SLAC Magnetic Measurements

Planar Insertion Device Analysis

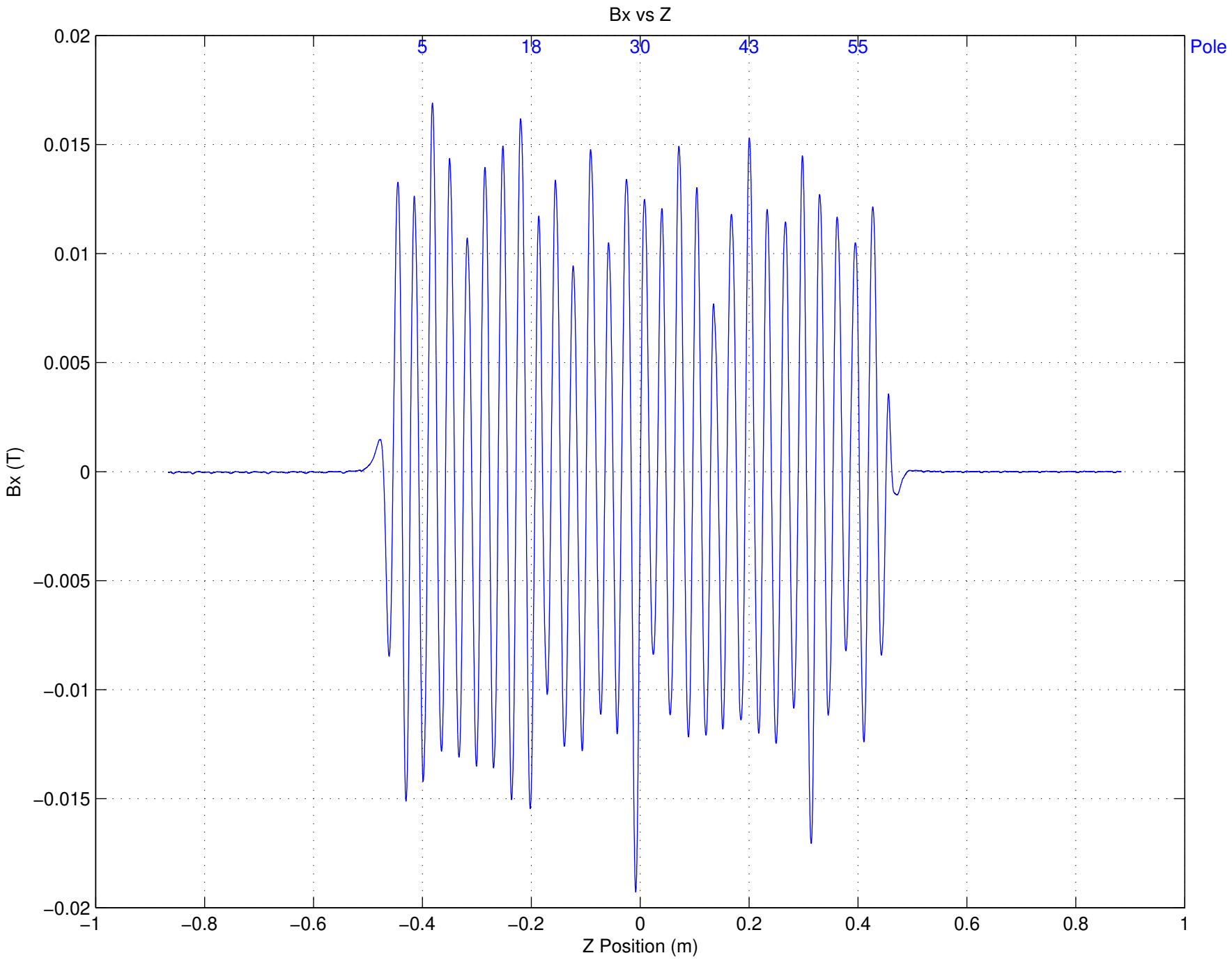
SLAC Magnetic Measurements
Date: 04−22−2013
Time: 10:01:22

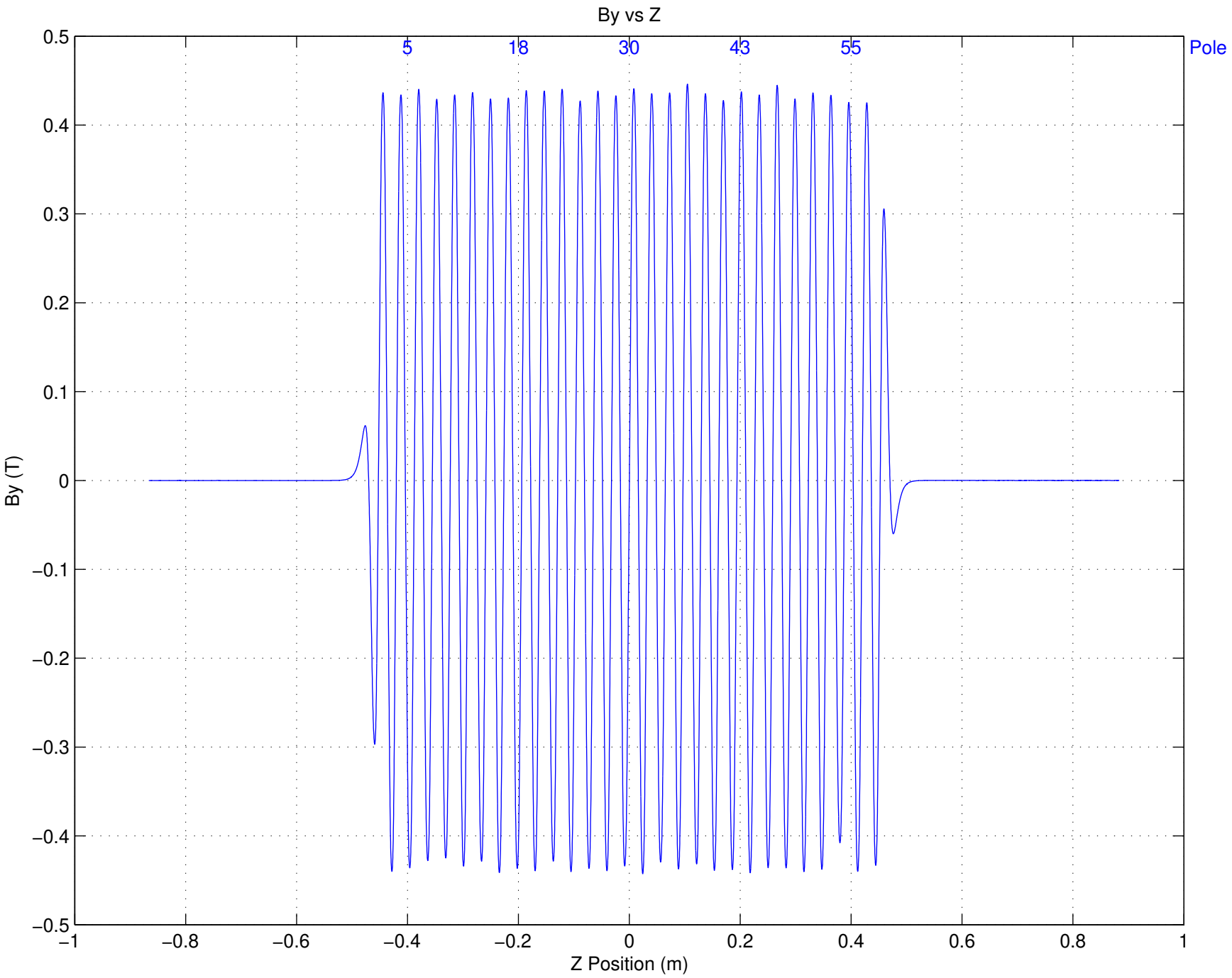
Project: LCLS
Device Type: Undulator
Data Type:
Serial Number: DELTA
DATASET Number: 1
Tuning Stage: Fine Tuning
Run Number: 69
Measurement Type: Z Scans
Operator: YL
Comment: Q3; #16 +2. #52 −2, #54 −2, #66 −2, #108 +2
Session first run: 60
Measurement Device x:
Measurement Device y: $SENTRON_4$41

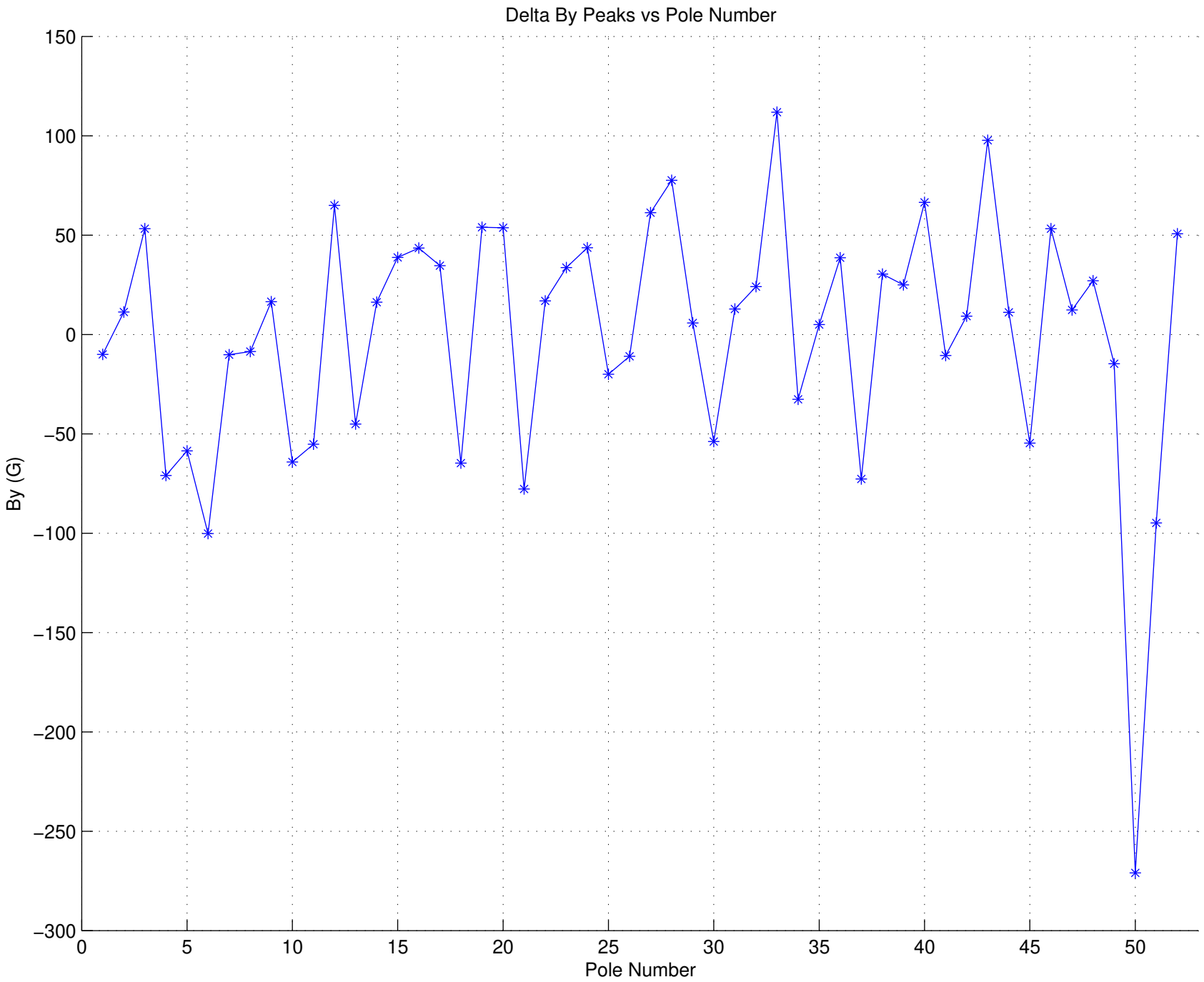
Data File: s:\magdata\LCLS\Undulator\DELTA\DATASET0001\Fine Tuning\Z Scans\Run 069\bscanz.dat

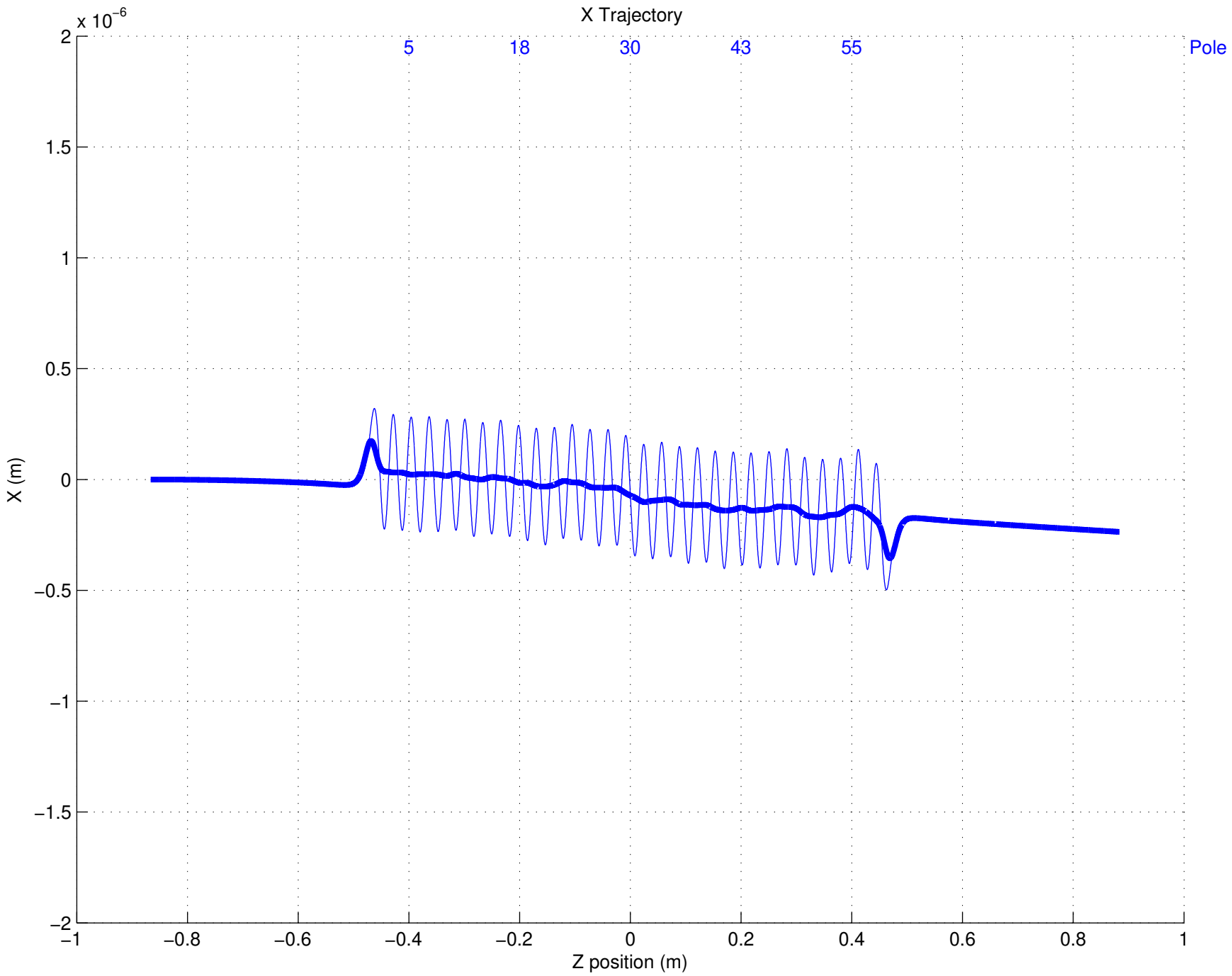
Temperature (C)
DELTA:−−> T1 19.98 −−> T2 20.32 −−> T5 19.89 −−> T3 20.42 −−> Air 20.02 −−> T4 19.96

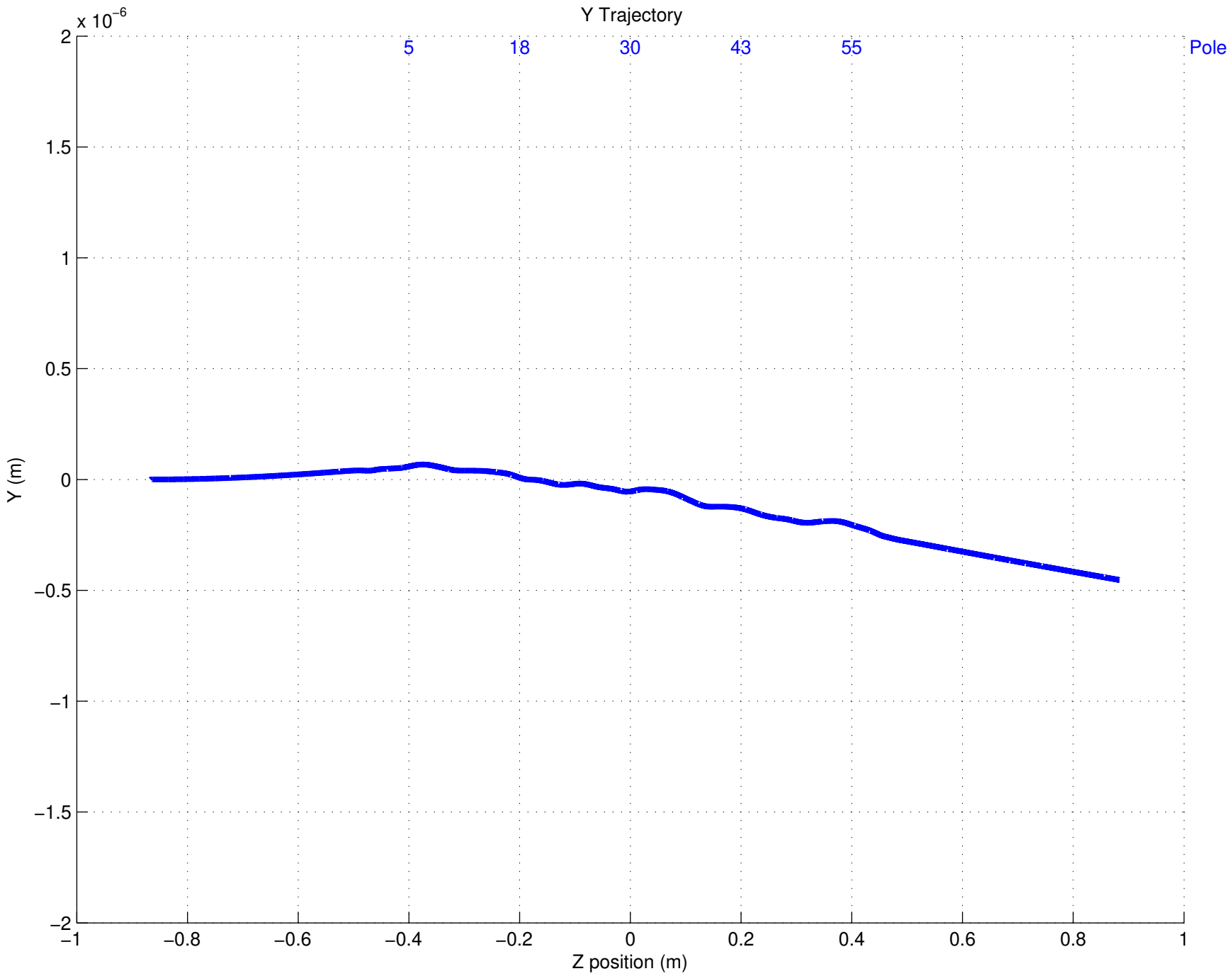
Axes position (m) X:0.020011 Y:0.000025
Initial Hall Probe Zero Measurements:
Vx_0i = 0.000712 V
Vy_0i = −0.003629 V

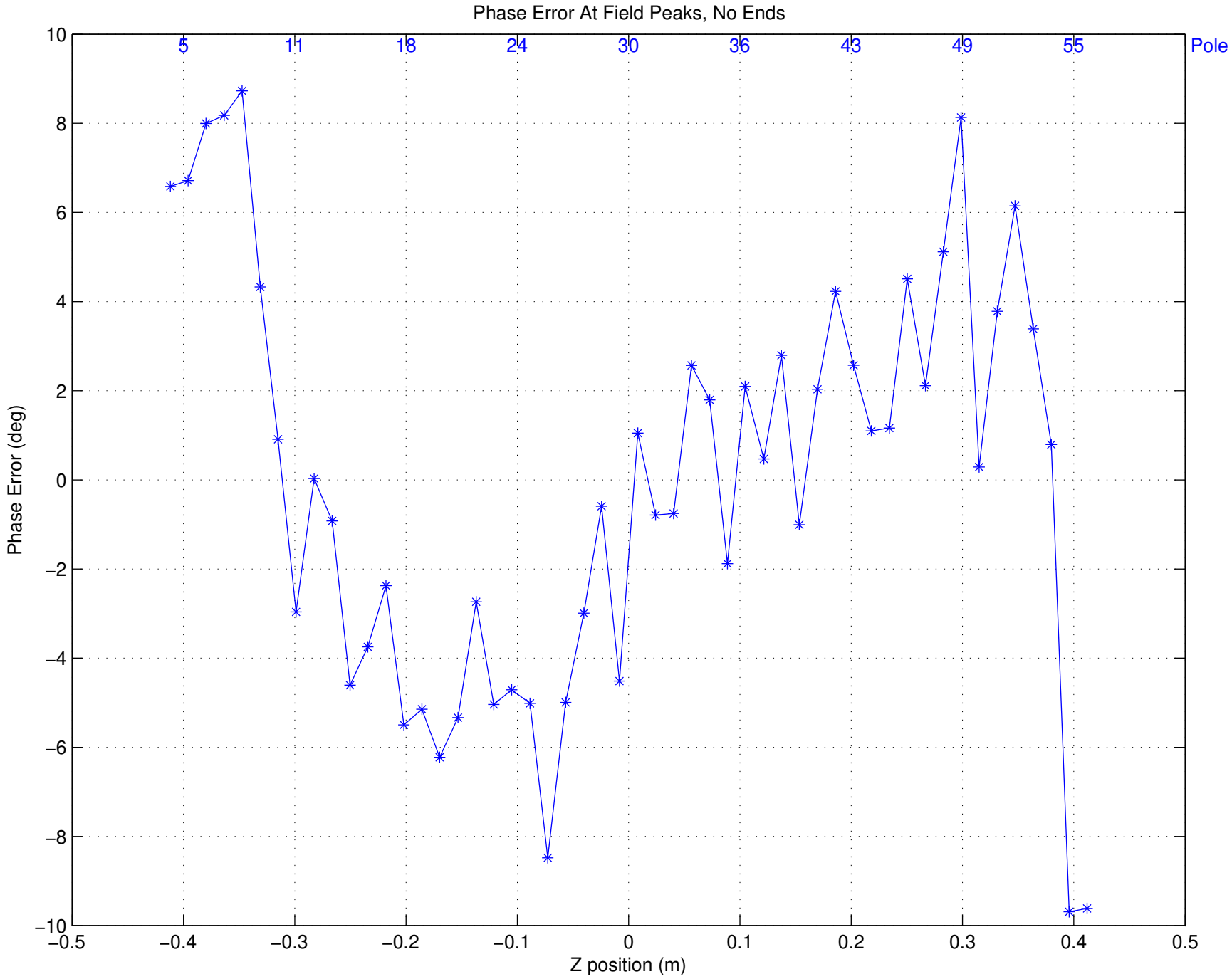

Bx vs Z
Pole
5
18
30
43
55
0.02
0.015
0.01
0.005
0
−0.005
−0.01
−0.015
−0.02
Bx (T)
−1
−0.8
−0.6
−0.4
−0.2
0
0.2
0.4
0.6
0.8
1
Z Position (m)


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)
−1
−0.8
−0.6
−0.4
−0.2
0
0.2
0.4
0.6
0.8
1
Z Position (m)

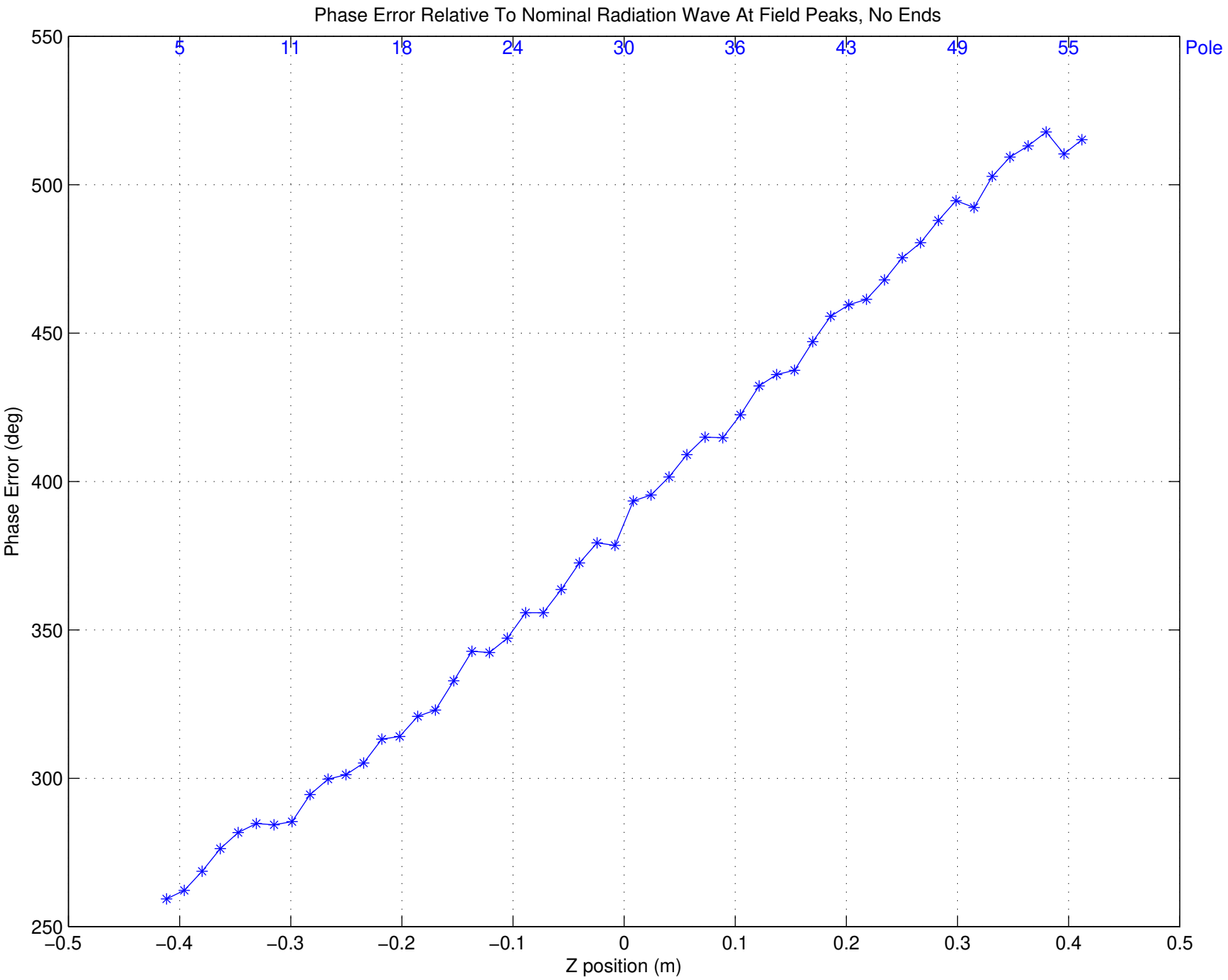

Delta By Peaks vs Pole Number
By (G)
Pole Number
150
100
50
0
−50
−100
−150
−200
−250
−300
0
5
10
15
20
25
30
35
40
45
50


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)
−1
−0.8
−0.6
−0.4
−0.2
0
0.2
0.4
0.6
0.8
1
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)
−1
−0.8
−0.6
−0.4
−0.2
0
0.2
0.4
0.6
0.8
1
Z position (m)



Phase Error: Ave = 0.000000 deg, RMS = 4.694755 deg


Phase Error Relative To Nominal Radiation Wave At Field Peaks, No Ends
Pole
5
11
18
24
30
36
43
49
55
Phase Error (deg)
550
500
450
400
350
300
250
Z position (m)
−0.5
−0.4
−0.3
−0.2
−0.1
0
0.1
0.2
0.3
0.4
0.5