SLAC Magnetic Measurements

Planar Insertion Device Analysis

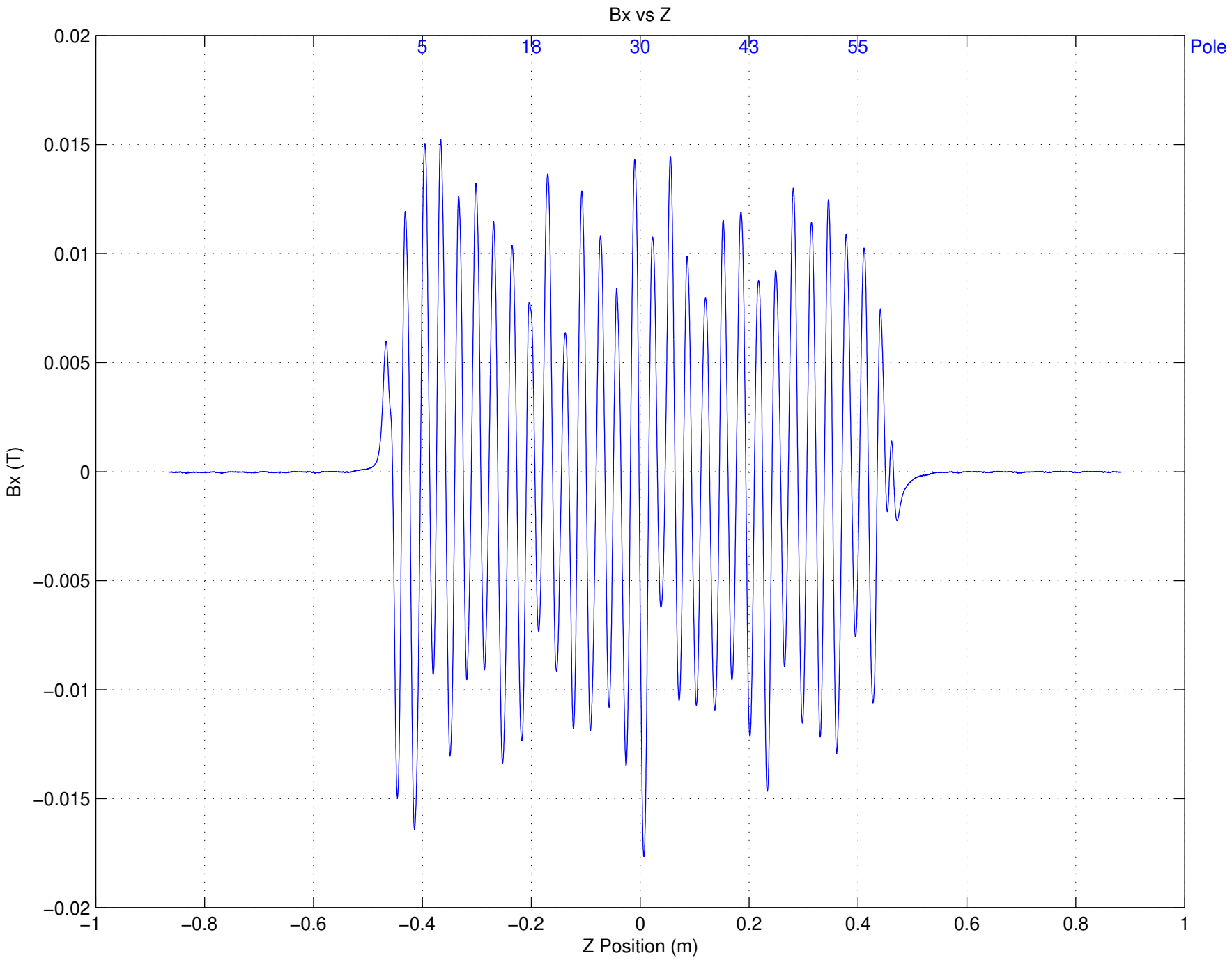
SLAC Magnetic Measurements
Date: 04–30–2013
Time: 15:16:05

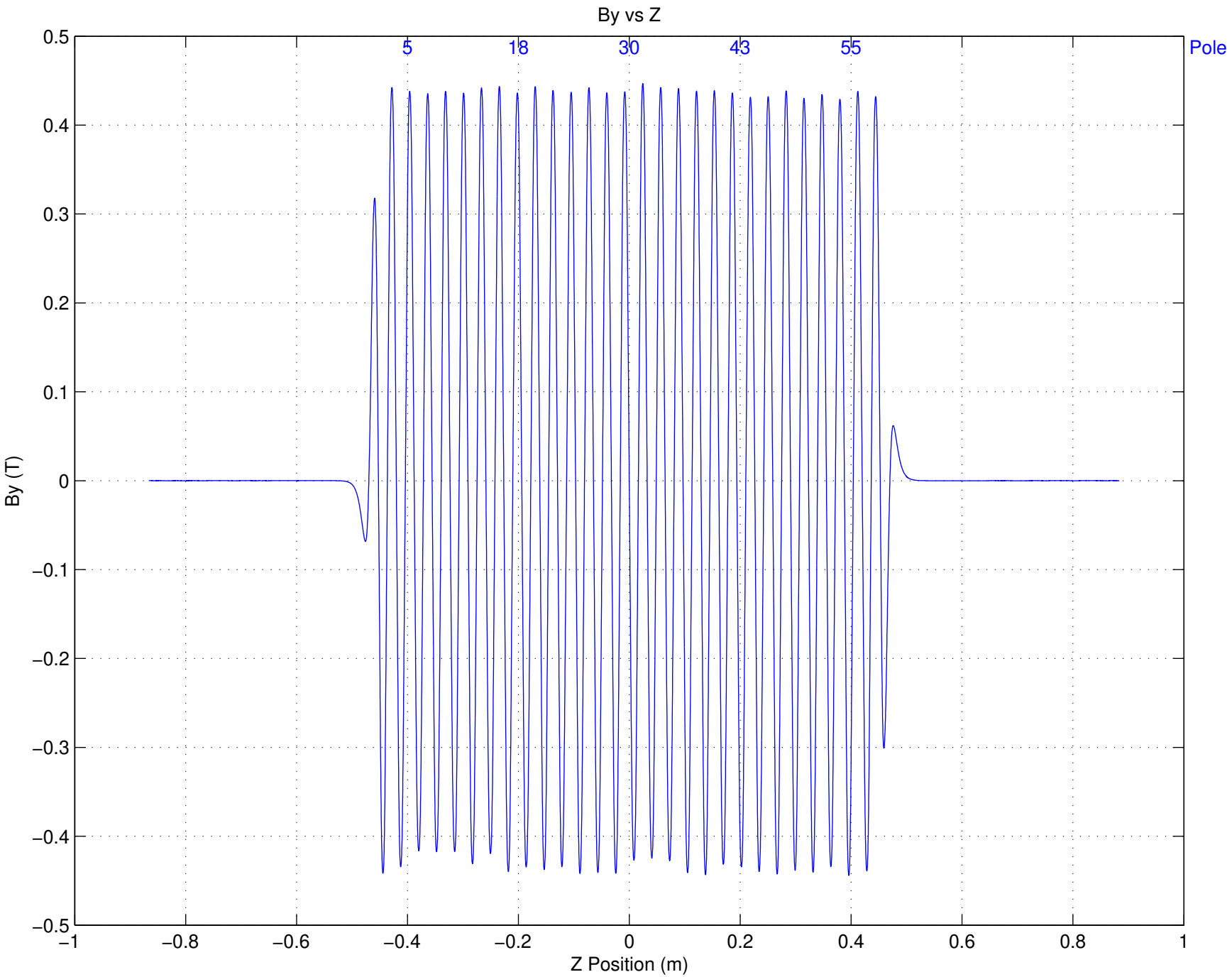
Project: LCLS
Device Type: Undulator
Data Type:
Serial Number: DELTA
DATASET Number: 2
Tuning Stage: Fine Tuning
Run Number: 18
Measurement Type: Z Scans
Operator: YL
Comment: Q2; #11 –1, #41 –1,#45 –2,#47 –2,#54 –2,#62 –2,#92 –2,#97 –2,#99 –2,#104 –3
Session first run: 17
Measurement Device x:
Measurement Device y: $SENTRON_4$41

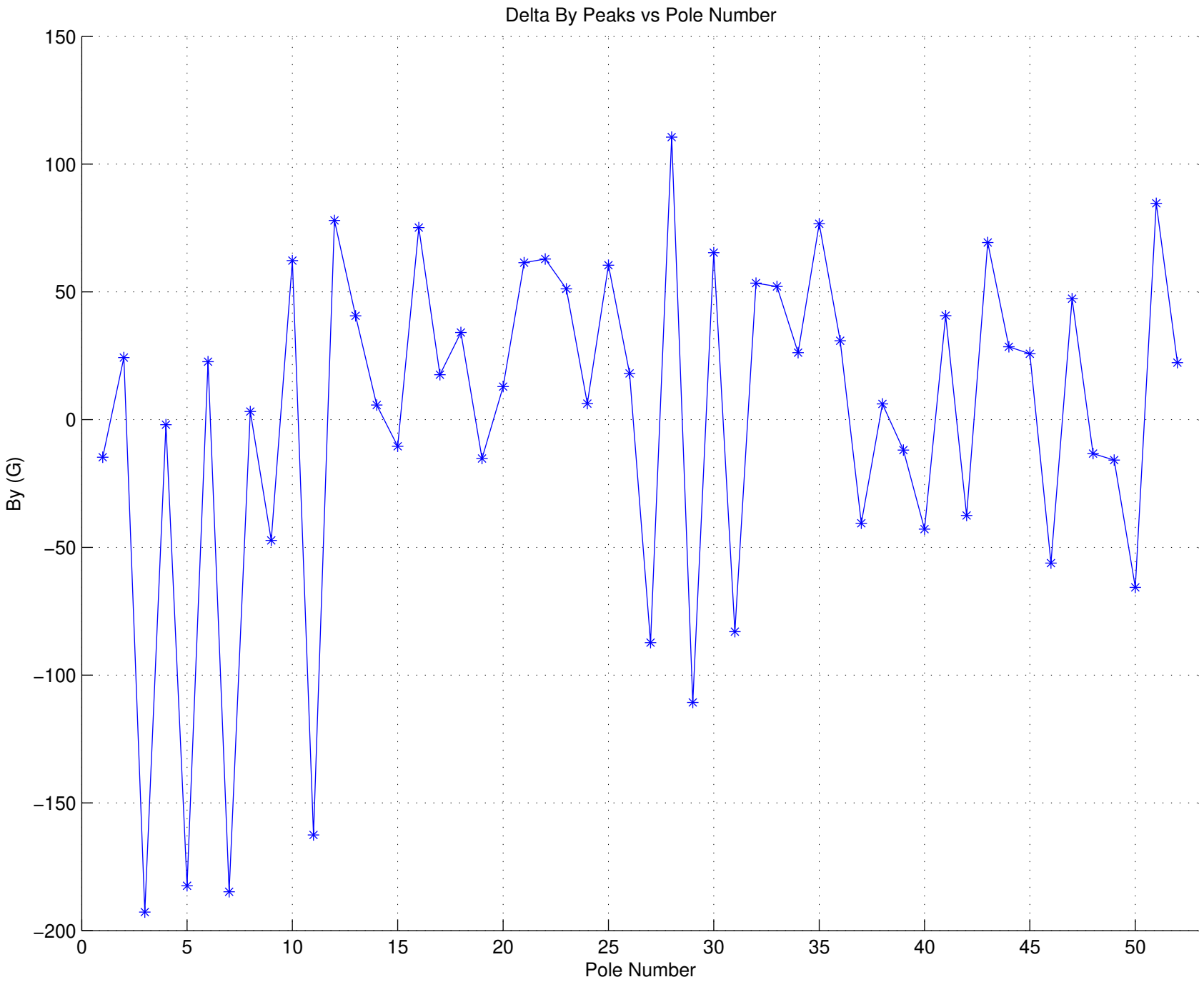
Data File: s:\magdata\LCLS\Undulator\DELTA\DATASET0002\Fine Tuning\Z Scans\Run 018\bscanz.dat

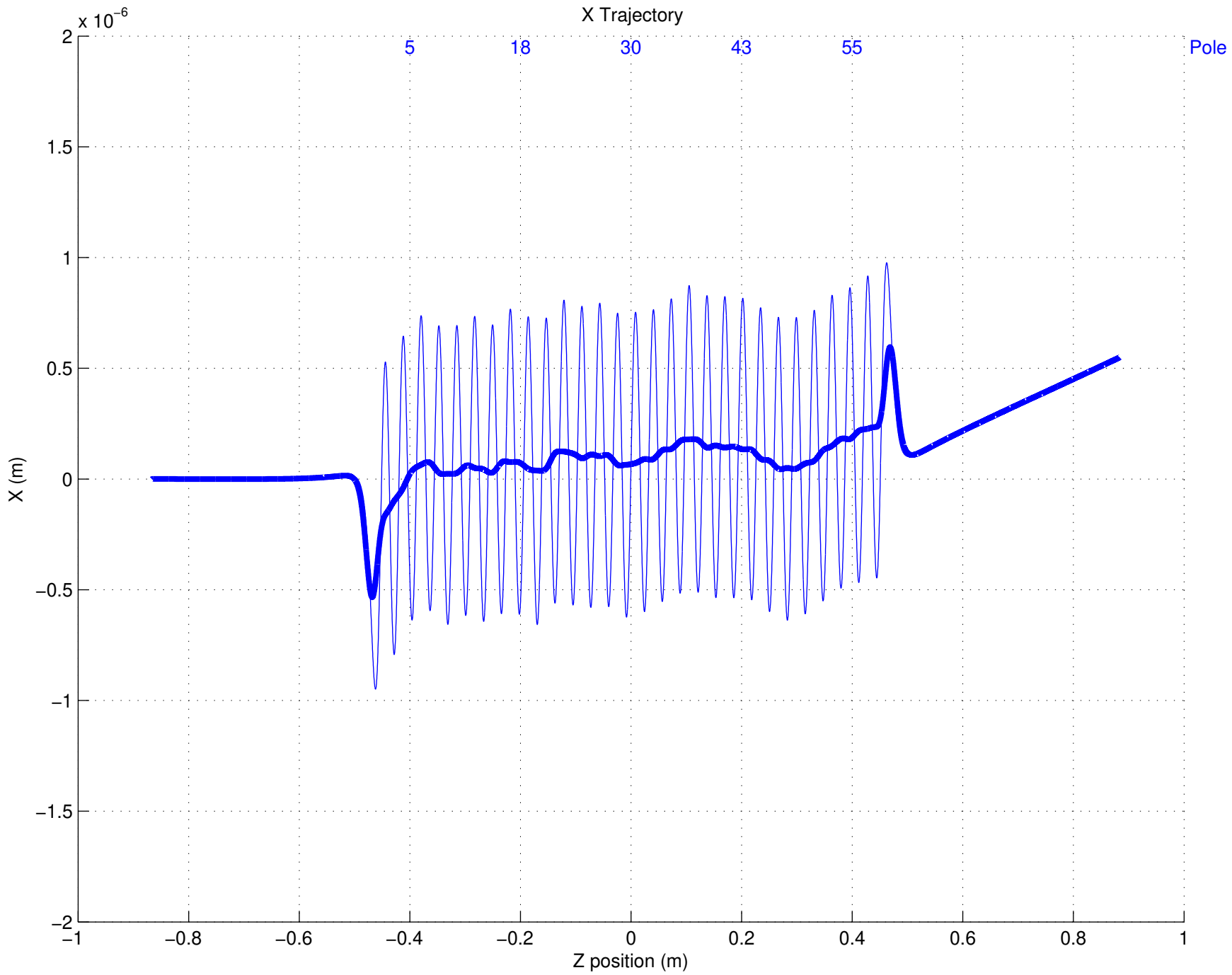
Temperature (C)
DELTA:––> T1 20.00 ––> T2 20.23 ––> T5 19.93 ––> T3 20.26 ––> Air 20.04 ––> T4 19.99

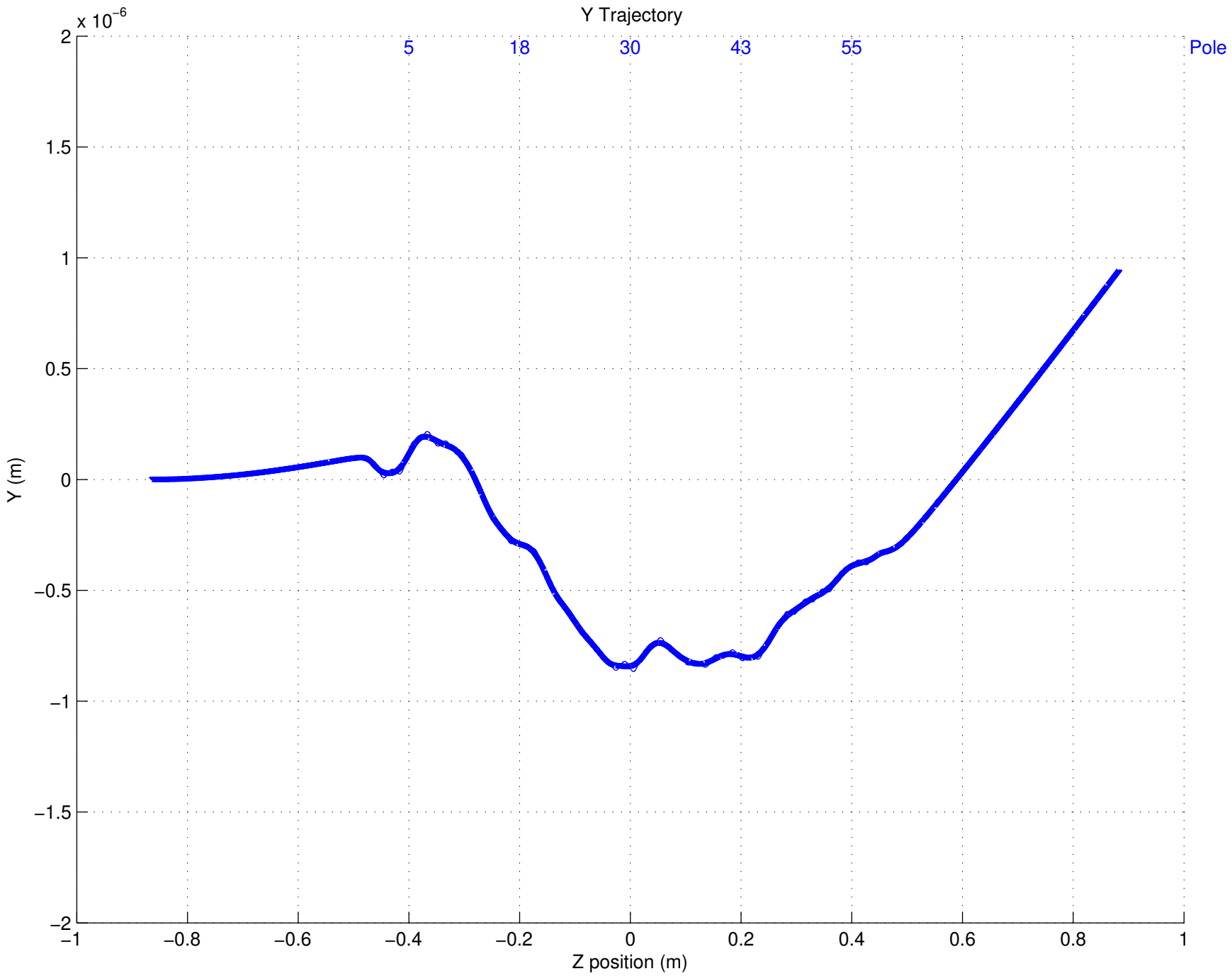
Axes position (m) X:0.019990 Y:0.000044
Initial Hall Probe Zero Measurements:
Vx_0i = 0.000777 V
Vy_0i = –0.003464 V

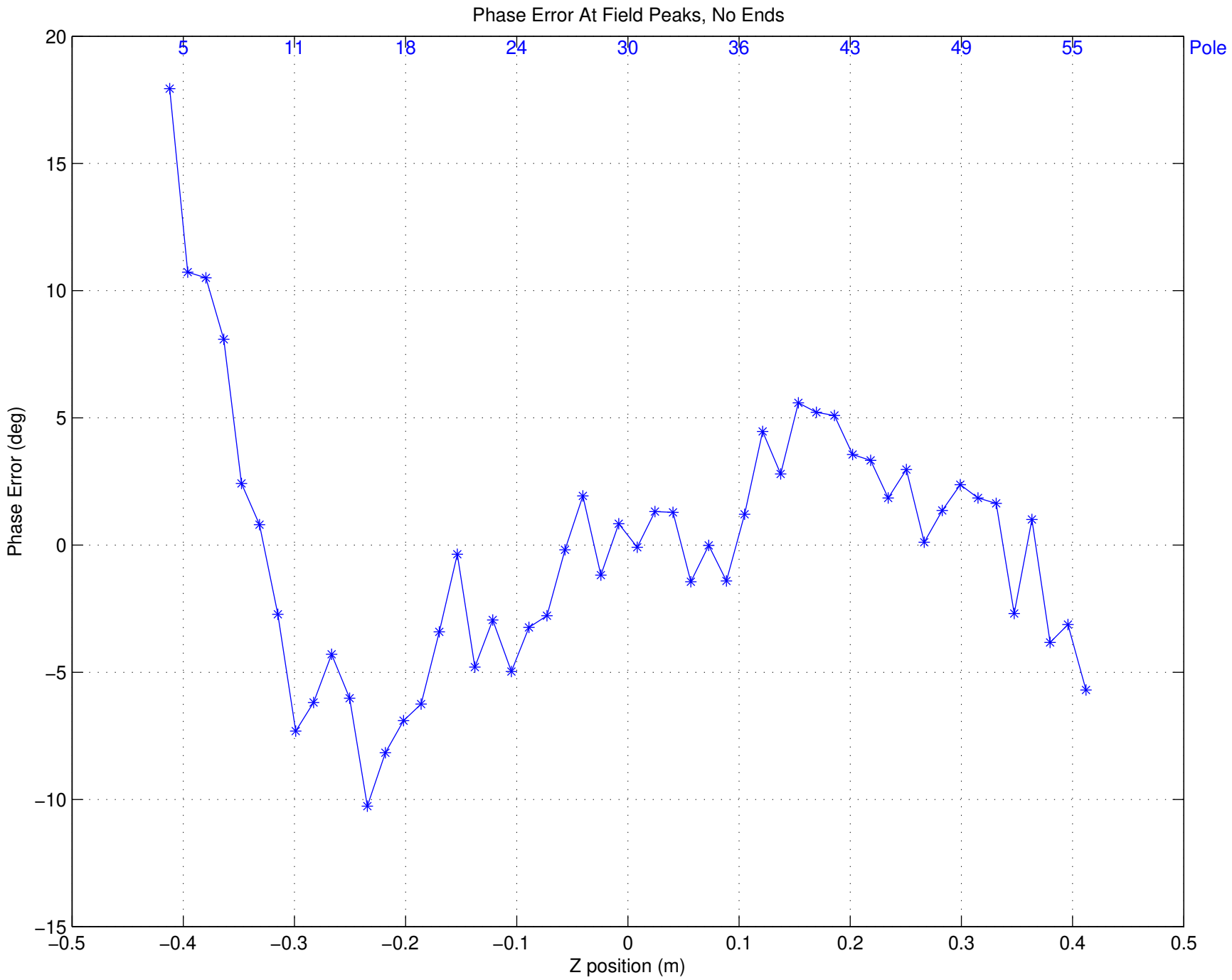

Bx vs Z
5
18
30
43
55
Pole
0.02
0.015
0.01
0.005
0
−0.005
−0.01
−0.015
−0.02
Bx (T)
−1
−0.8
−0.6
−0.4
−0.2
0
0.2
0.4
0.6
0.8
1
Z Position (m)


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)

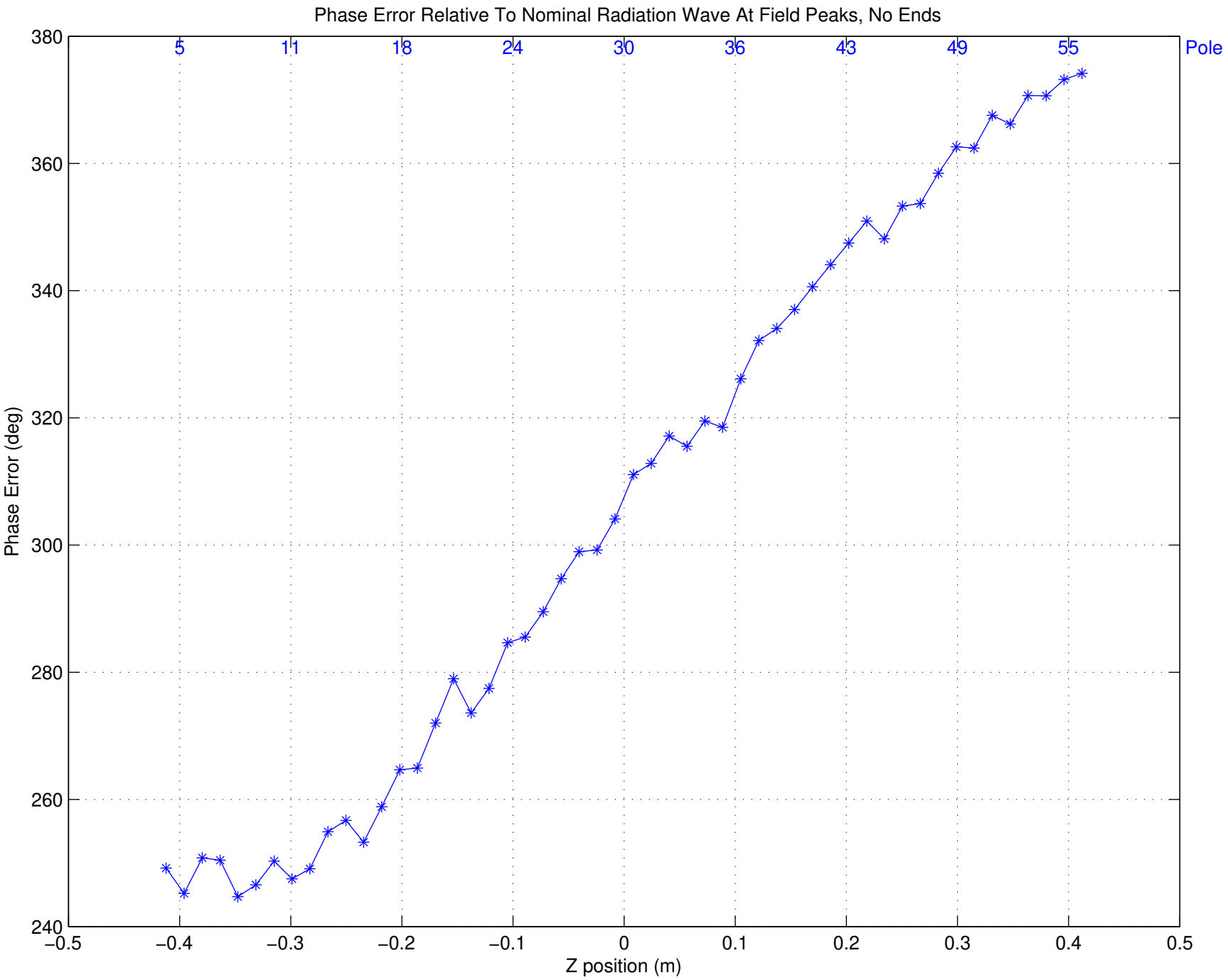

Delta By Peaks vs Pole Number
By (G)
Pole Number
150
100
50
0
−50
−100
−150
−200
0
5
10
15
20
25
30
35
40
45
50


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
2
1.5
1
0.5
0
−0.5
−1
−1.5
−2
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 = 5.163599 deg


Phase Error Relative To Nominal Radiation Wave At Field Peaks, No Ends
Pole
5
11
18
24
30
36
43
49
55
380
360
340
320
300
280
260
240
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)