SLAC Magnetic Measurements

Planar Insertion Device Analysis

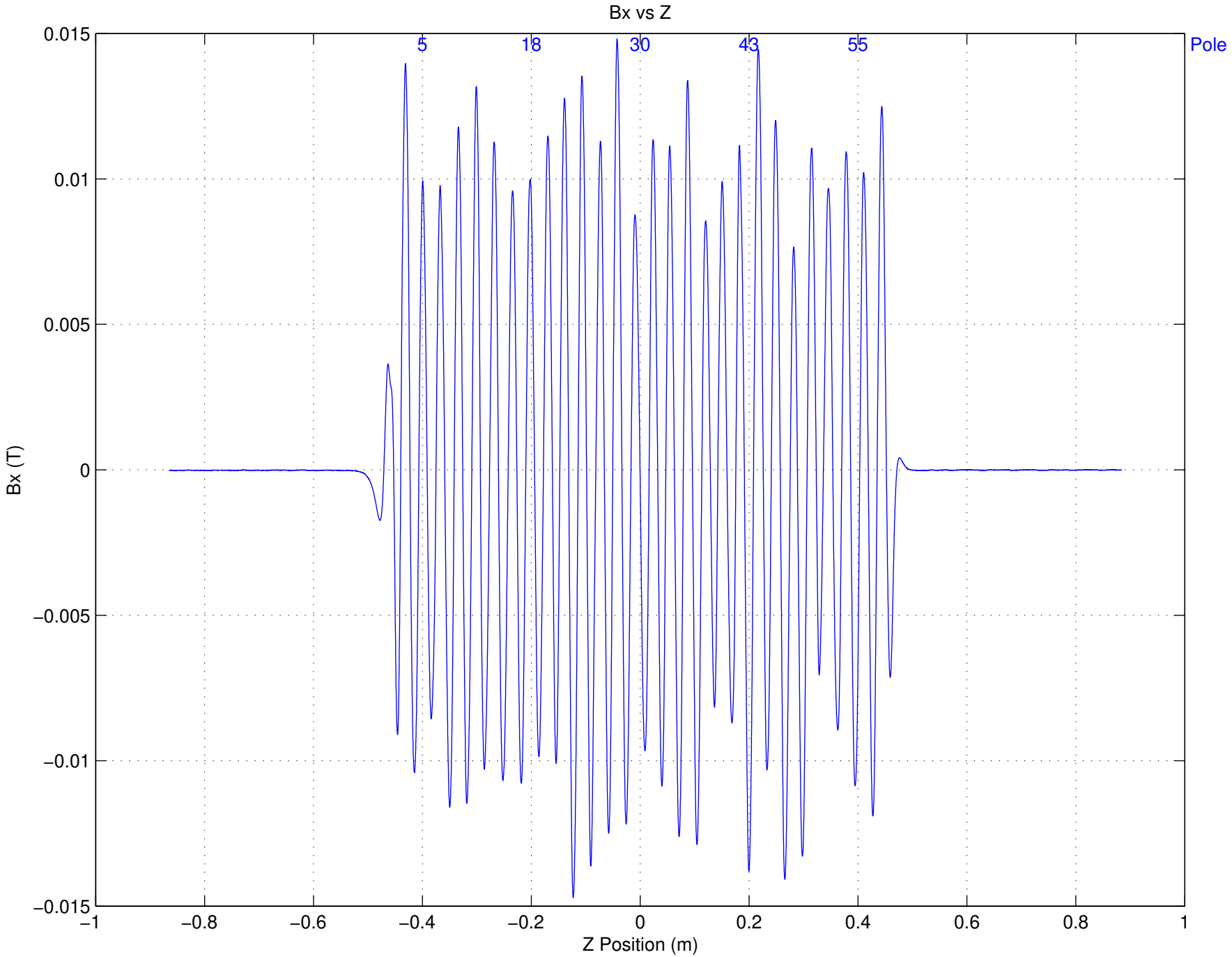
SLAC Magnetic Measurements
Date: 05−13−2013
Time: 10:11:05

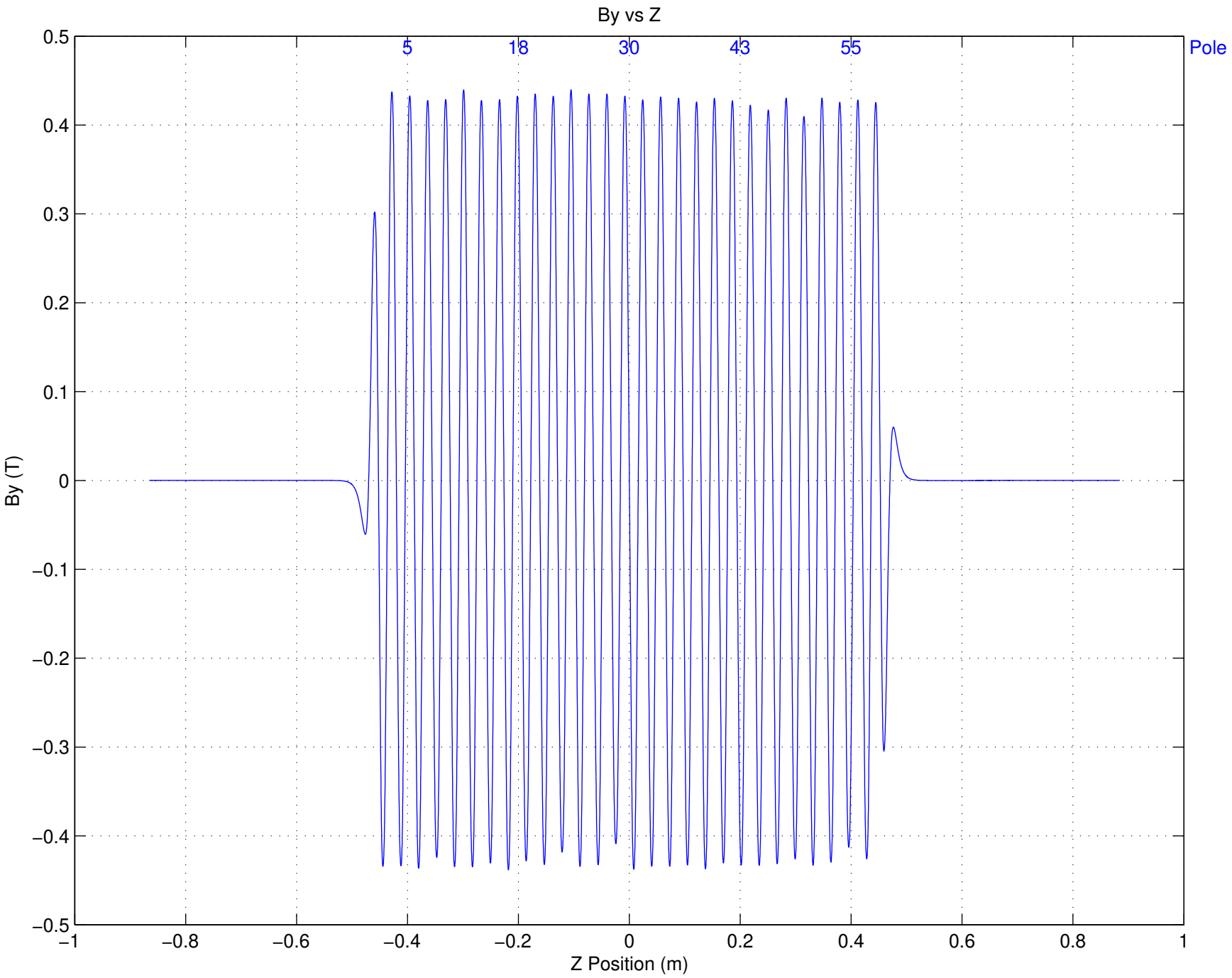
Project: LCLS
Device Type: Undulator
Data Type:
Serial Number: DELTA
DATASET Number: 3
Tuning Stage: Fine Tuning
Run Number: 13
Measurement Type: Z Scans
Operator: YL
Comment: Q1; check repeatability, #1
Session first run: 13
Measurement Device x:
Measurement Device y: $SENTRON_4$41

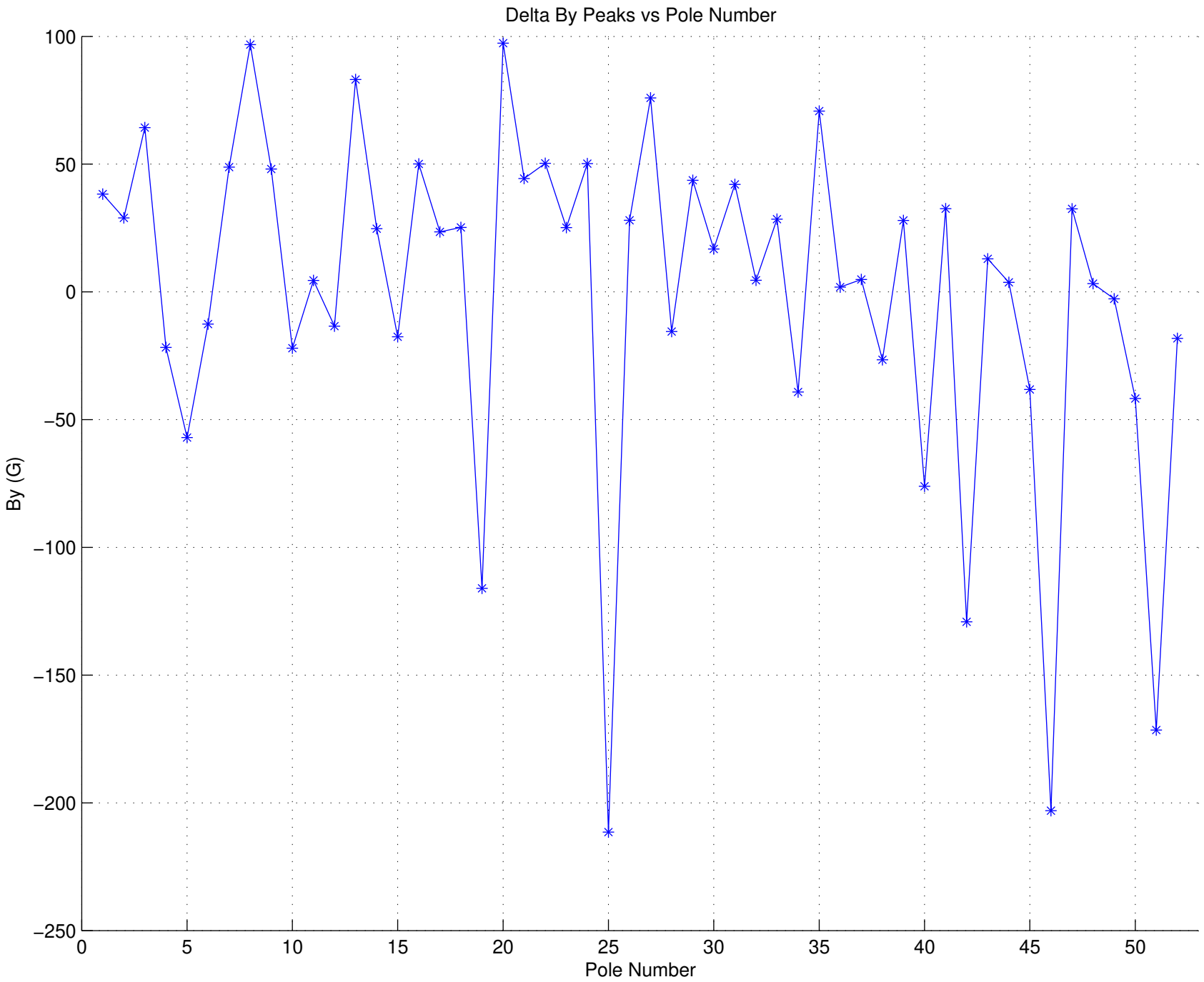
Data File: s:\magdata\LCLS\Undulator\DELTA\DATASET0003\Fine Tuning\Z Scans\Run 013\bscanz.dat

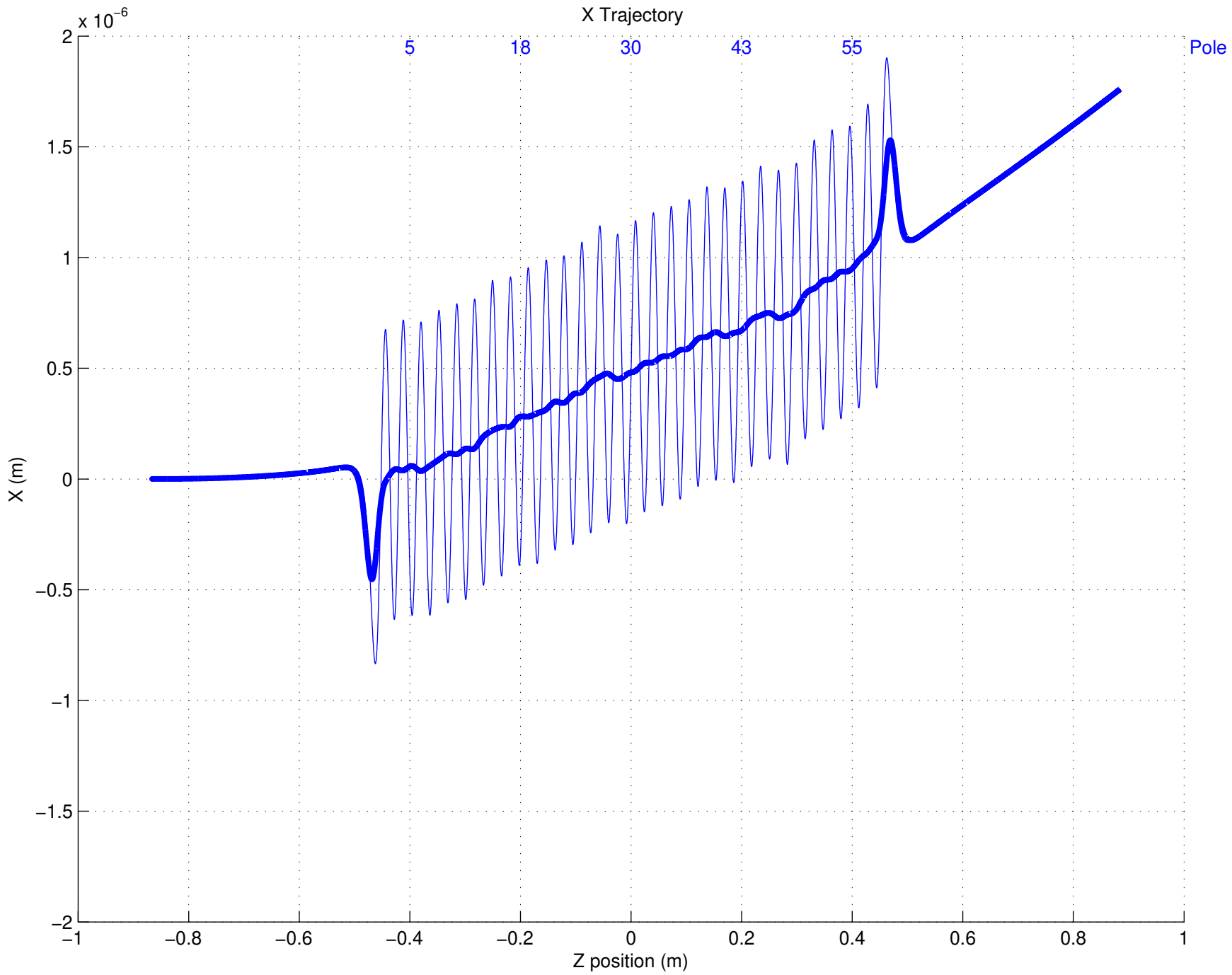
Temperature (C)
DELTA:−−> T1 19.99 −−> T2 19.95 −−> T5 19.90 −−> T3 19.95 −−> Air 20.00 −−> T4 19.97

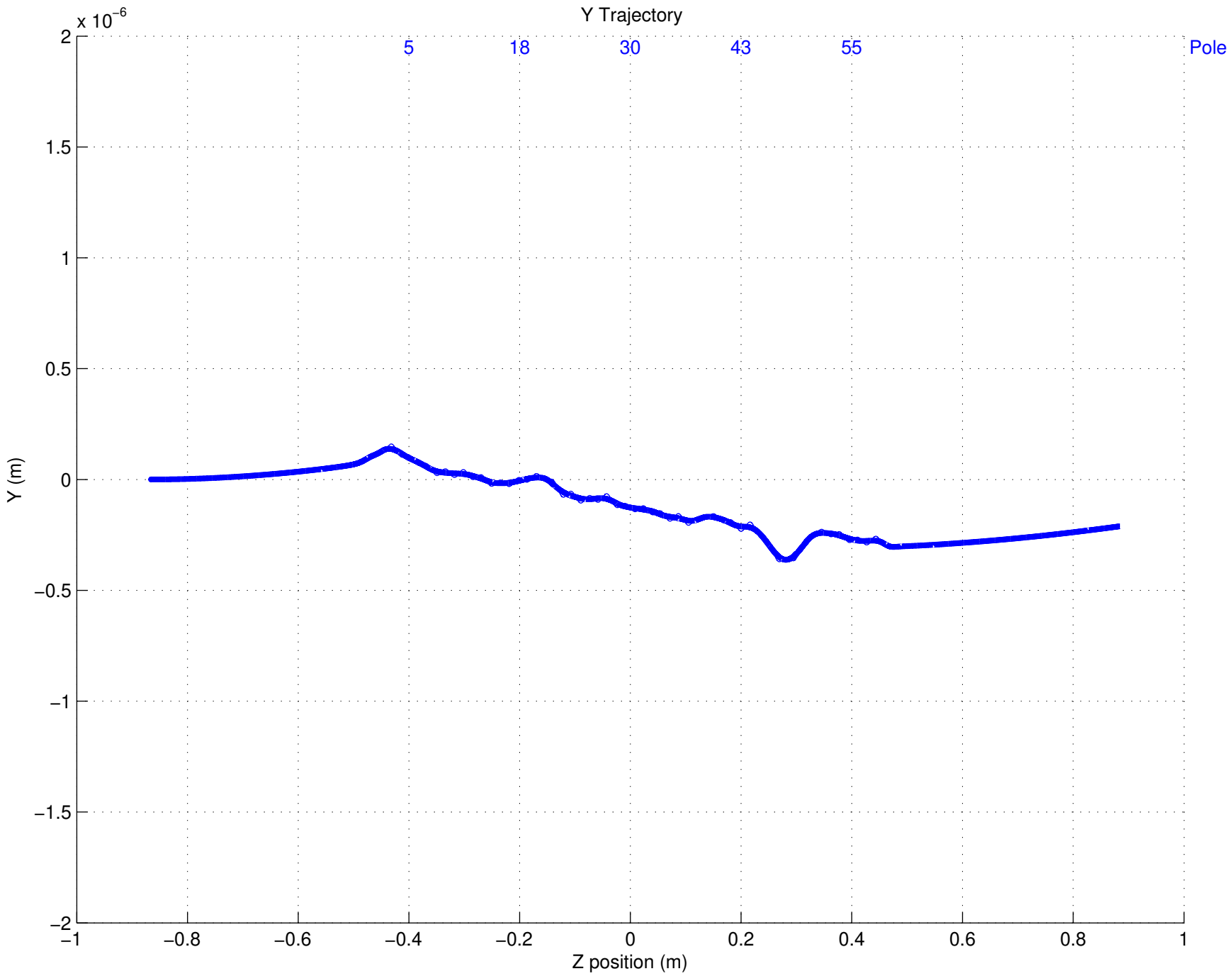
Axes position (m) X:0.020863 Y:−0.000105
Initial Hall Probe Zero Measurements:
Vx_0i = 0.001008 V
Vy_0i = −0.003264 V

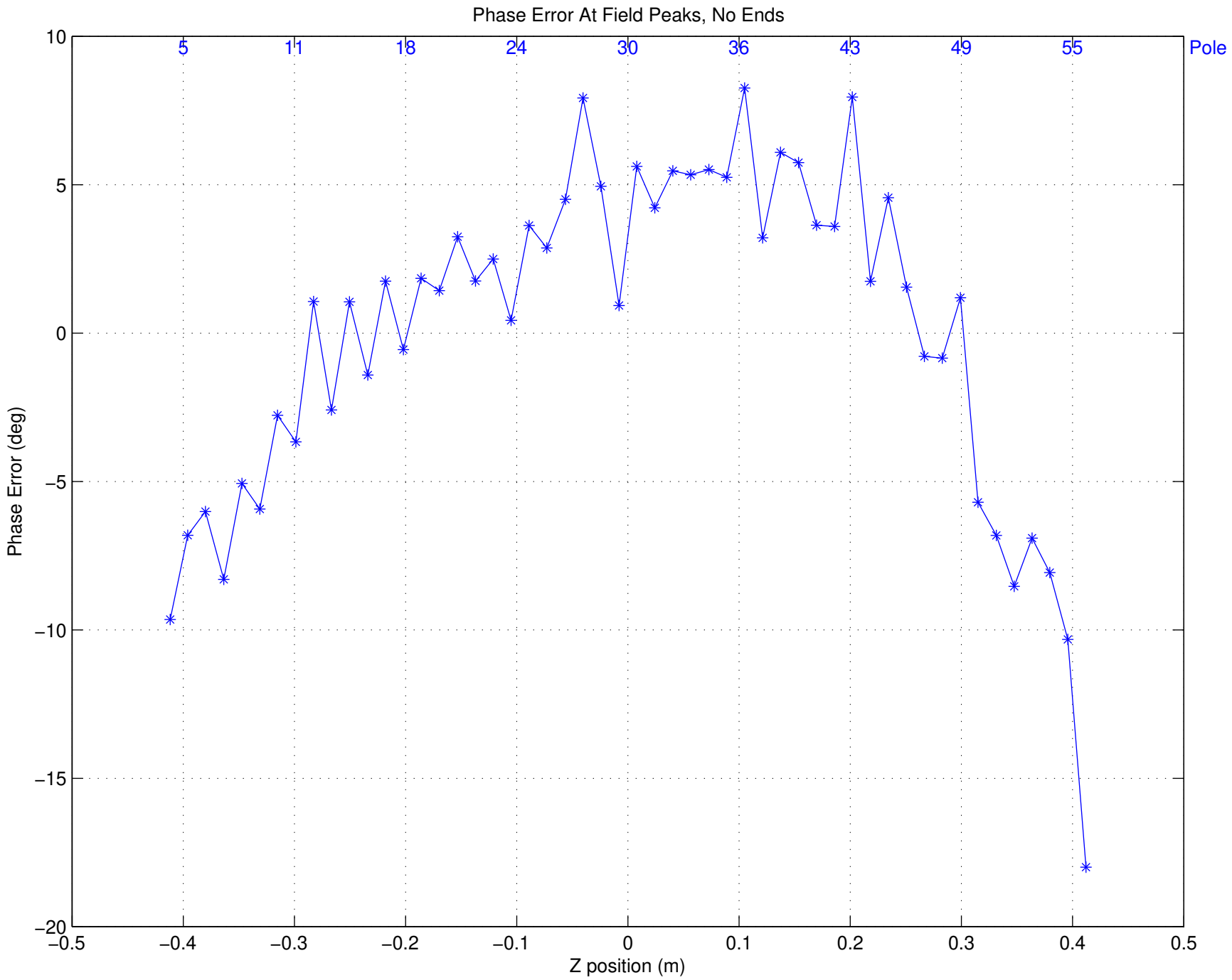

Bx vs Z
5
18
30
43
55
Pole
0.015
0.01
0.005
0
−0.005
−0.01
−0.015
Bx (T)
−1
−0.8
−0.6
−0.4
−0.2
0
0.2
0.4
0.6
0.8
1
Z Position (m)


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)

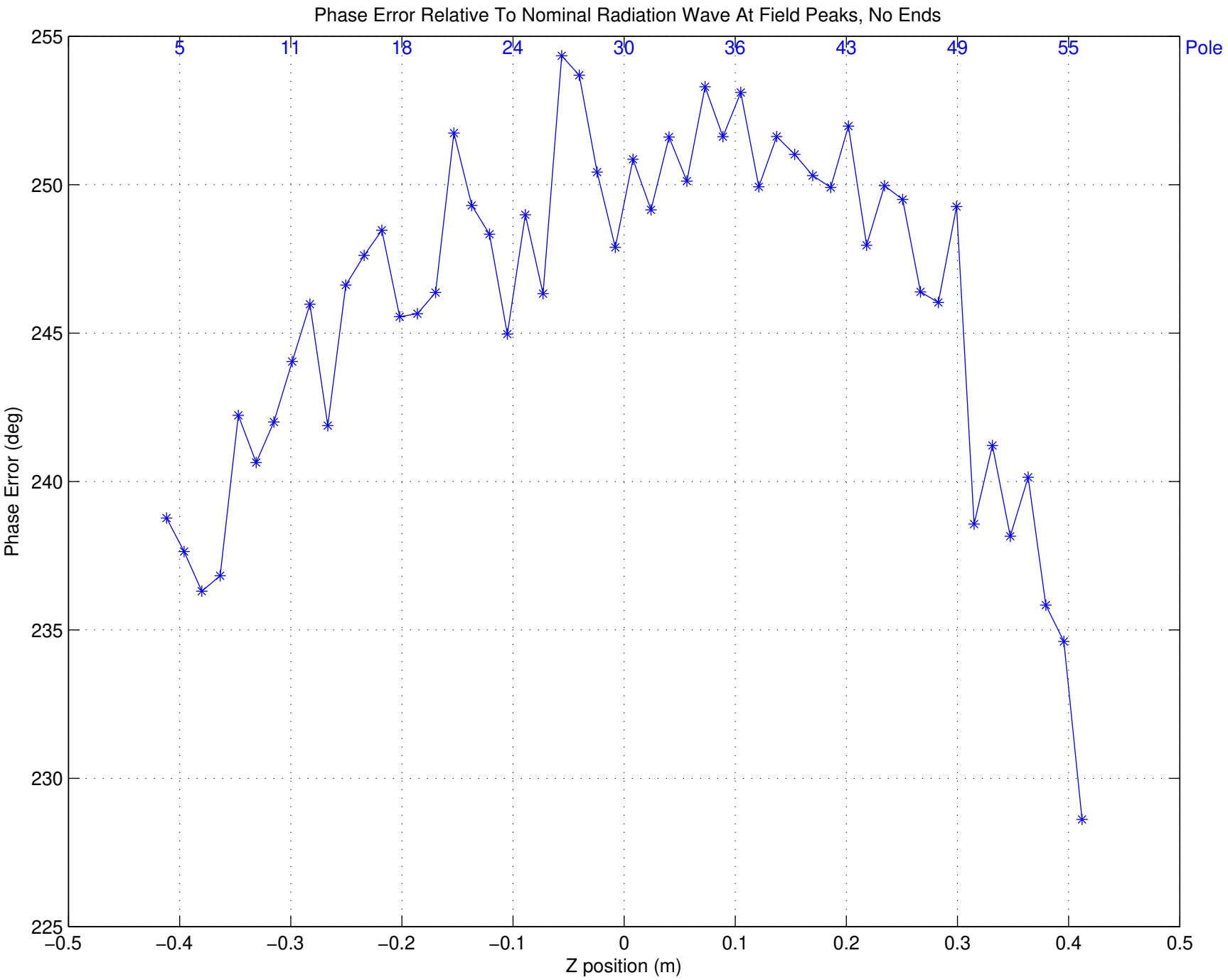

Delta By Peaks vs Pole Number
By (G)
Pole Number
100
50
0
−50
−100
−150
−200
−250
0
5
10
15
20
25
30
35
40
45
50


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
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 = 5.642248 deg


Phase Error Relative To Nominal Radiation Wave At Field Peaks, No Ends
Pole
5
11
18
24
30
36
43
49
55
255
250
245
240
235
230
225
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)