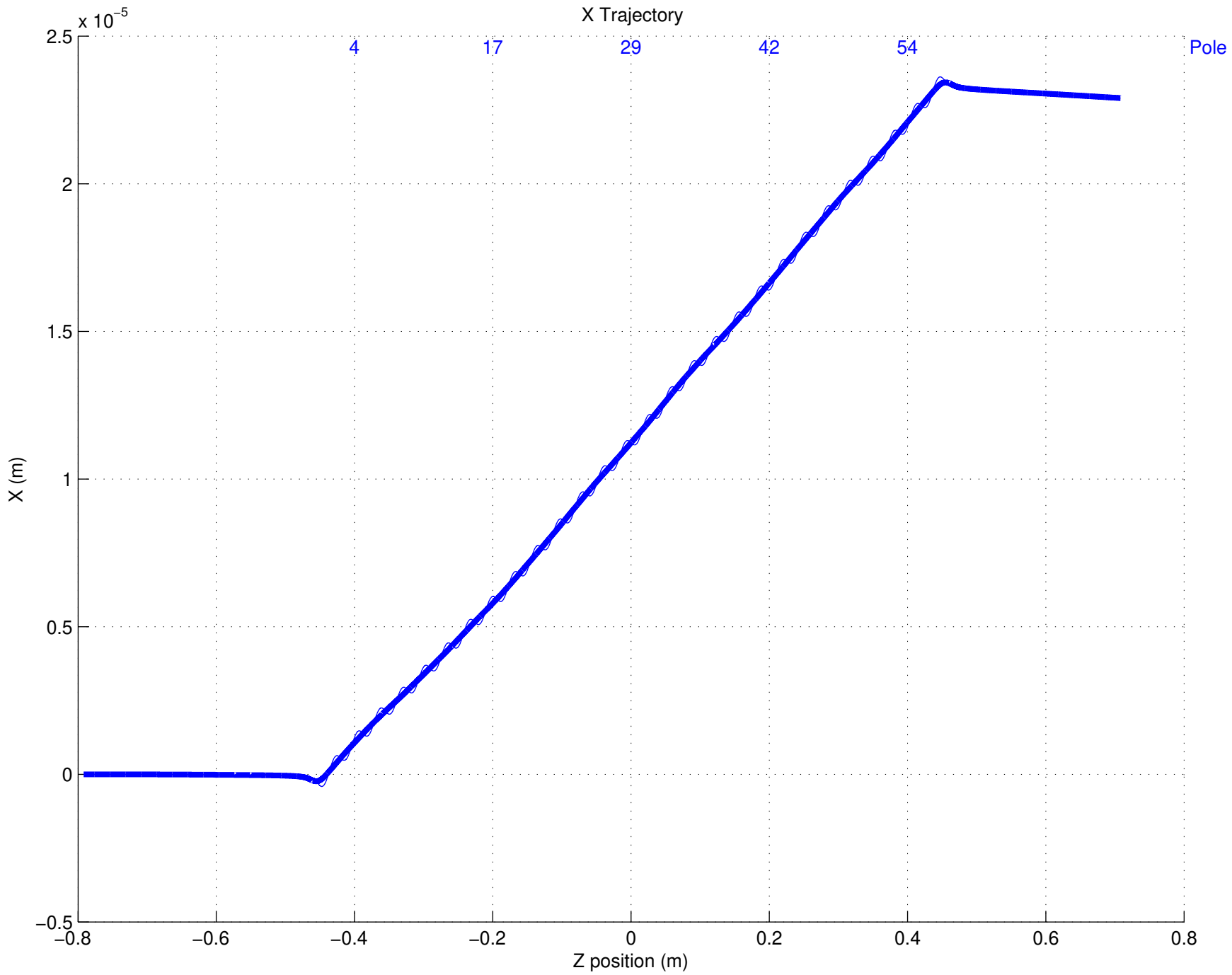

By vs Z With Fitted Peaks And Zeros
4
17
29
42
54
Pole
0.5
0.4
0.3
0.2
0.1
0
−0.1
−0.2
−0.3
−0.4
−0.5
By (T)
−0.8
−0.6
−0.4
−0.2
0
0.2
0.4
0.6
0.8
Z Position (m)

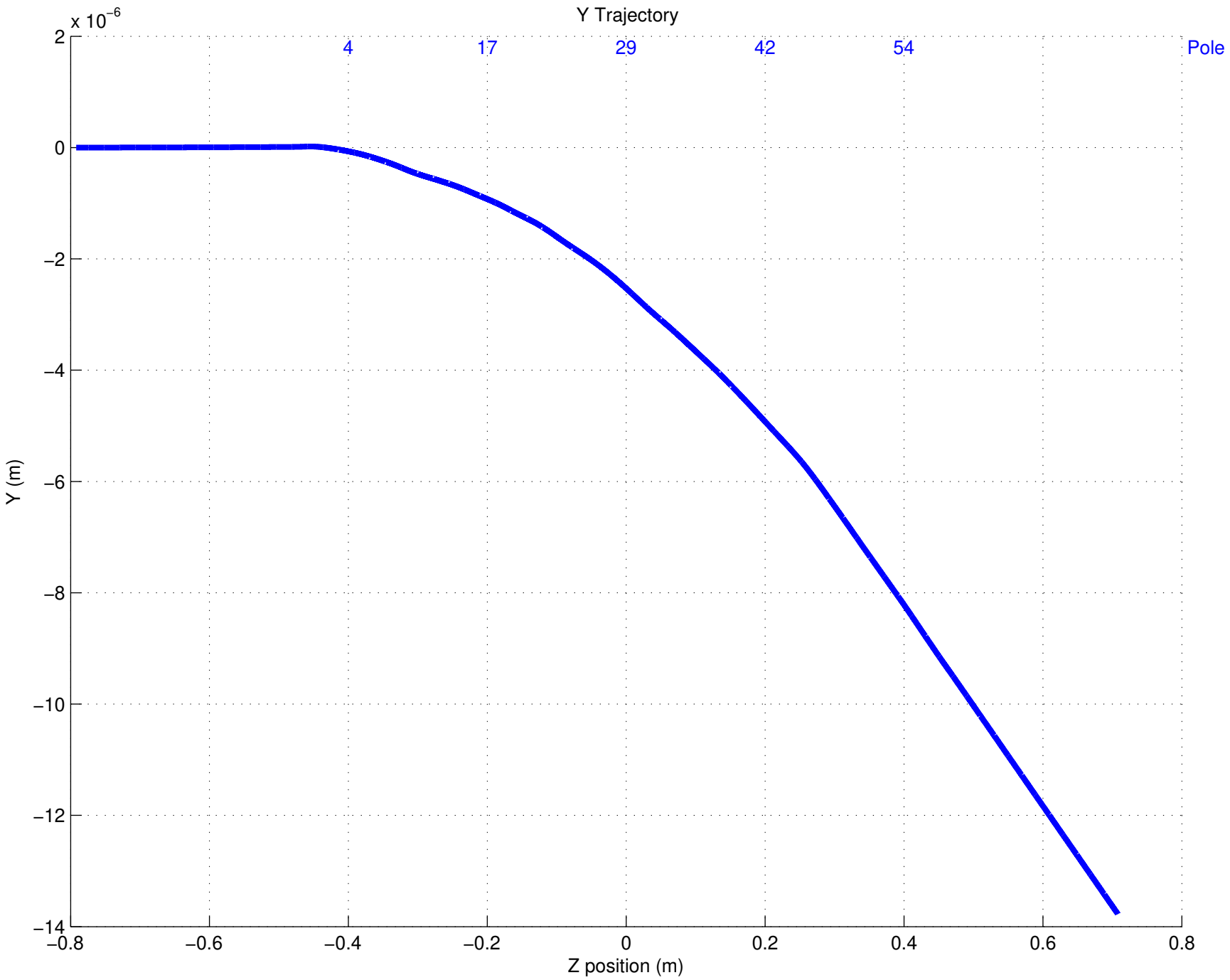


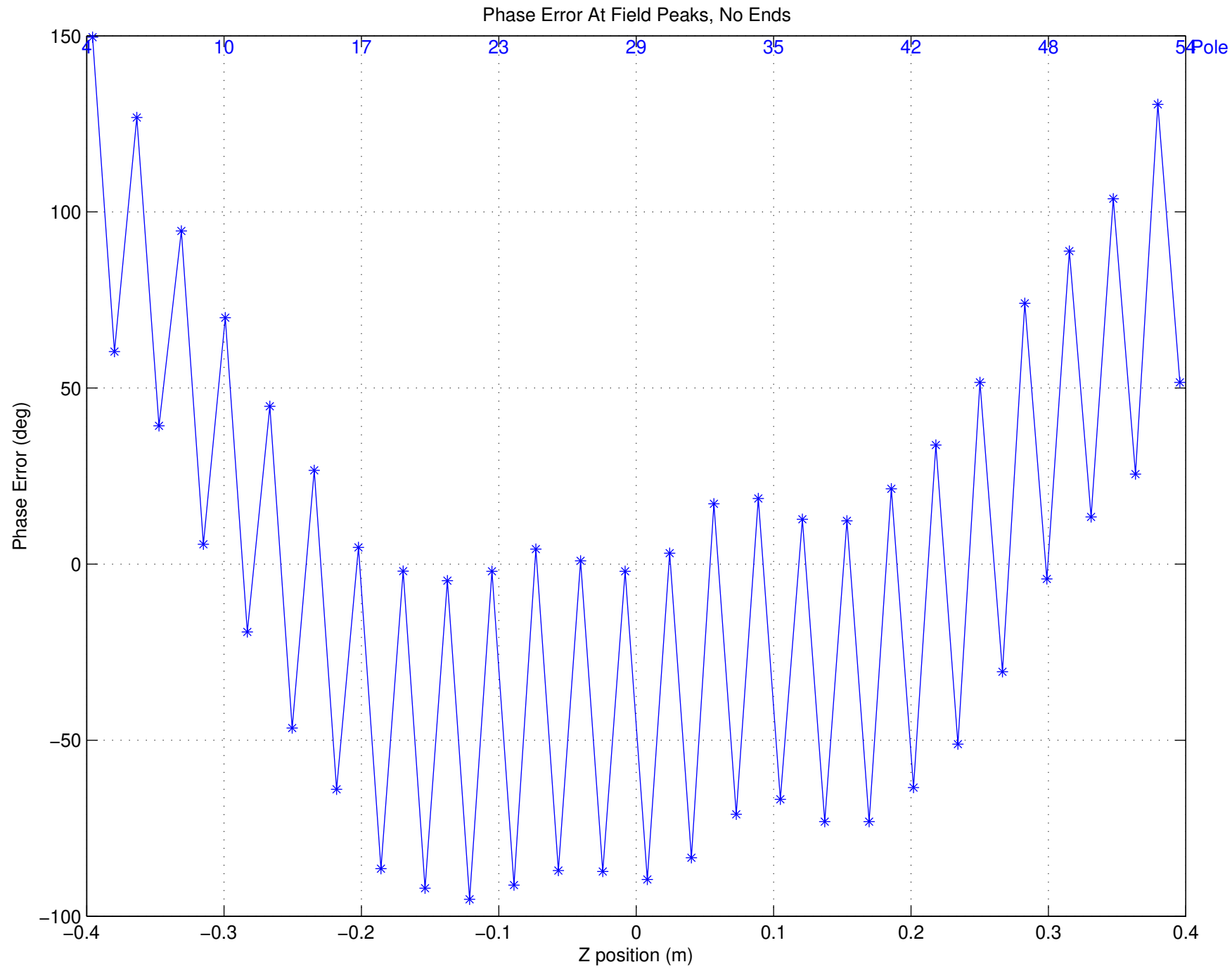
Peak Fields: Ave = 0.427282 T, RMS = 0.003791 T



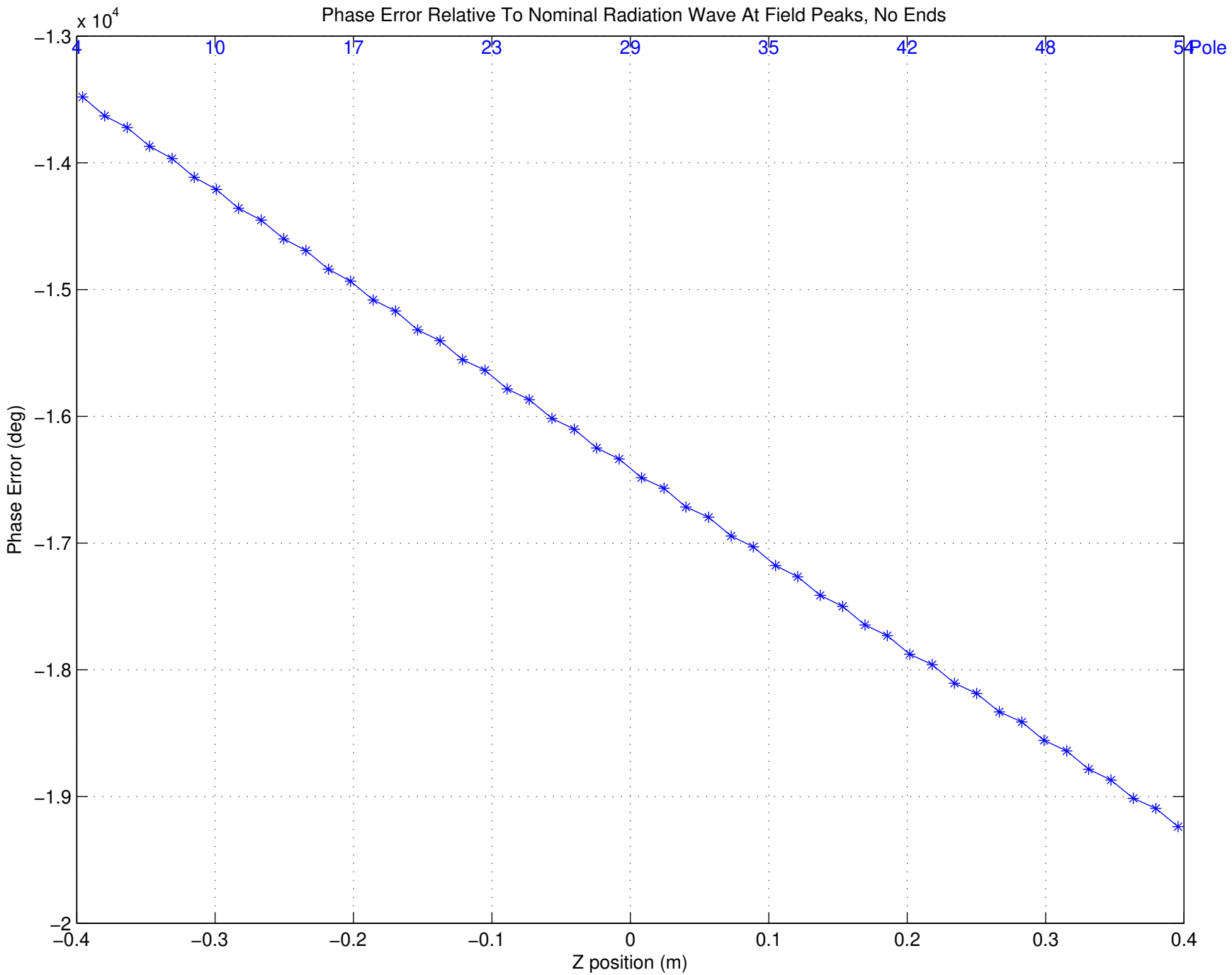
Peak Field Spacing: Ave = 0.016152 m, RMS = 0.000147 m


X Trajectory
x 10^-5
2.5
2
1.5
1
0.5
0
−0.5
X (m)
4
17
29
42
54
Pole
−0.8
−0.6
−0.4
−0.2
0
0.2
0.4
0.6
0.8
Z position (m)


Y Trajectory
x 10^-6
2
0
−2
−4
−6
−8
−10
−12
−14
Y (m)
4
17
29
42
54
Pole
−0.8
−0.6
−0.4
−0.2
0
0.2
0.4
0.6
0.8
Z position (m)



Phase Error: Ave = 0.000000 deg, RMS = 65.175636 deg


Phase Error Relative To Nominal Radiation Wave At Field Peaks, No Ends
x 10^4
−1.3
−1.4
−1.5
−1.6
−1.7
−1.8
−1.9
−2
Phase Error (deg)
4
10
17
23
29
35
42
48
54
Pole
−0.4
−0.3
−0.2
−0.1
0
0.1
0.2
0.3
0.4
Z position (m)