SLAC Magnetic Measurements

Planar Insertion Device Analysis

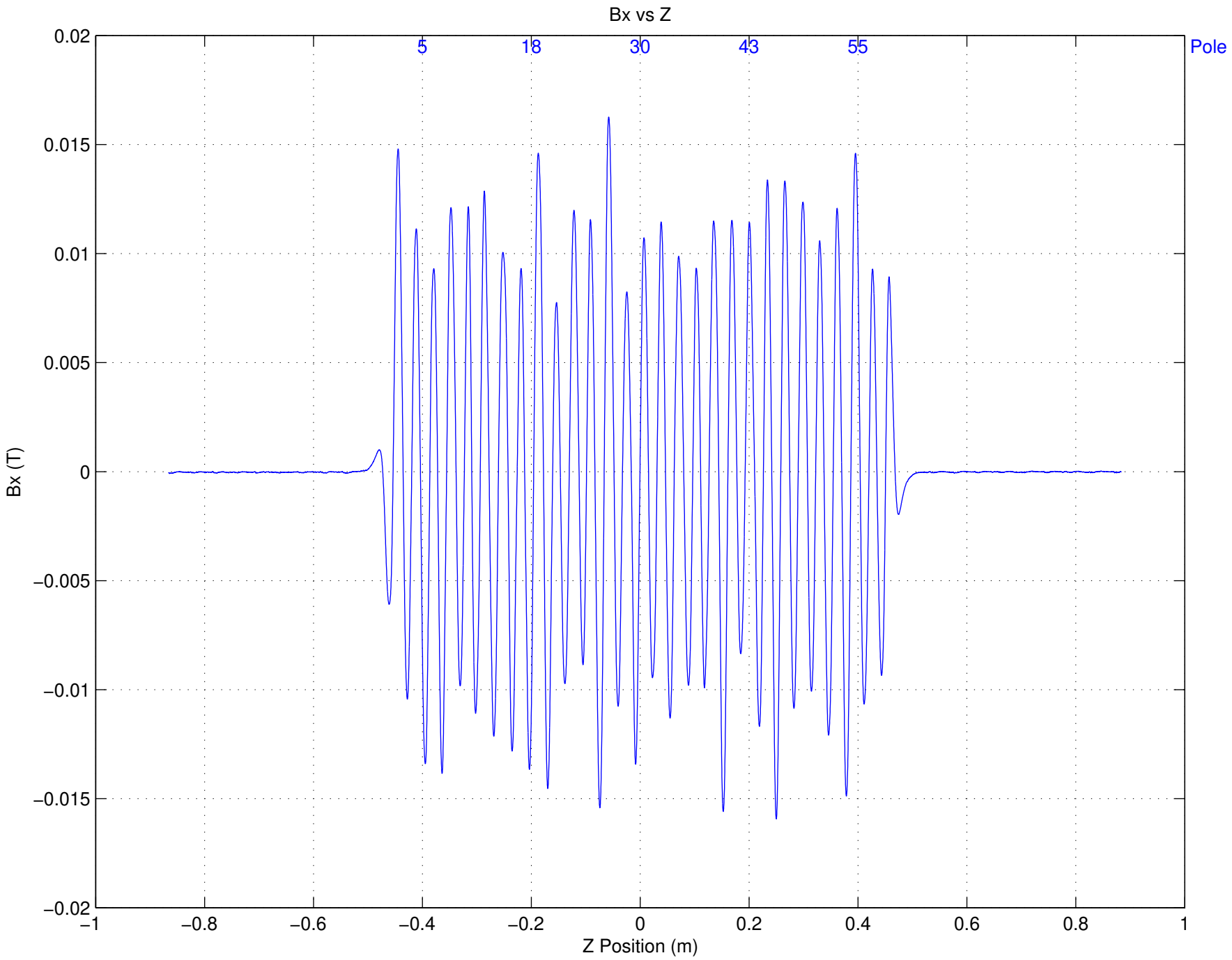
SLAC Magnetic Measurements
Date: 04–29–2013
Time: 12:10:47

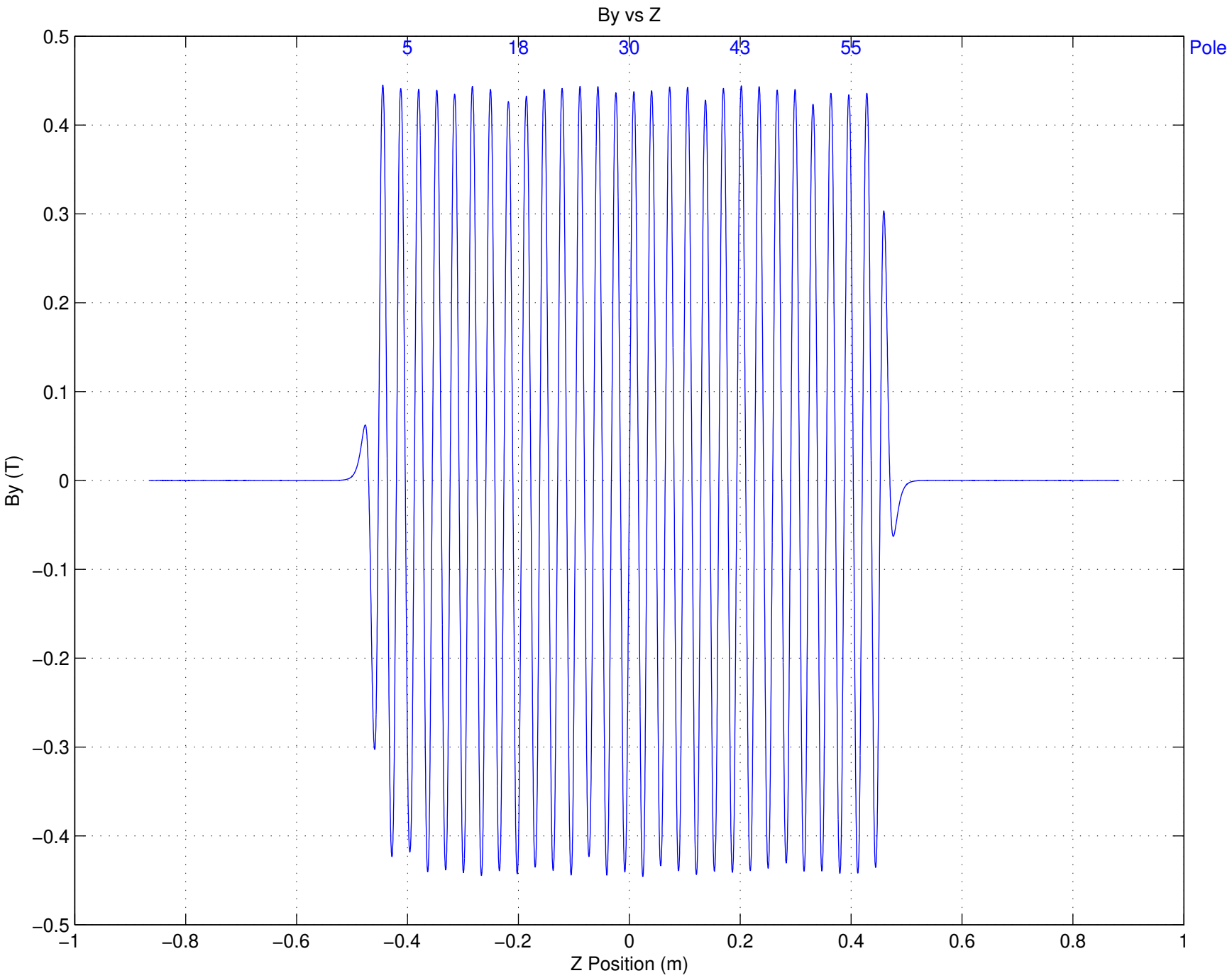
Project: LCLS
Device Type: Undulator
Data Type:
Serial Number: DELTA
DATASET Number: 2
Tuning Stage: Fine Tuning
Run Number: 13
Measurement Type: Z Scans
Operator: YL
Comment: Q4; #29 +1,#31 +1,#39 –4, #51 –2, #53 –30, #83 –30
Session first run: 11
Measurement Device x:
Measurement Device y: $SENTRON_4$41

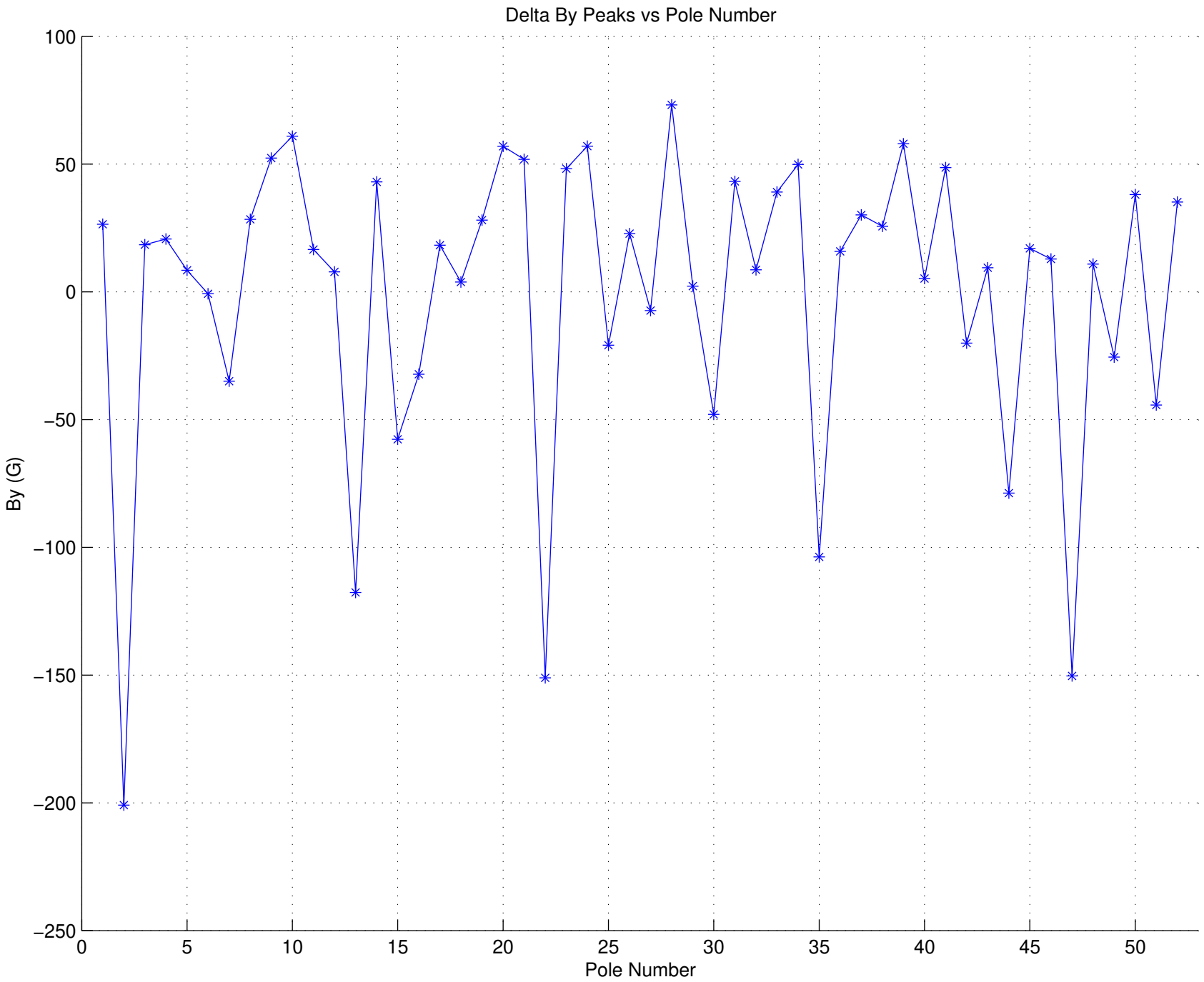
Data File: s:\magdata\LCLS\Undulator\DELTA\DATASET0002\Fine Tuning\Z Scans\Run 013\bscanz.dat

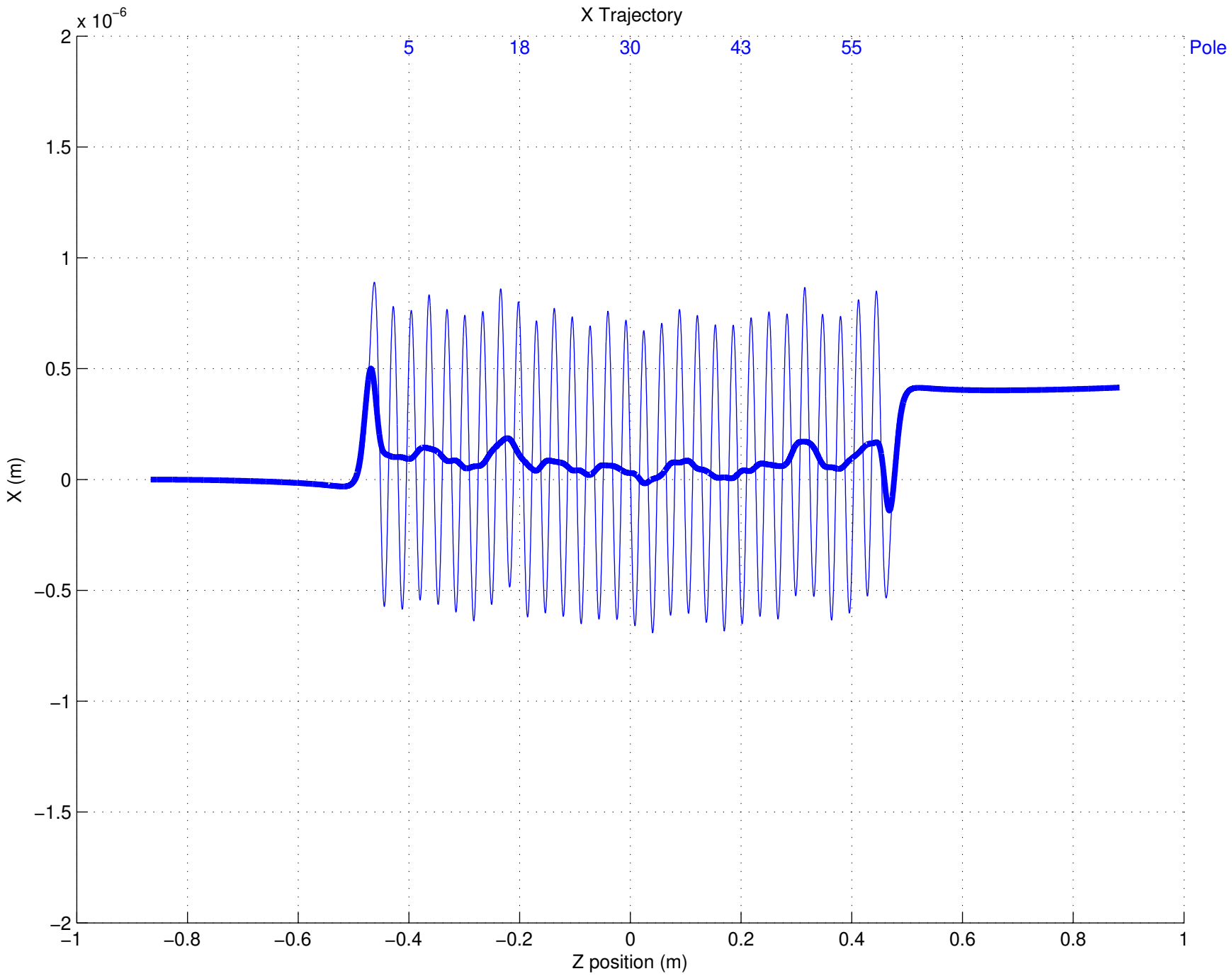
Temperature (C)
DELTA:––> T1 19.98 ––> T2 20.19 ––> T5 19.92 ––> T3 20.16 ––> Air 20.03 ––> T4 19.98

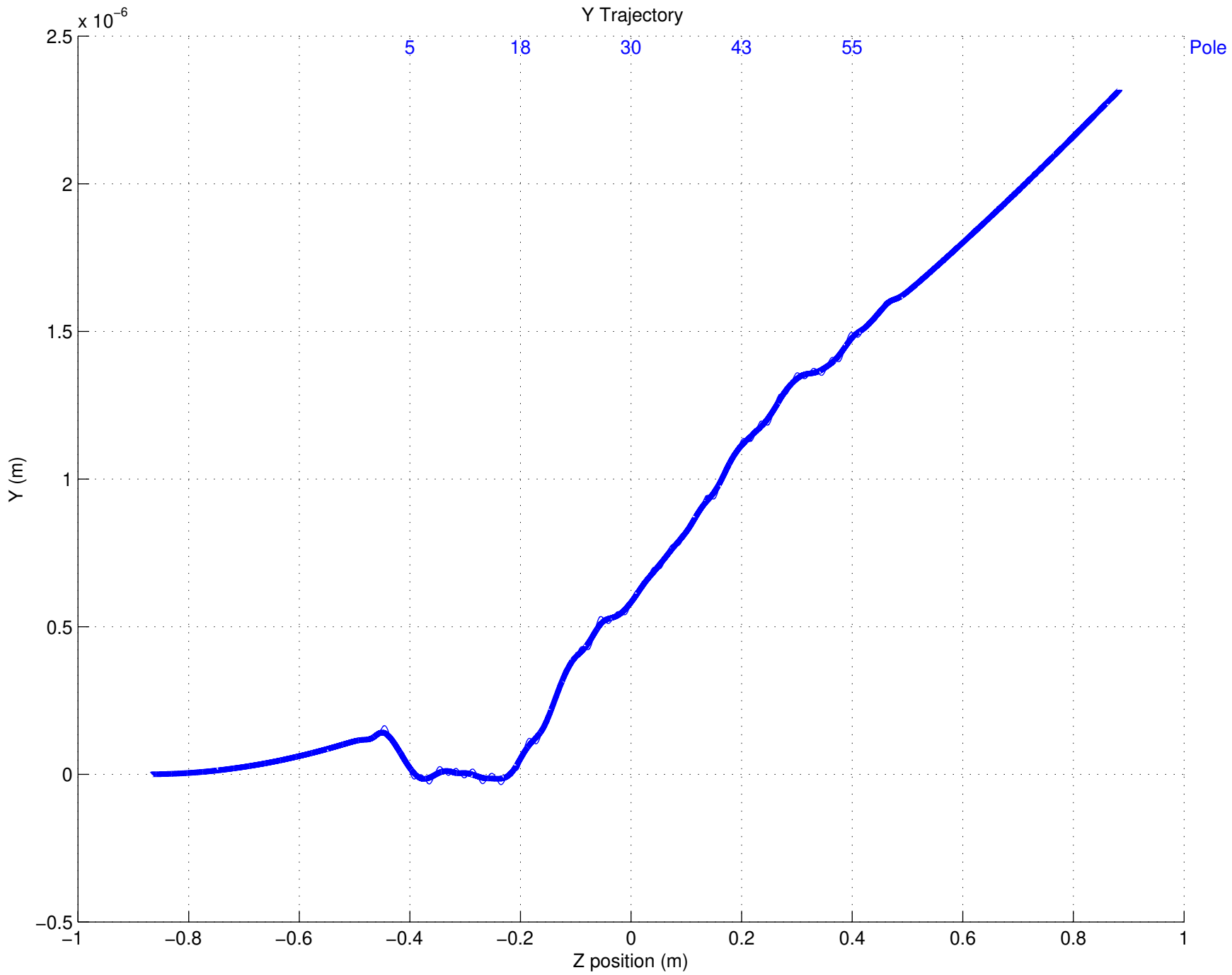
Axes position (m) X:0.019970 Y:0.000025
Initial Hall Probe Zero Measurements:
Vx_0i = 0.000796 V
Vy_0i = –0.003441 V

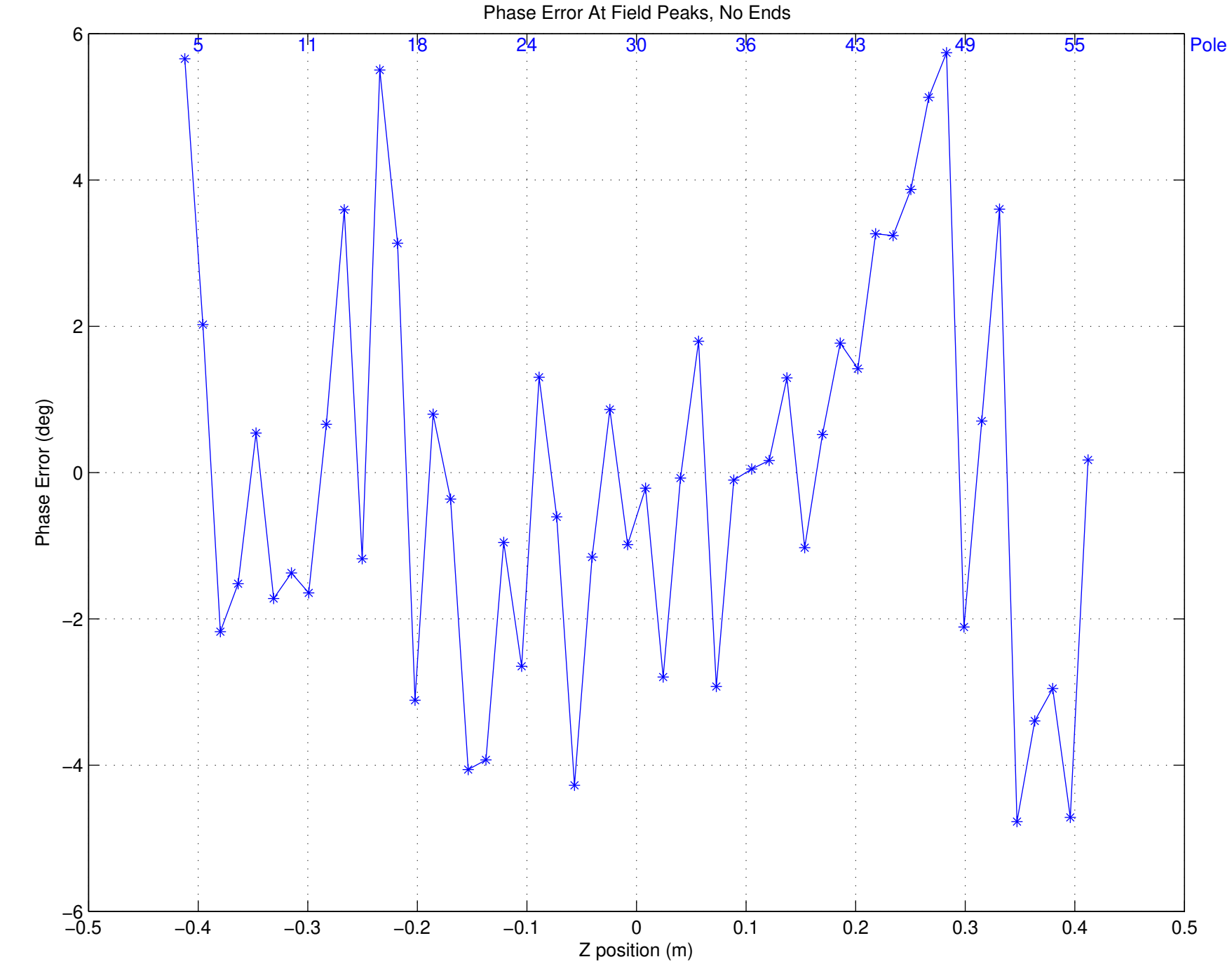

Bx vs Z
Pole
5
18
30
43
55
0.02
0.015
0.01
0.005
0
−0.005
−0.01
−0.015
−0.02
Bx (T)
−1
−0.8
−0.6
−0.4
−0.2
0
0.2
0.4
0.6
0.8
1
Z Position (m)


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)

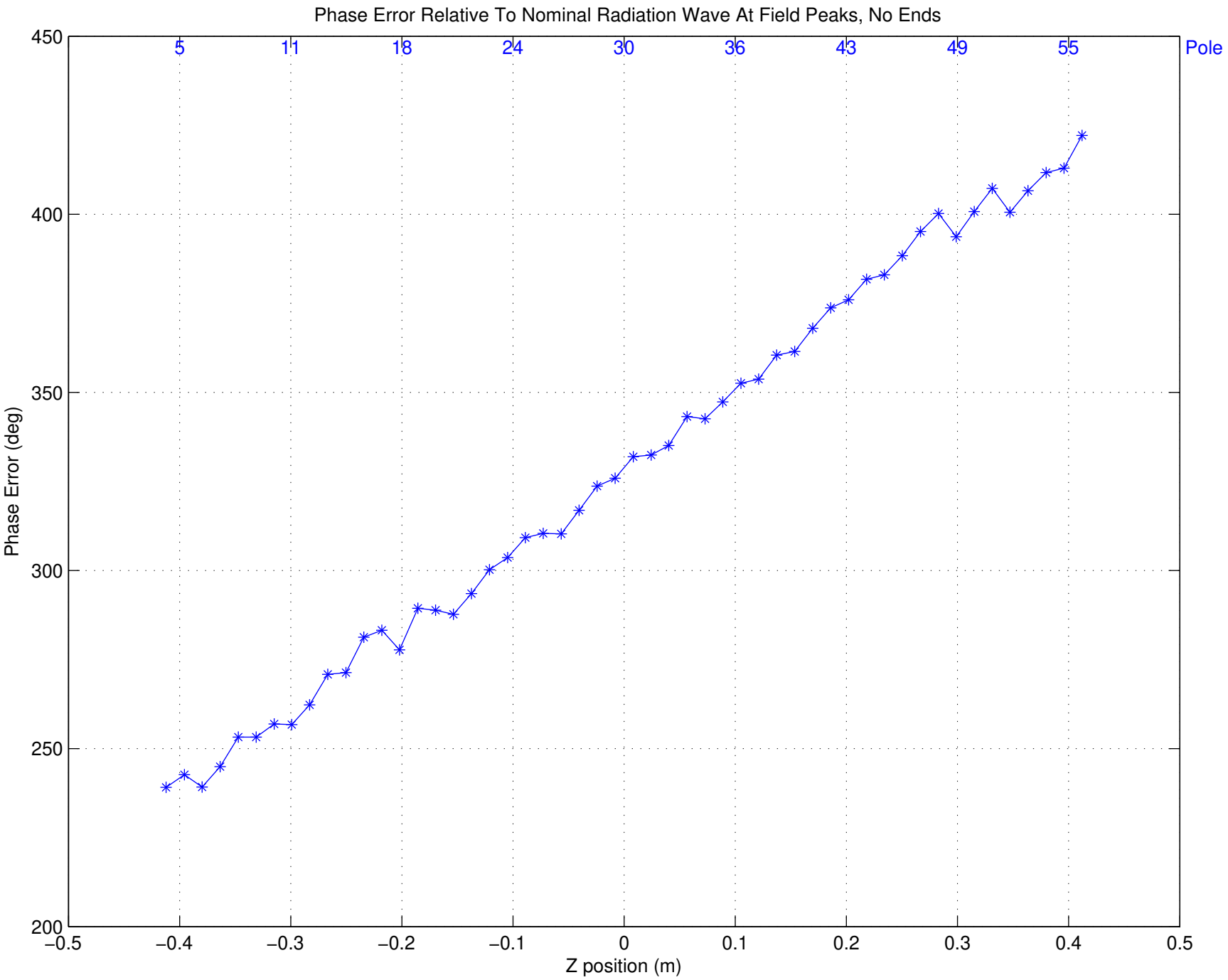

Delta By Peaks vs Pole Number
By (G)
Pole Number
100
50
0
−50
−100
−150
−200
−250
0
5
10
15
20
25
30
35
40
45
50


X Trajectory
x 10^-6
2
1.5
1
0.5
0
−0.5
−1
−1.5
−2
X (m)
5
18
30
43
55
Pole
−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
2.5
2
1.5
1
0.5
0
−0.5
Y (m)
5
18
30
43
55
Pole
−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 = 2.750765 deg


Phase Error Relative To Nominal Radiation Wave At Field Peaks, No Ends
5
11
18
24
30
36
43
49
55
Pole
450
400
350
300
250
200
Phase Error (deg)
−0.5
−0.4
−0.3
−0.2
−0.1
0
0.1
0.2
0.3
0.4
0.5
Z position (m)