SLAC Magnetic Measurements

Planar Insertion Device Analysis

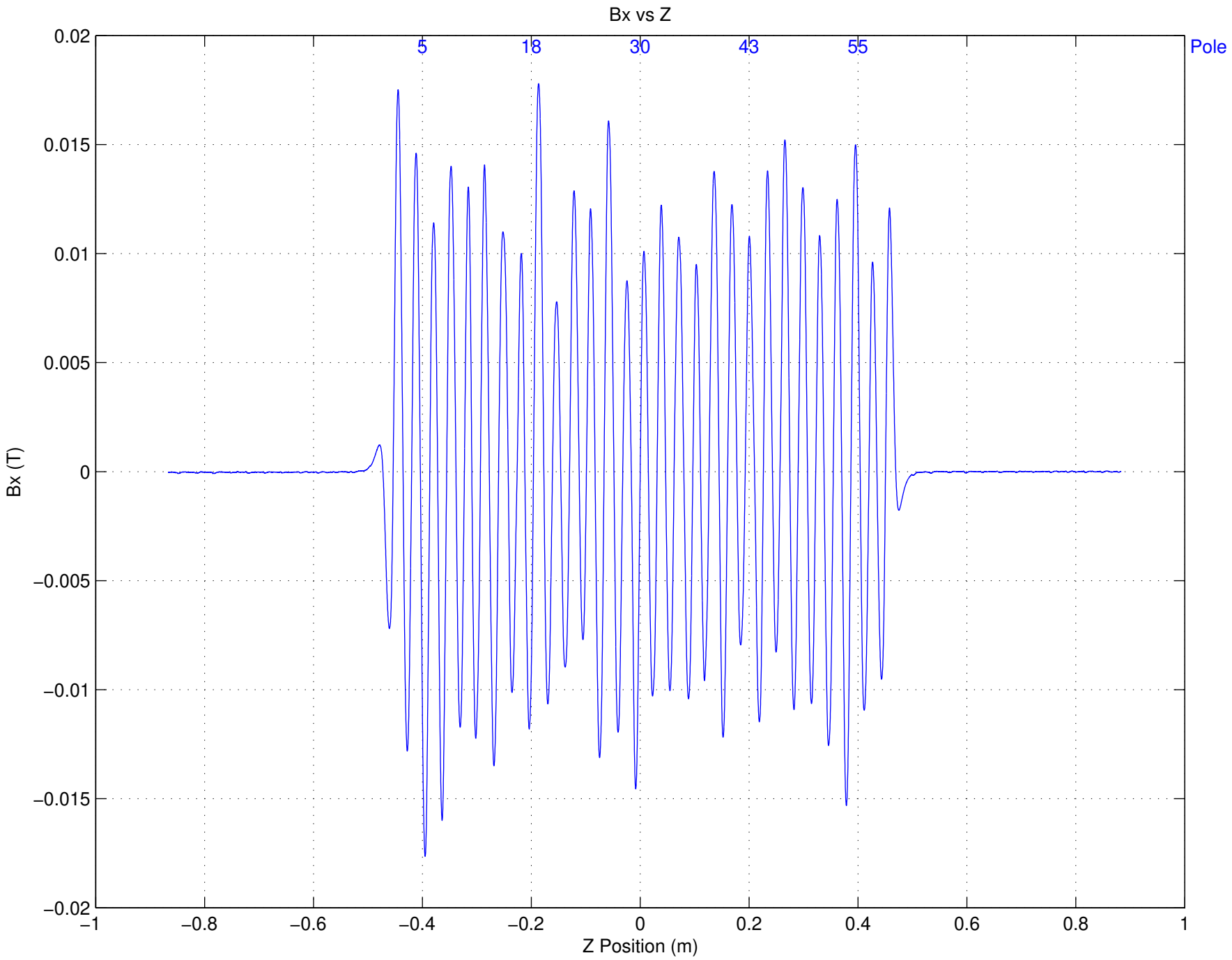
SLAC Magnetic Measurements
Date: 04–23–2013
Time: 11:36:06

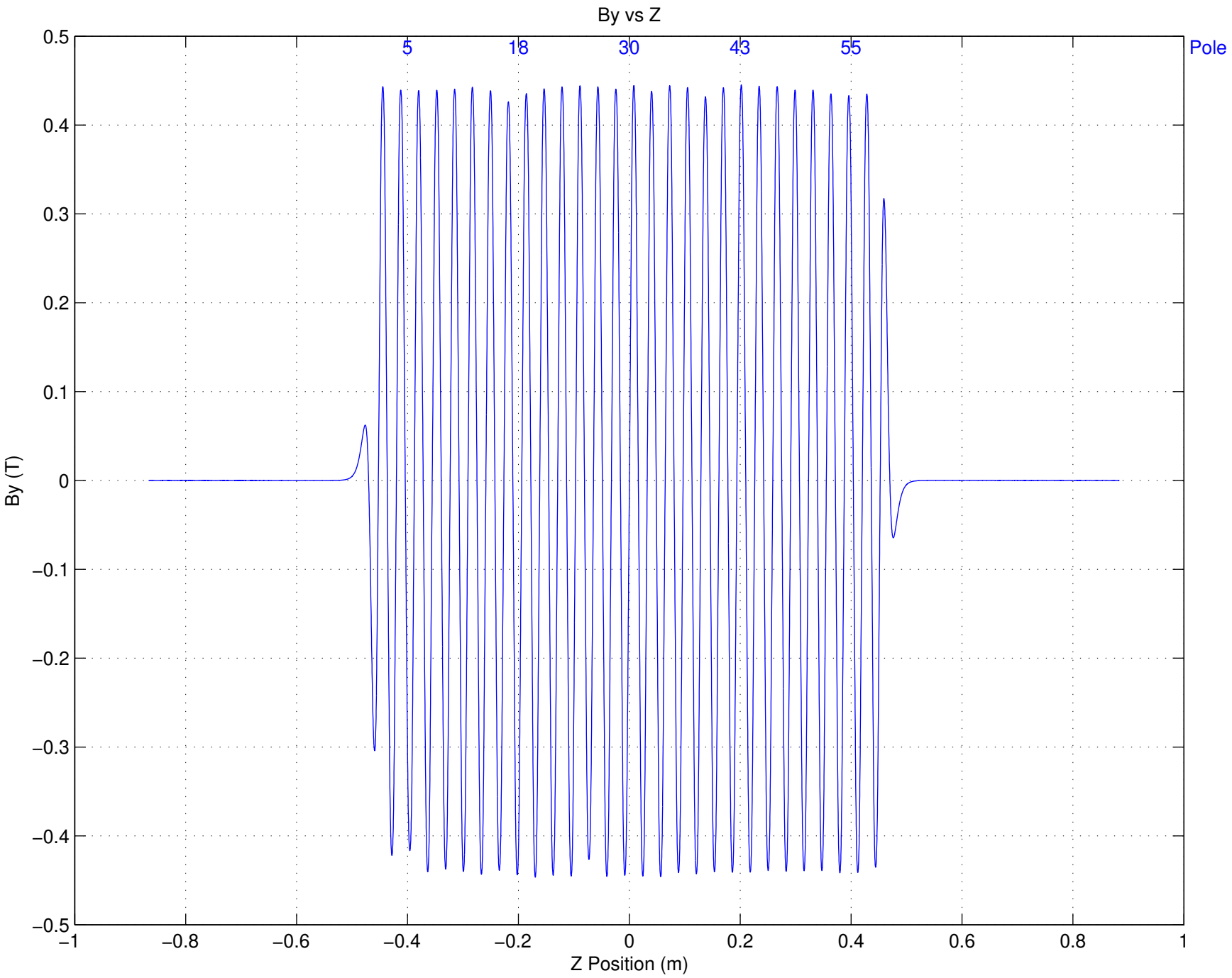
Project: LCLS
Device Type: Undulator
Data Type:
Serial Number: DELTA
DATASET Number: 1
Tuning Stage: Fine Tuning
Run Number: 73
Measurement Type: Z Scans
Operator: YL
Comment: Q4; #11 –8, #33 –6, #37 –4,#51 –6,#77 –4, #119 +12, #9 –50,#21 –50, #23 +50
Session first run: 71
Measurement Device x:
Measurement Device y: $SENTRON_4$41

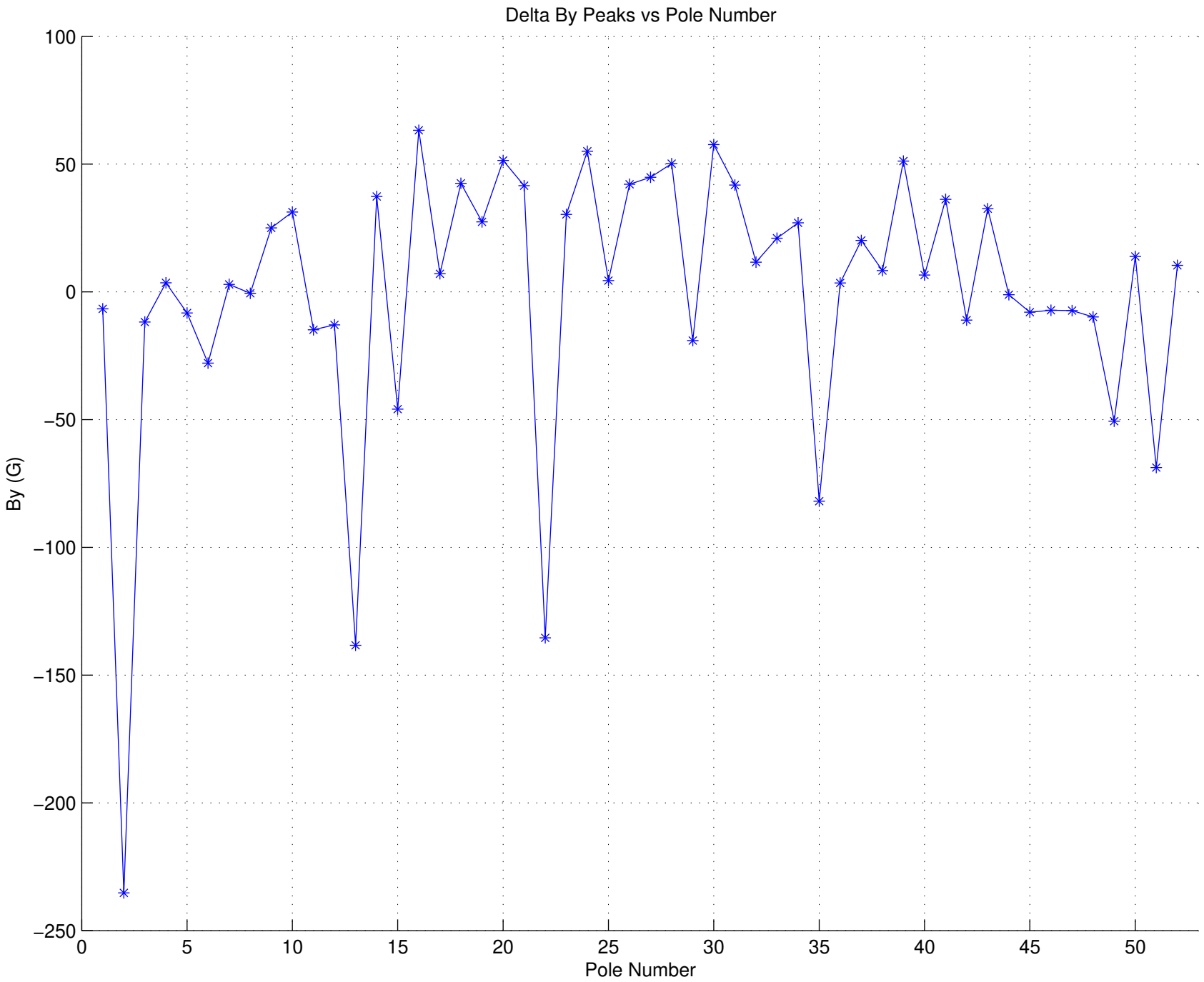
Data File: s:\magdata\LCLS\Undulator\DELTA\DATASET0001\Fine Tuning\Z Scans\Run 073\bscanz.dat

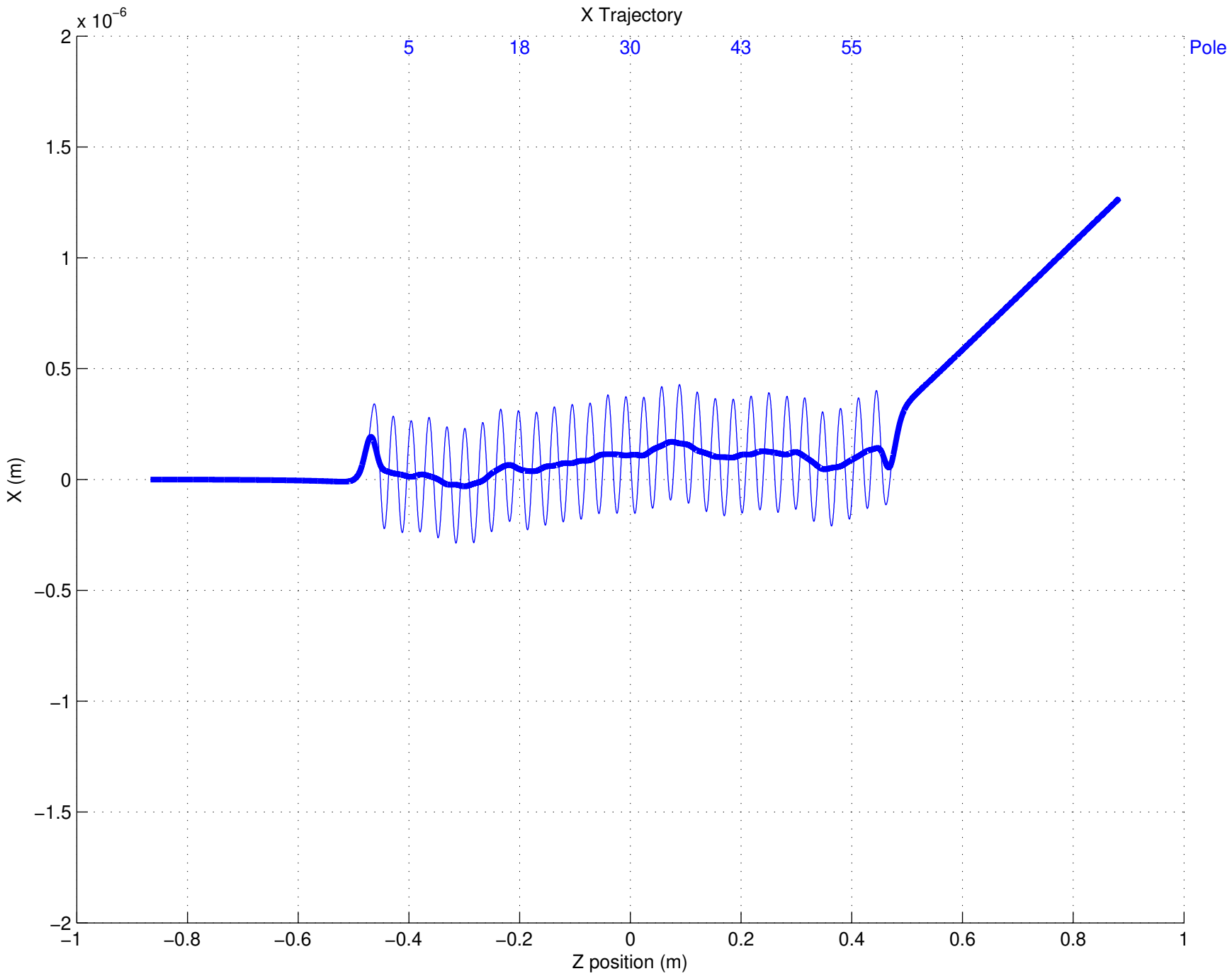
Temperature (C)
DELTA:––> T1 20.03 ––> T2 20.28 ––> T5 19.90 ––> T3 20.16 ––> Air 20.00 ––> T4 19.97

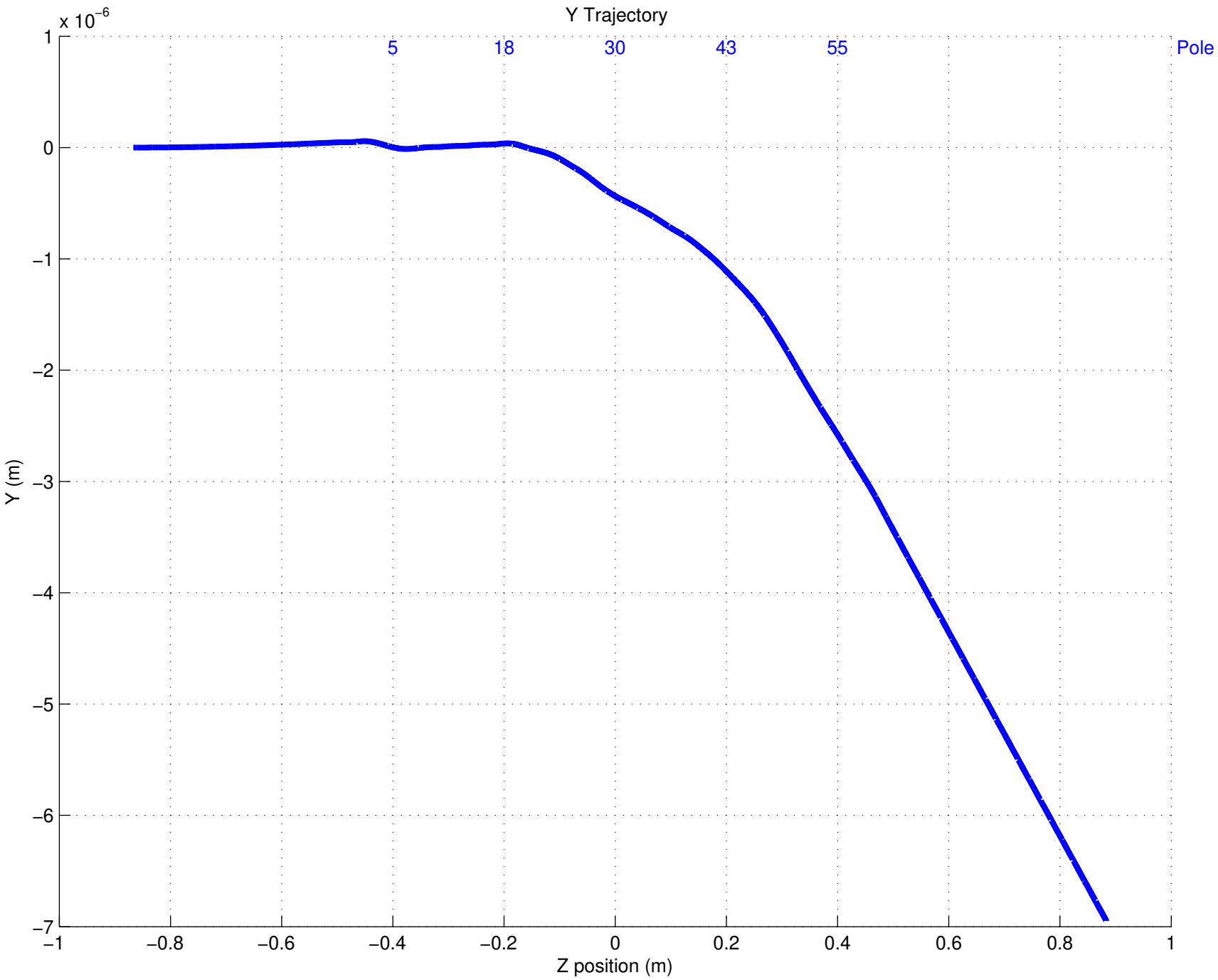
Axes position (m) X:0.020040 Y:0.000025
Initial Hall Probe Zero Measurements:
Vx_0i = 0.000787 V
Vy_0i = –0.003684 V

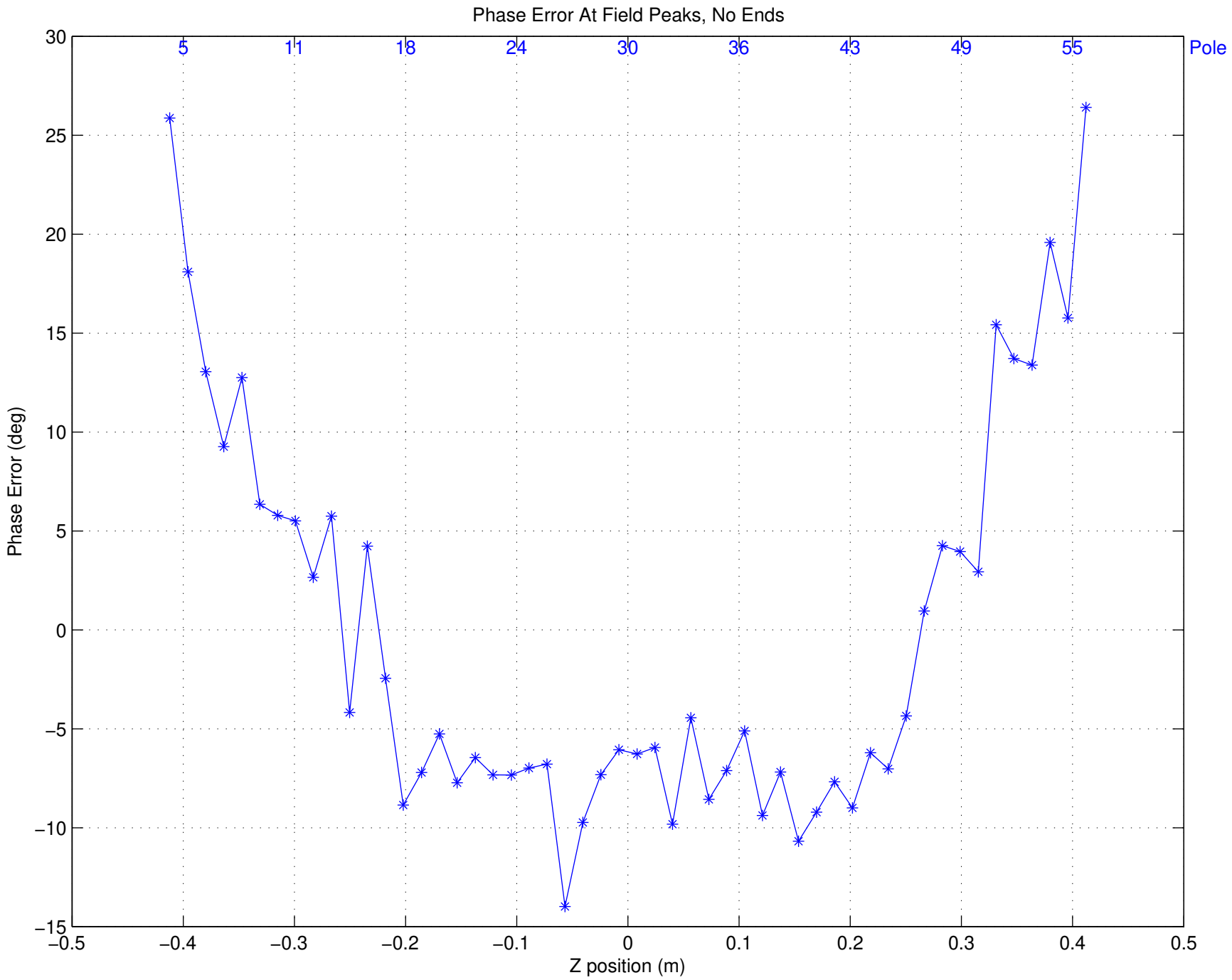

Bx vs Z
5
18
30
43
55
Pole
0.02
0.015
0.01
0.005
0
−0.005
−0.01
−0.015
−0.02
Bx (T)
−1
−0.8
−0.6
−0.4
−0.2
0
0.2
0.4
0.6
0.8
1
Z Position (m)


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)

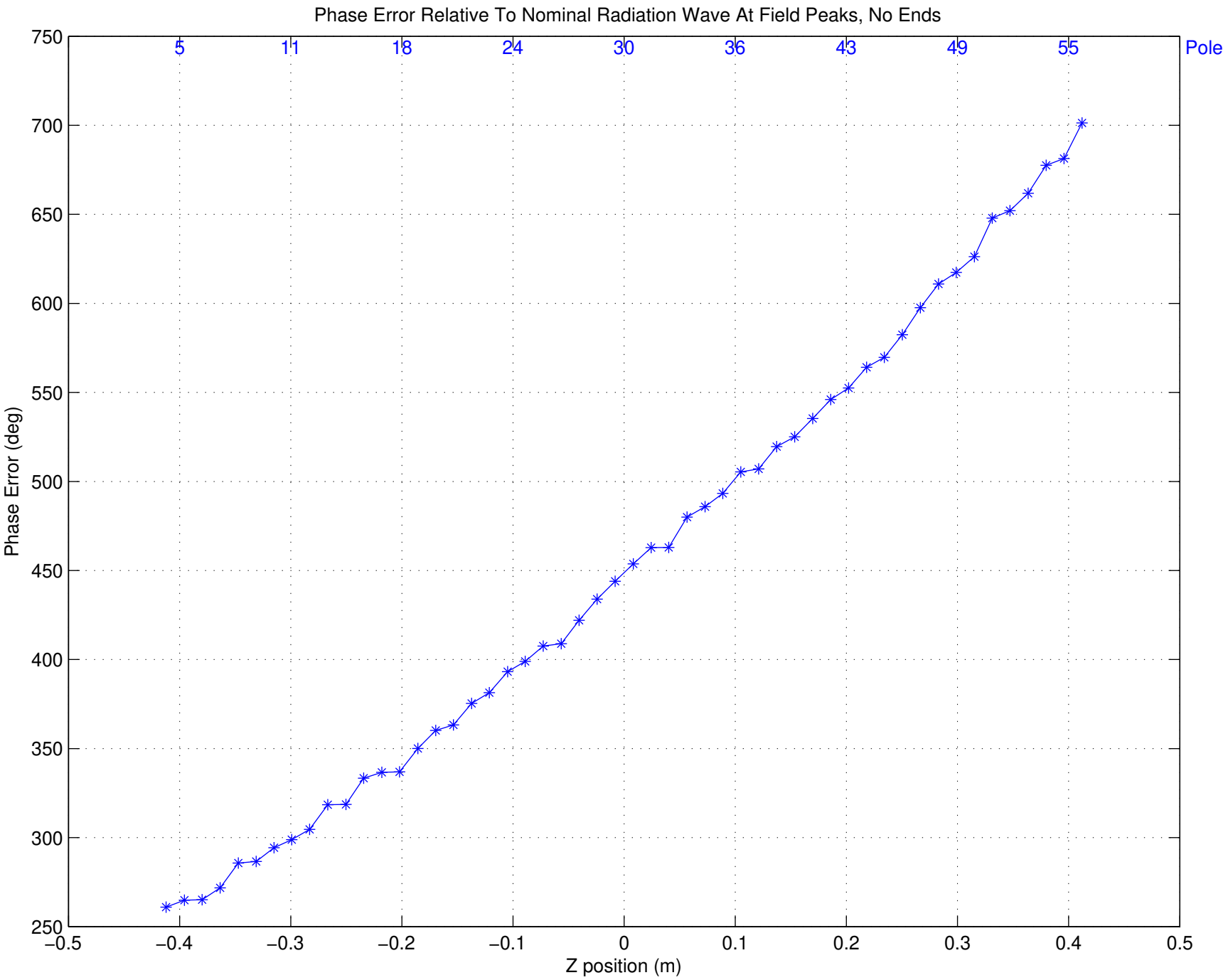

Delta By Peaks vs Pole Number
By (G)
Pole Number
100
50
0
−50
−100
−150
−200
−250
0
5
10
15
20
25
30
35
40
45
50


X Trajectory
x 10^-6
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
1
0
−1
−2
−3
−4
−5
−6
−7
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 = 10.238089 deg


Phase Error Relative To Nominal Radiation Wave At Field Peaks, No Ends
Pole
5
11
18
24
30
36
43
49
55
750
700
650
600
550
500
450
400
350
300
250
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)