SLAC Magnetic Measurements

Planar Insertion Device Analysis

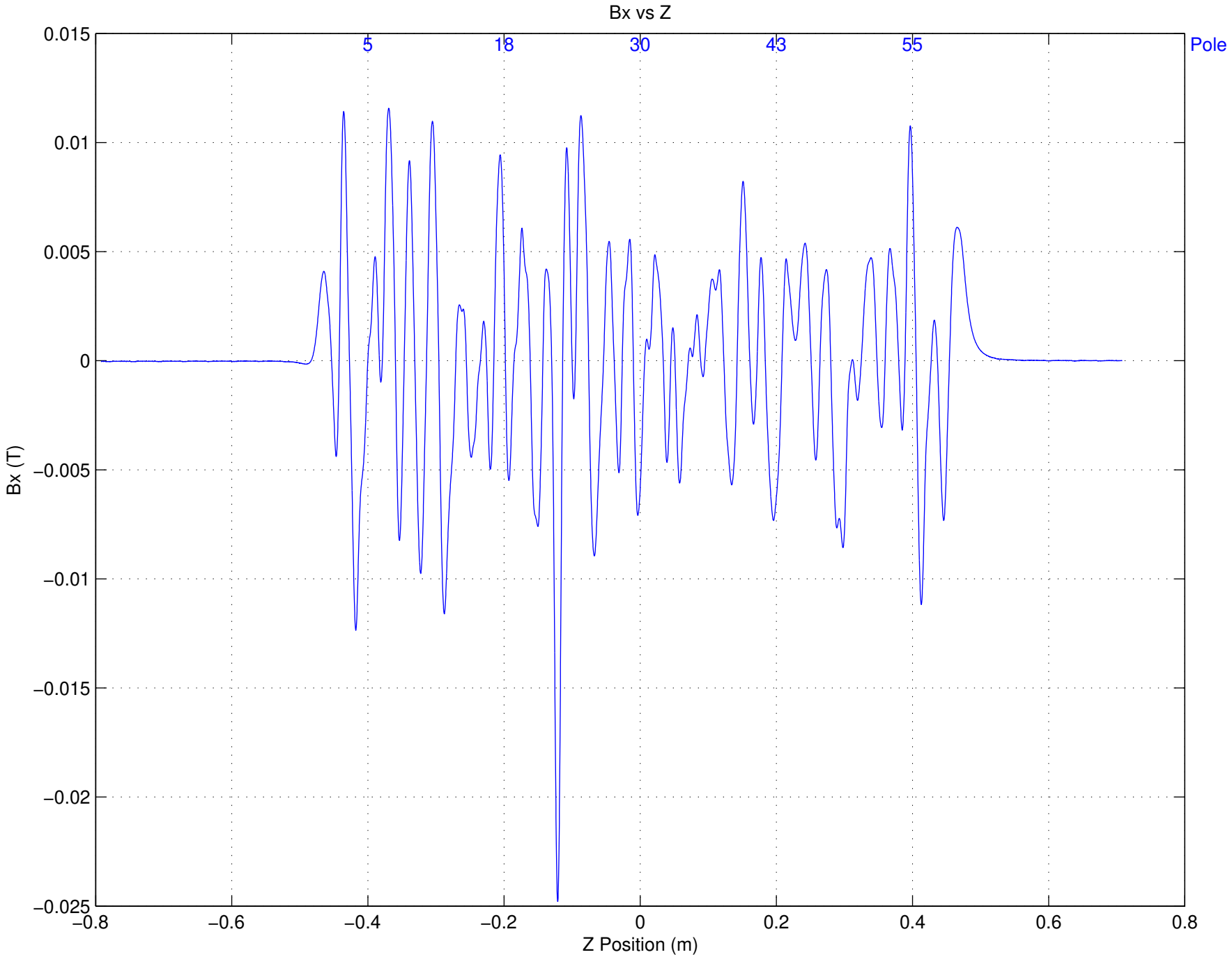
SLAC Magnetic Measurements
Date: 12−12−2012
Time: 09:53:24

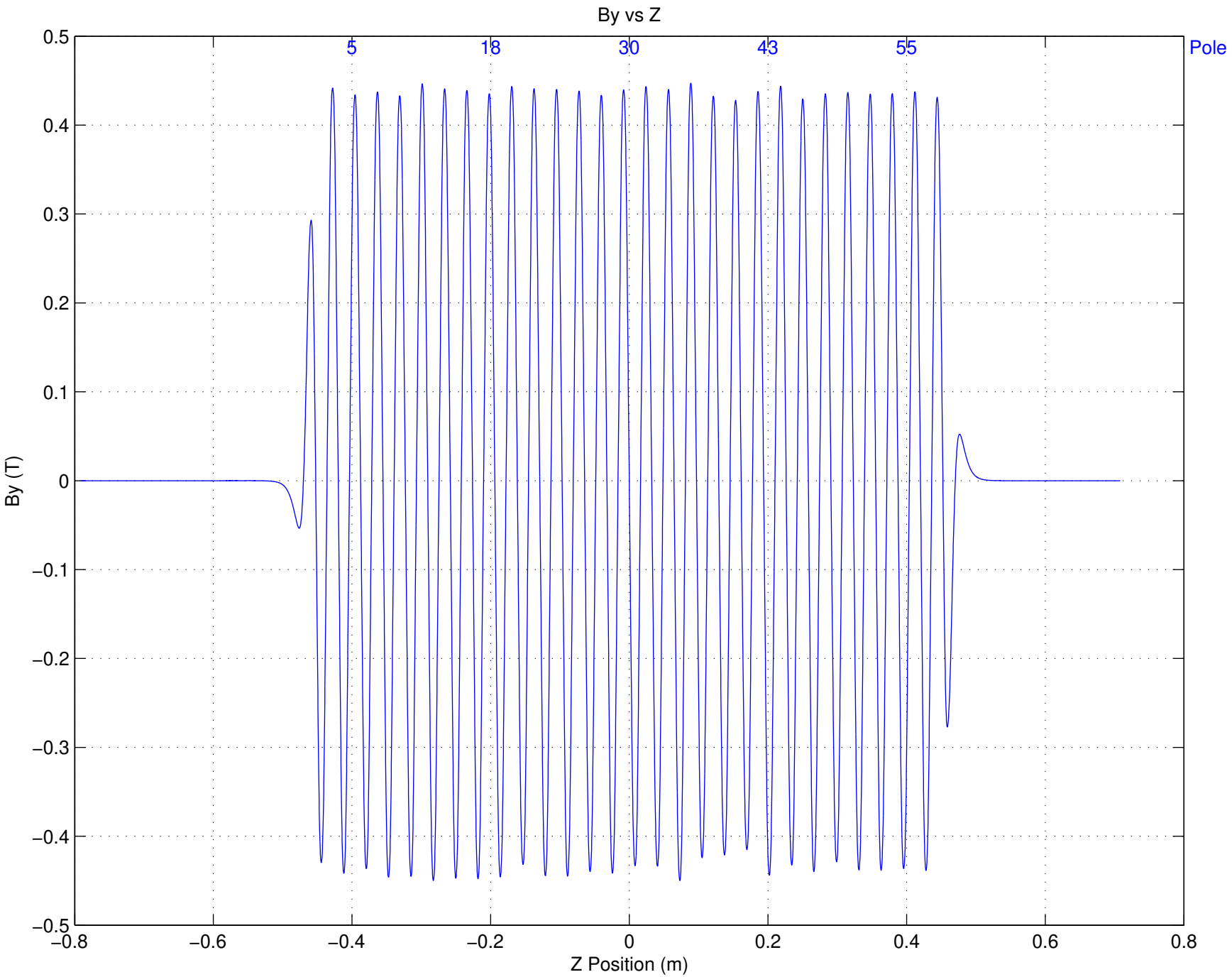
Project: LCLS
Device Type: Undulator
Data Type:
Serial Number: DELTA
DATASET Number: 1
Tuning Stage: Fine Tuning
Run Number: 8
Measurement Type: Z Scans
Operator: YL
Comment: check field magnitude, quadrant 1
Session first run: 8
Measurement Device x:
Measurement Device y: $SENTRON_4$41

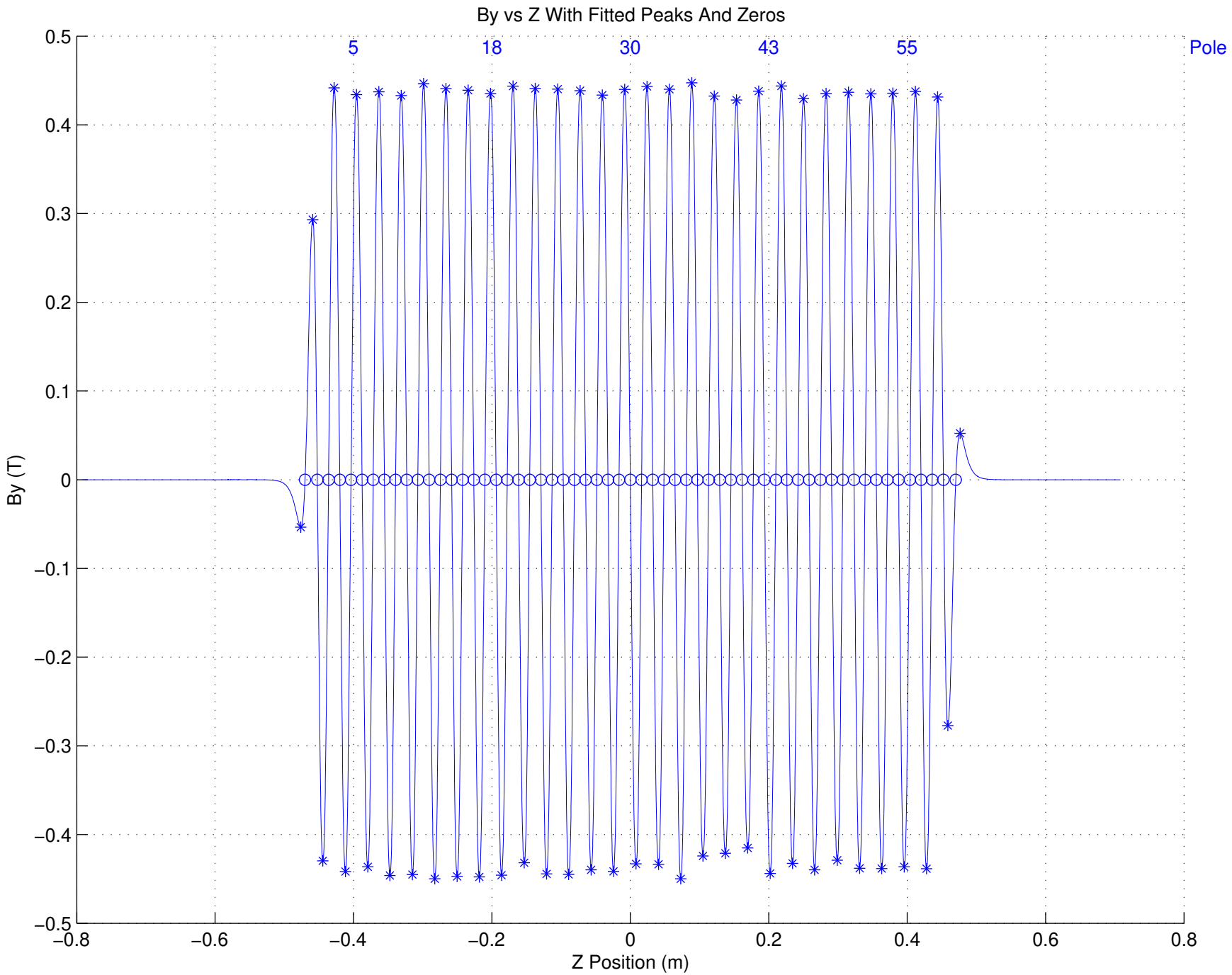
Data File: s:\magdata\LCLS\Undulator\DELTA\DATASET0001\Fine Tuning\Z Scans\Run 008\bscanz.dat

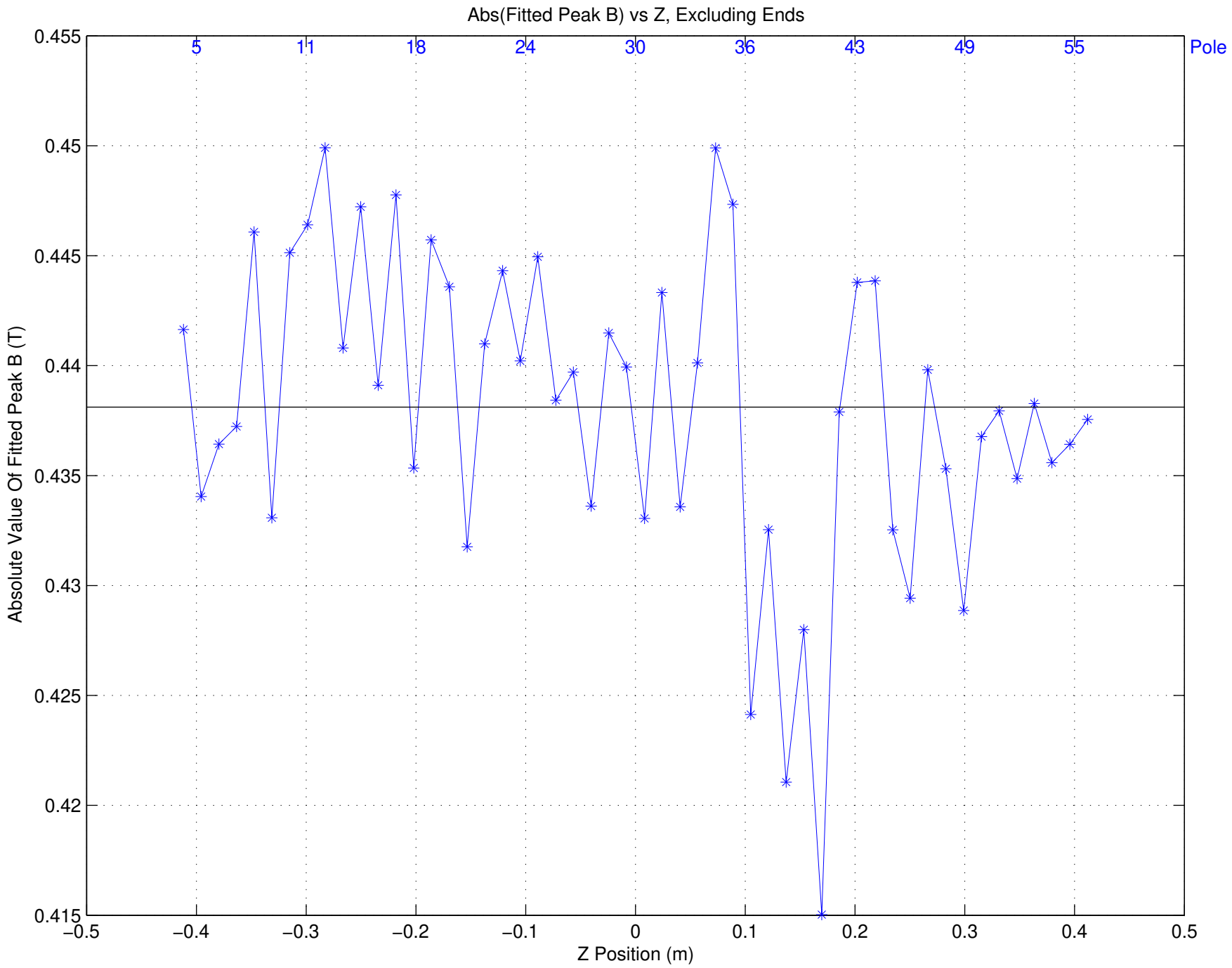
Temperature (C)
DELTA:−−> T1 20.04 −−> T2 20.00 −−> T5 19.91 −−> T3 19.98 −−> Air 19.98 −−> T4 19.89

Axes position (m) X:0.029700 Y:0.000200
Initial Hall Probe Zero Measurements:
Vx_0i = 0.000996 V
Vy_0i = −0.003483 V

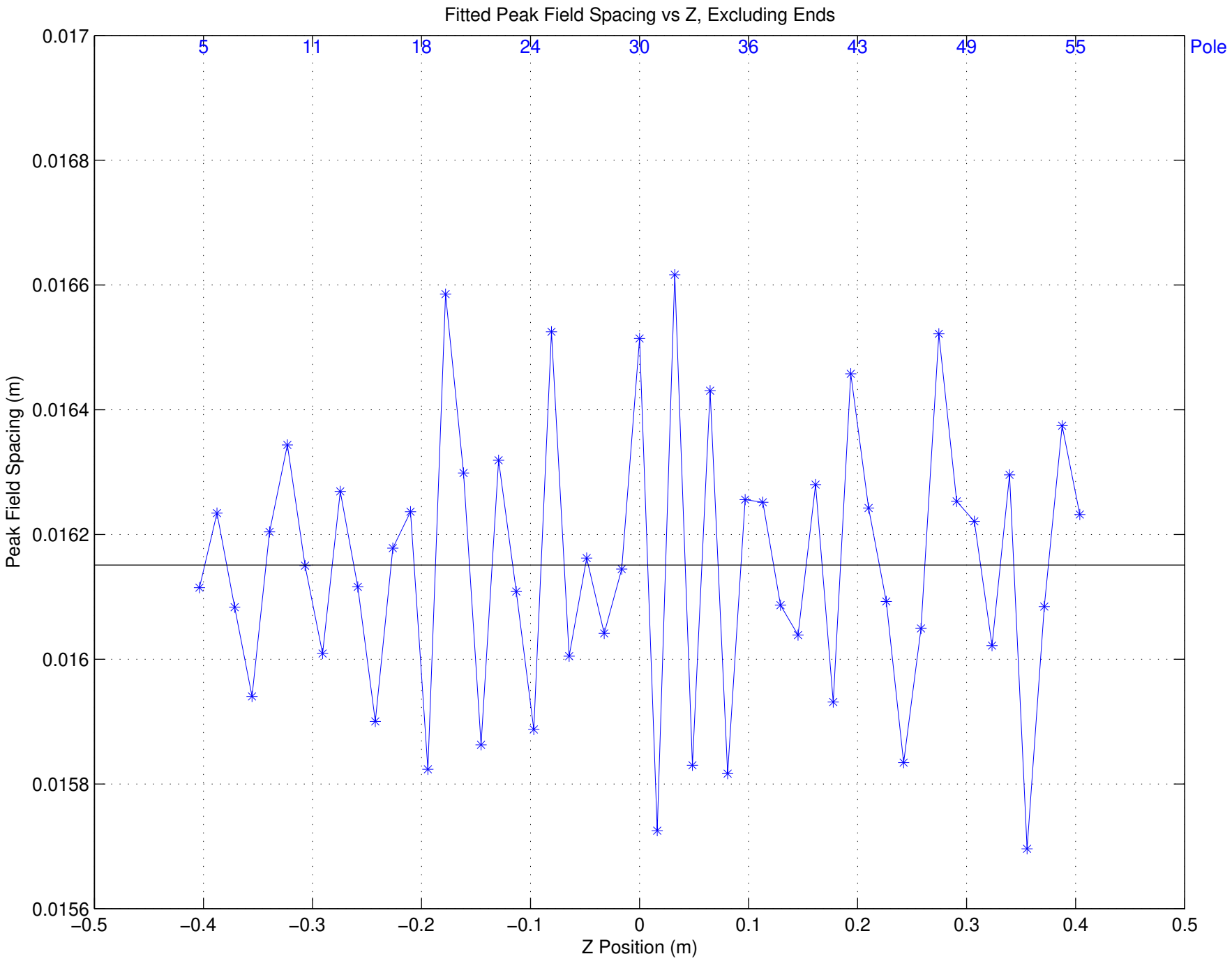

Bx vs Z
5
18
30
43
55
Pole
0.015
0.01
0.005
0
−0.005
−0.01
−0.015
−0.02
−0.025
Bx (T)
−0.8
−0.6
−0.4
−0.2
0
0.2
0.4
0.6
0.8
Z Position (m)


By vs Z
5
18
30
43
55
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)

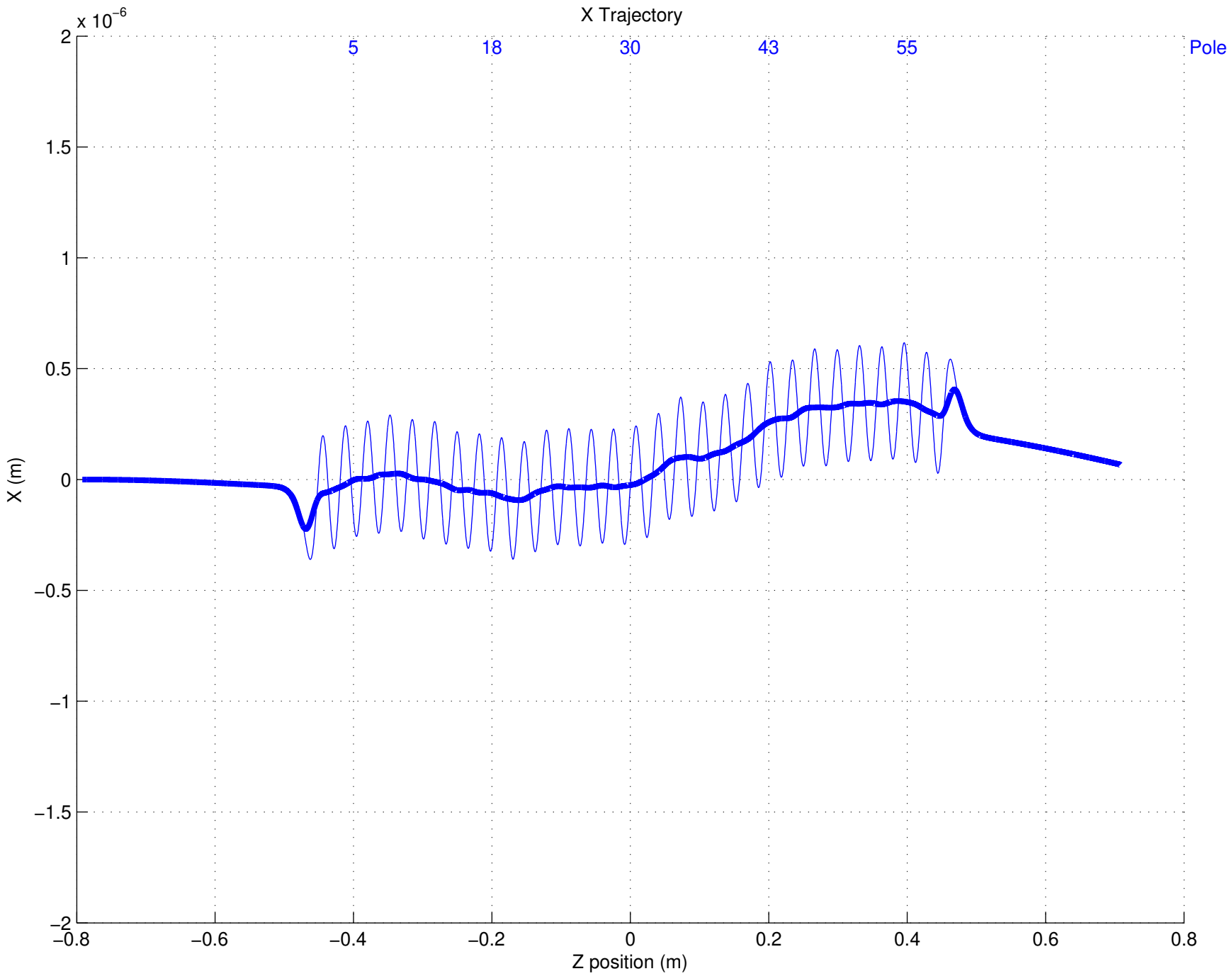

By vs Z With Fitted Peaks And Zeros
5
18
30
43
55
Pole
0.5
0.4
0.3
0.2
0.1
0
−0.1
−0.2
−0.3
−0.4
−0.5
By (T)
−0.8
−0.6
−0.4
−0.2
0
0.2
0.4
0.6
0.8
Z Position (m)

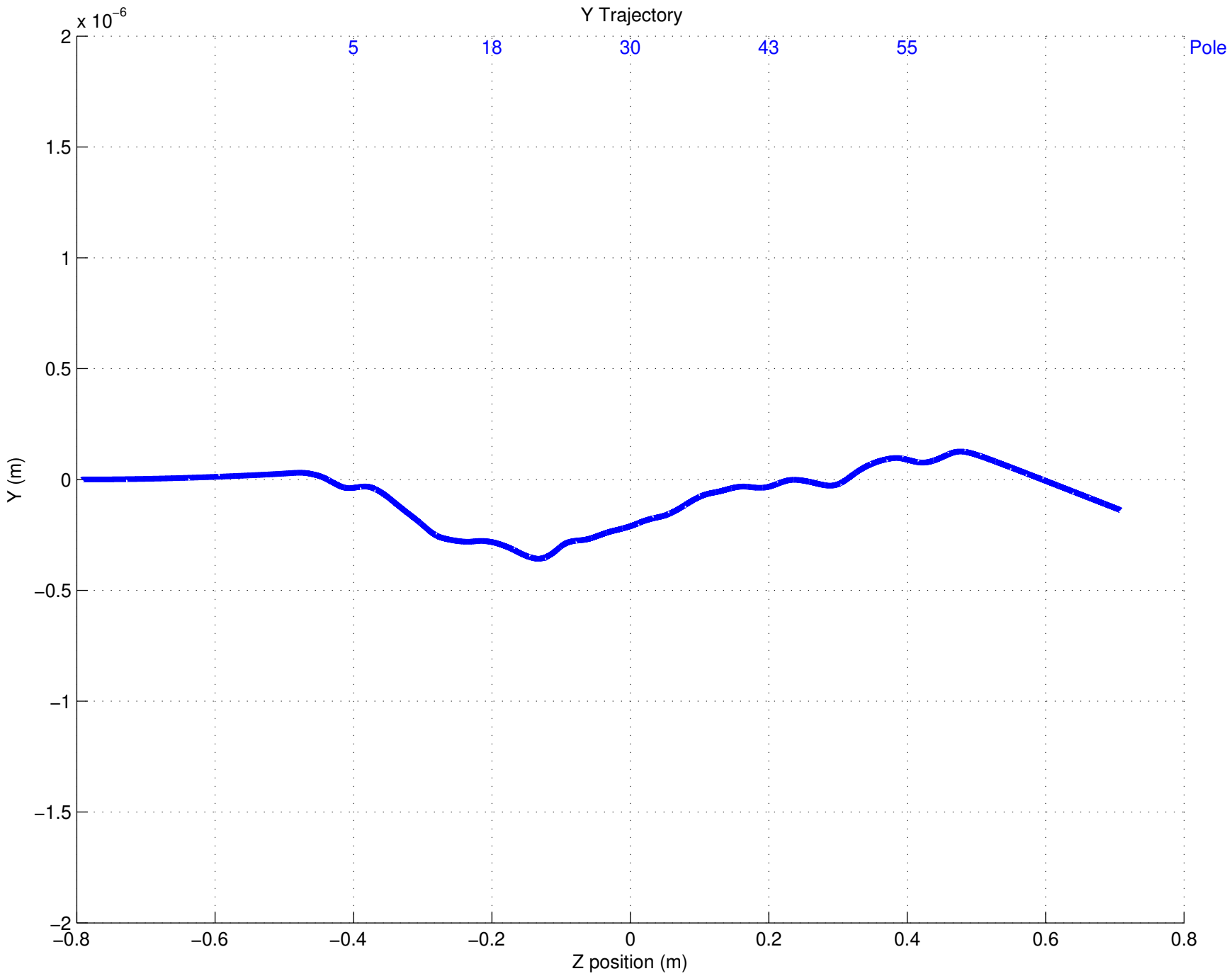


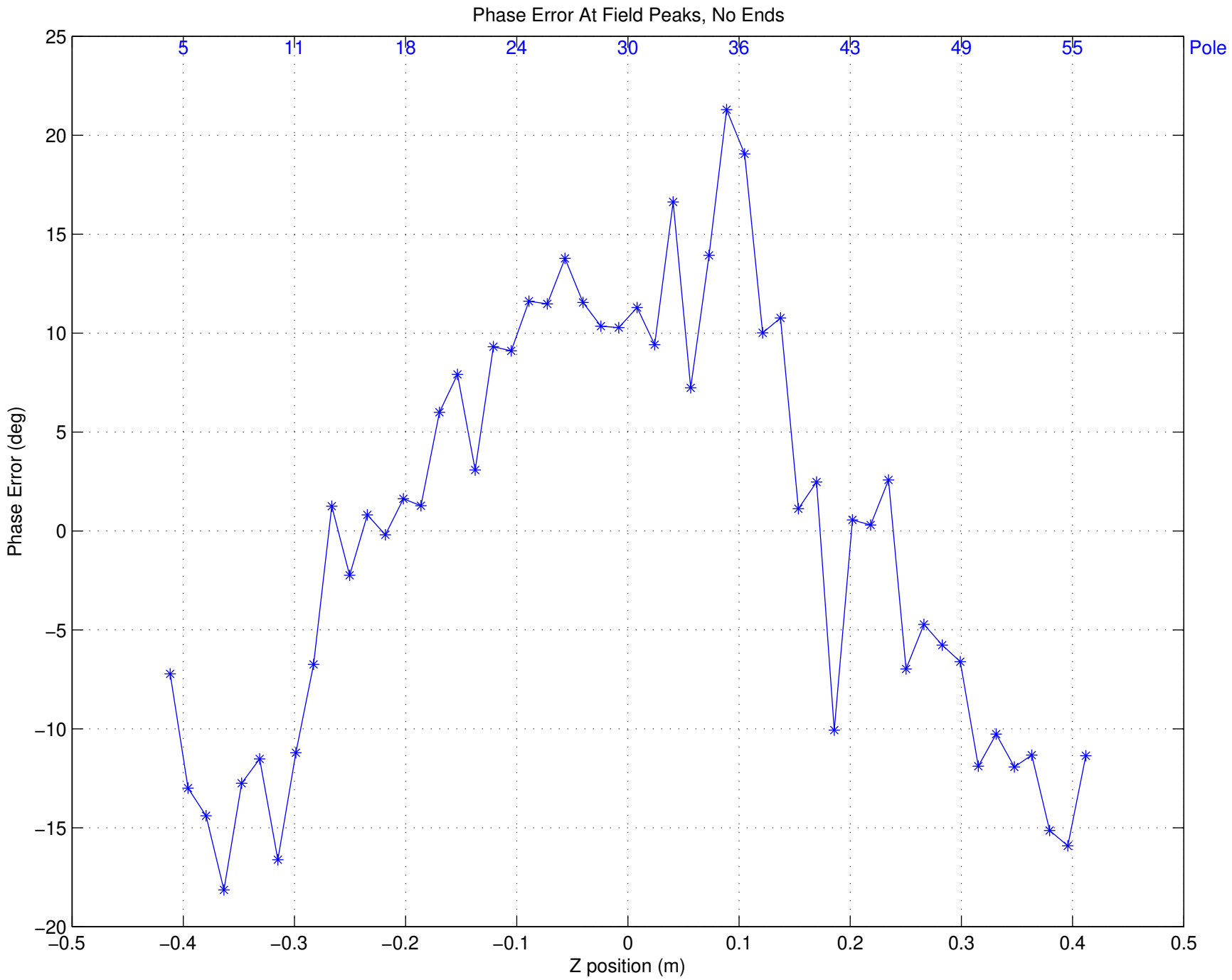
Peak Fields: Ave = 0.438112 T, RMS = 0.007110 T



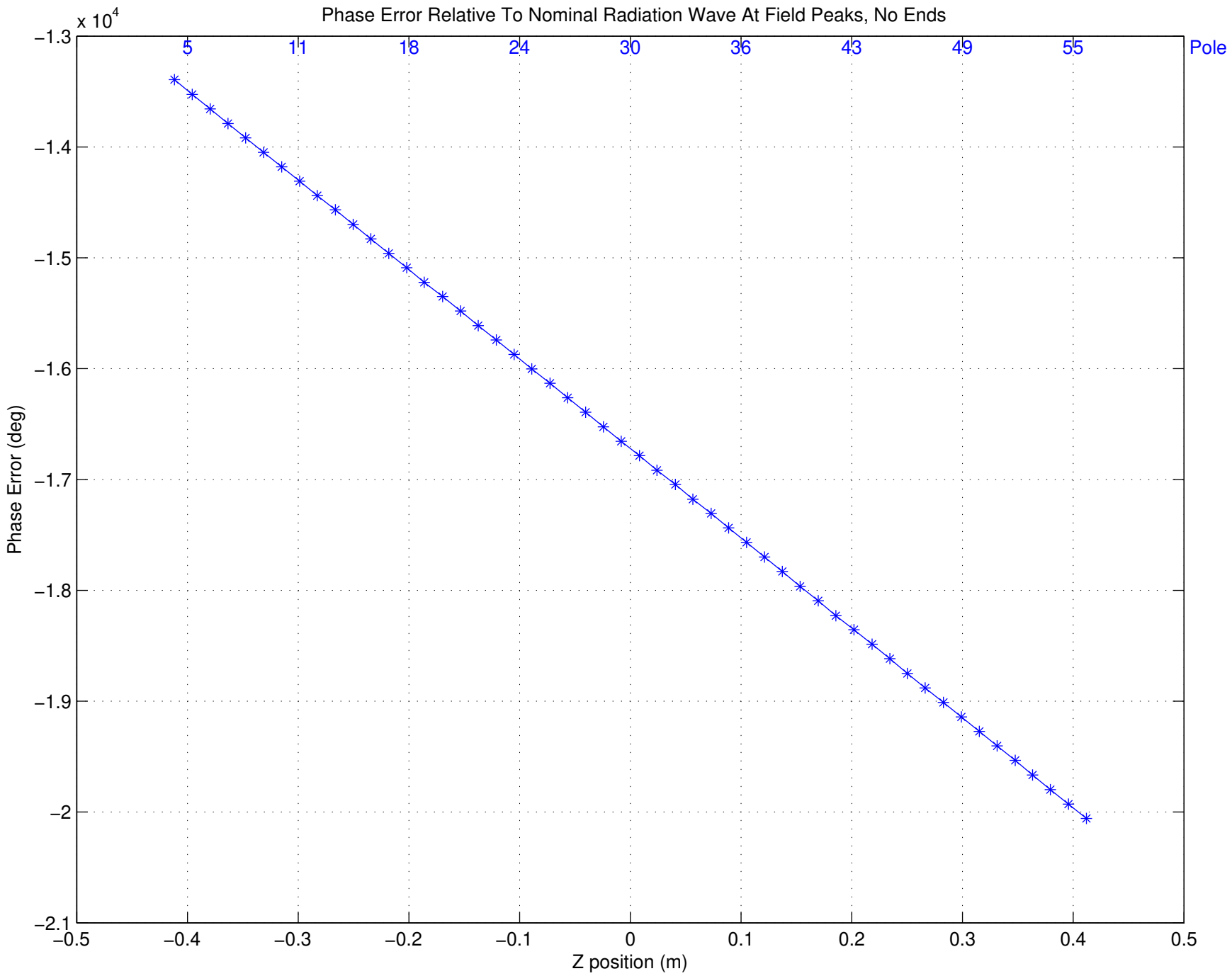
Peak Field Spacing: Ave = 0.016151 m, RMS = 0.000223 m


X Trajectory
x 10^-6
5
18
30
43
55
Pole
2
1.5
1
0.5
0
−0.5
−1
−1.5
−2
X (m)
−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
5
18
30
43
55
Pole
2
1.5
1
0.5
0
−0.5
−1
−1.5
−2
Y (m)
−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 = 10.623189 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
−2.1
Phase Error (deg)
5
11
18
24
30
36
43
49
55
Pole
−0.5
−0.4
−0.3
−0.2
−0.1
0
0.1
0.2
0.3
0.4
0.5
Z position (m)