SLAC Magnetic Measurements

Planar Insertion Device Analysis

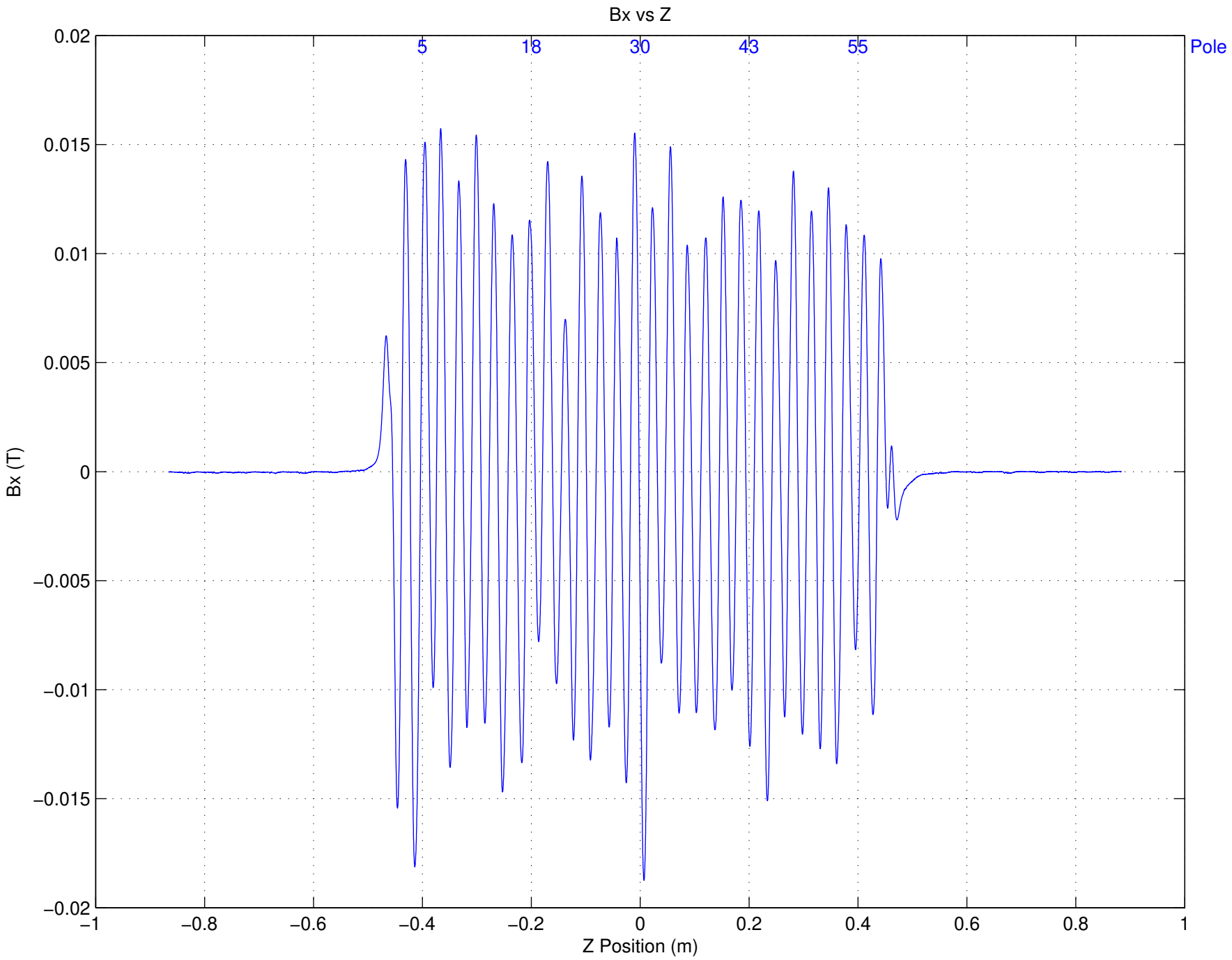
SLAC Magnetic Measurements
Date: 04–30–2013
Time: 16:50:51

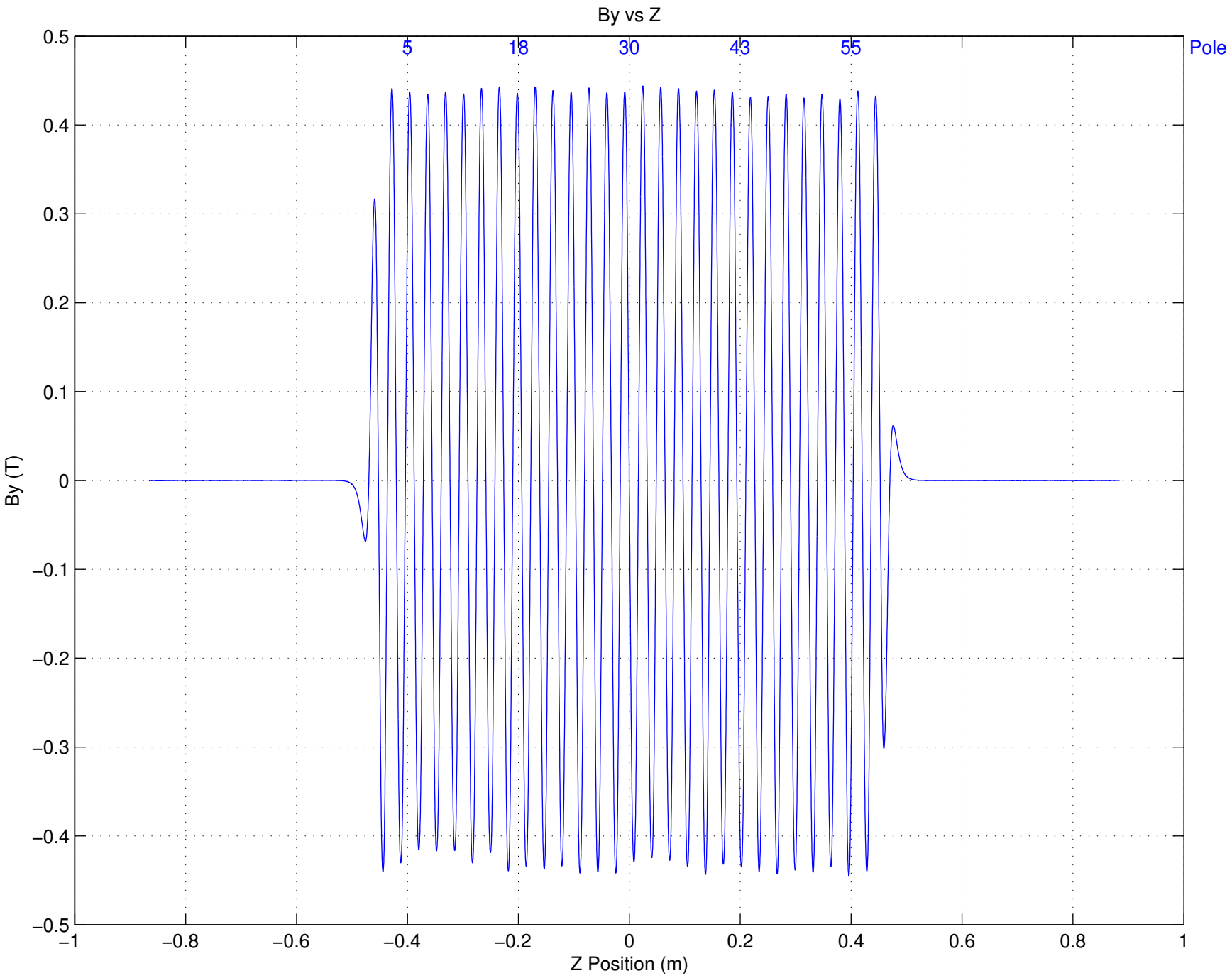
Project: LCLS
Device Type: Undulator
Data Type:
Serial Number: DELTA
DATASET Number: 2
Tuning Stage: Fine Tuning
Run Number: 19
Measurement Type: Z Scans
Operator: YL
Comment: Q2; #61 +1,#61 –1,#73 –2,#95 –2,#7 –60, #9 –1
Session first run: 17
Measurement Device x:
Measurement Device y: $SENTRON_4$41

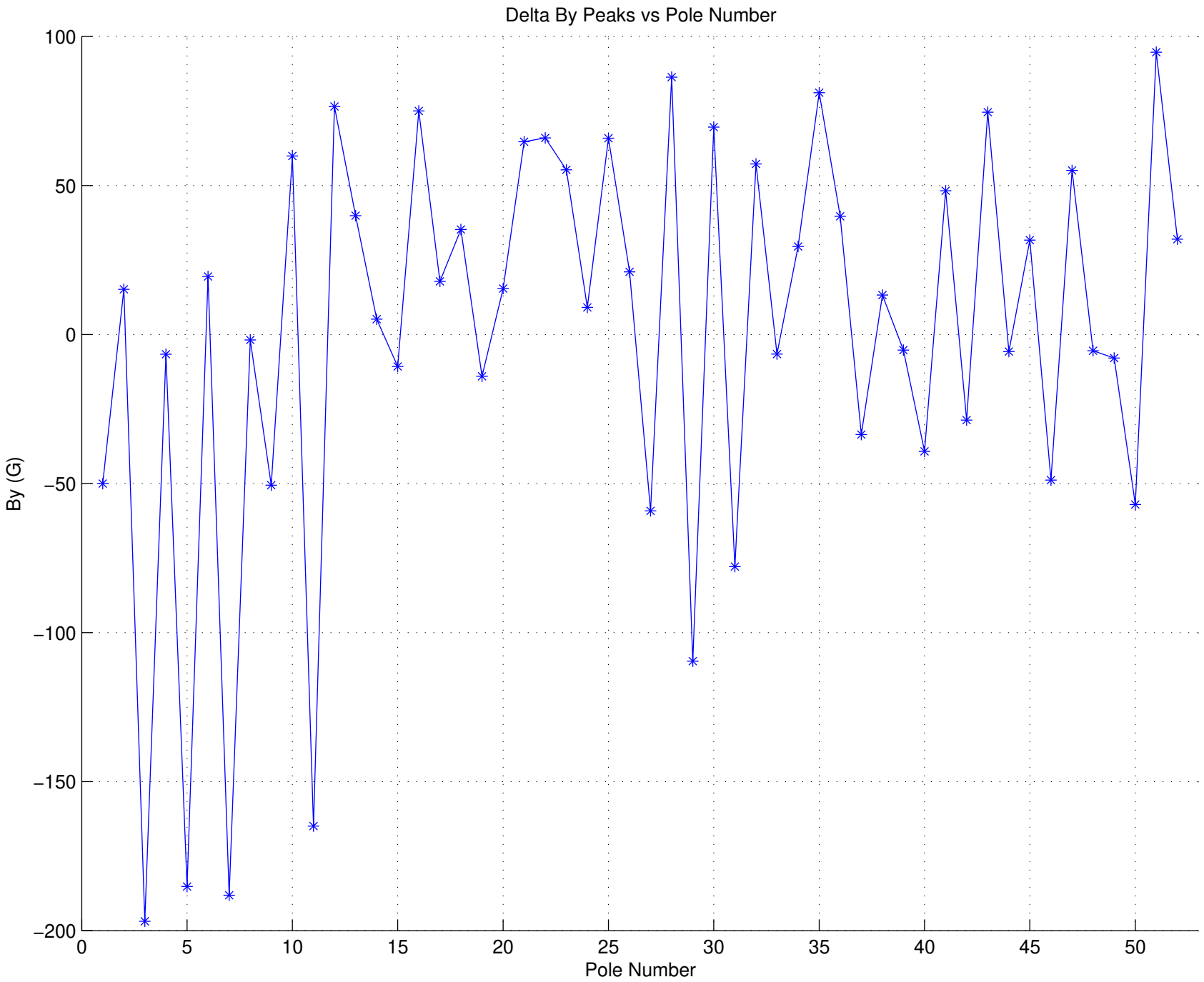
Data File: s:\magdata\LCLS\Undulator\DELTA\DATASET0002\Fine Tuning\Z Scans\Run 019\bscanz.dat

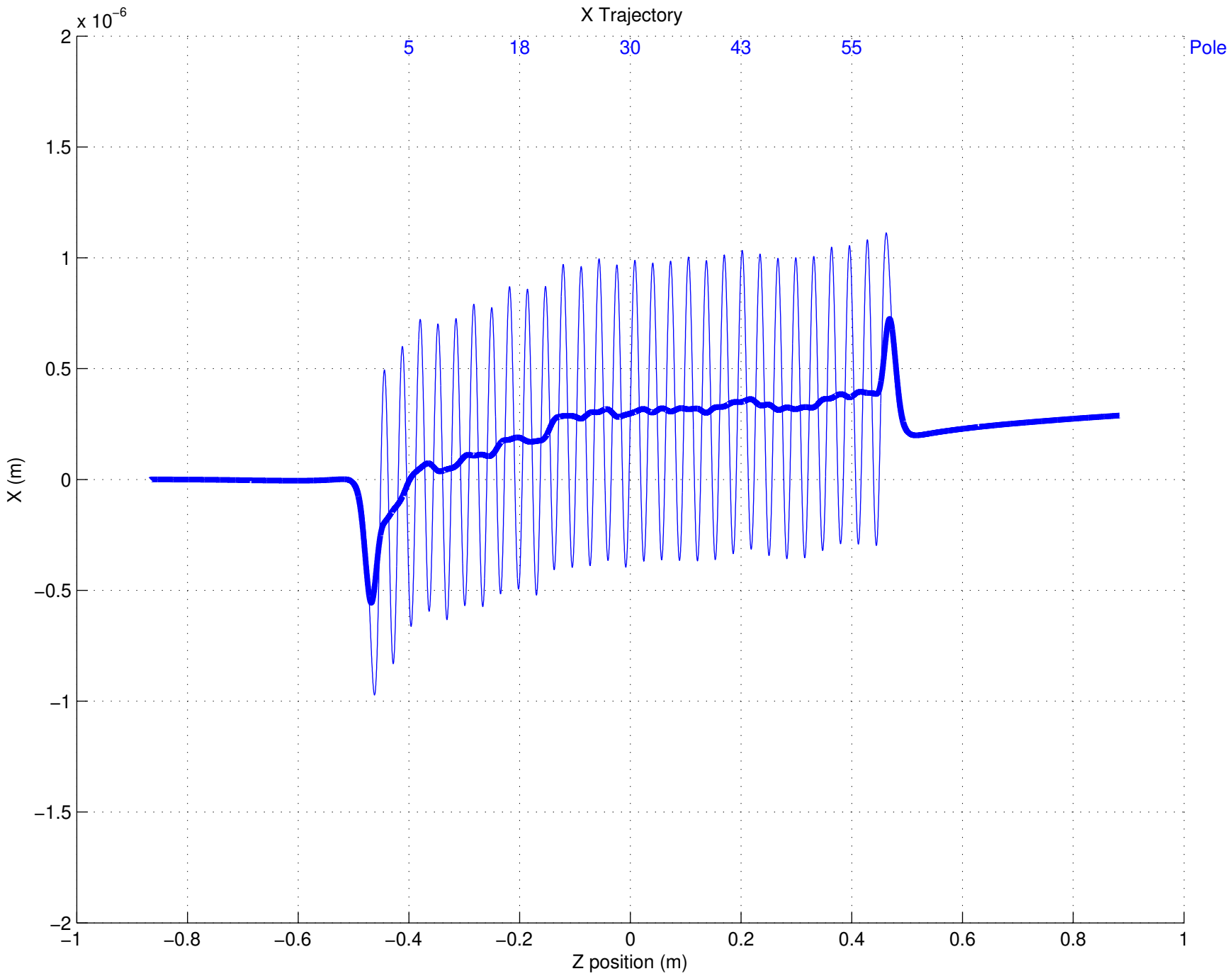
Temperature (C)
DELTA:––> T1 20.03 ––> T2 20.54 ––> T5 19.95 ––> T3 20.46 ––> Air 20.05 ––> T4 20.02

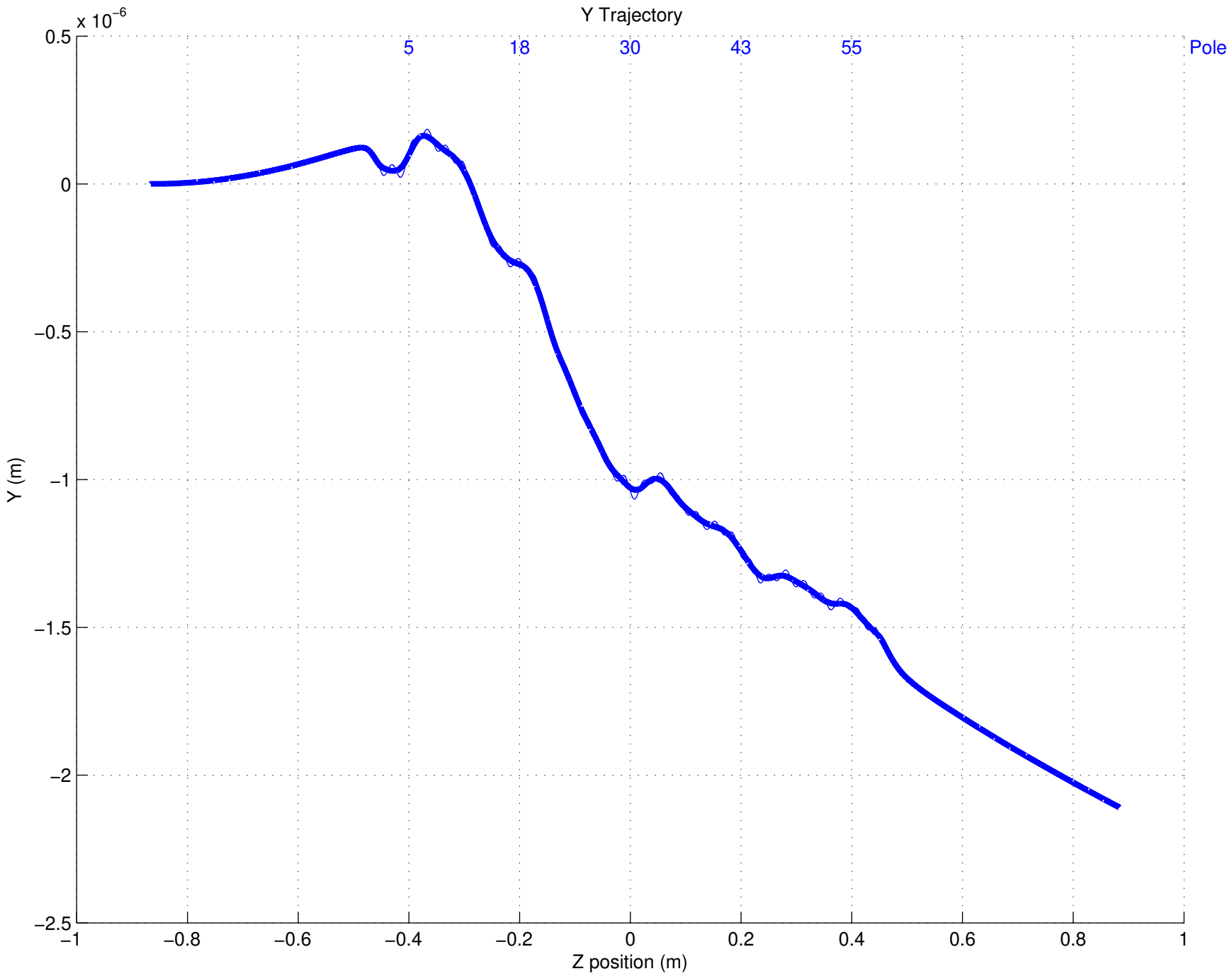
Axes position (m) X:0.019990 Y:0.000044
Initial Hall Probe Zero Measurements:
Vx_0i = 0.000791 V
Vy_0i = –0.003488 V

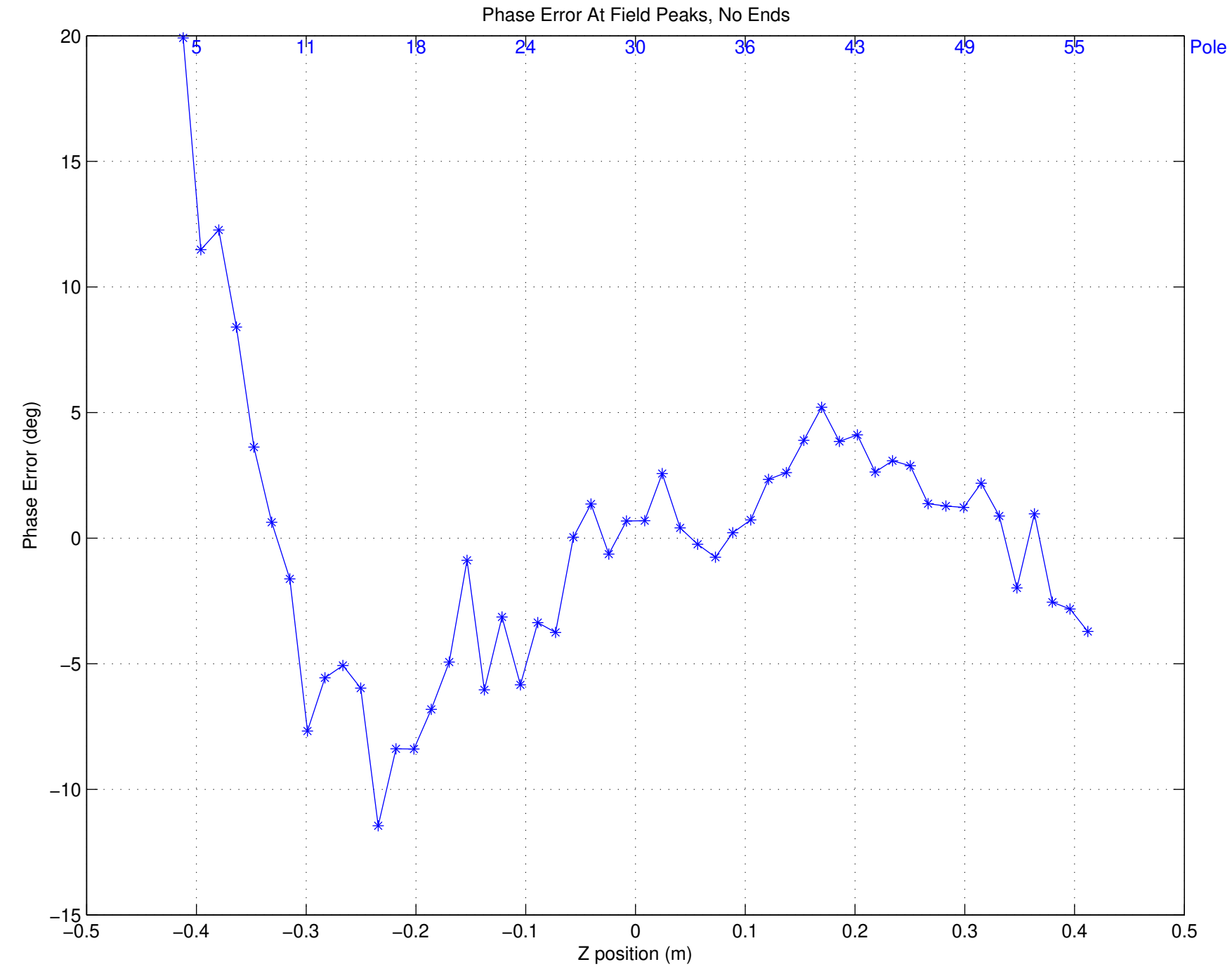

Bx vs Z
5
18
30
43
55
Pole
0.02
0.015
0.01
0.005
0
−0.005
−0.01
−0.015
−0.02
Bx (T)
−1
−0.8
−0.6
−0.4
−0.2
0
0.2
0.4
0.6
0.8
1
Z Position (m)


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)

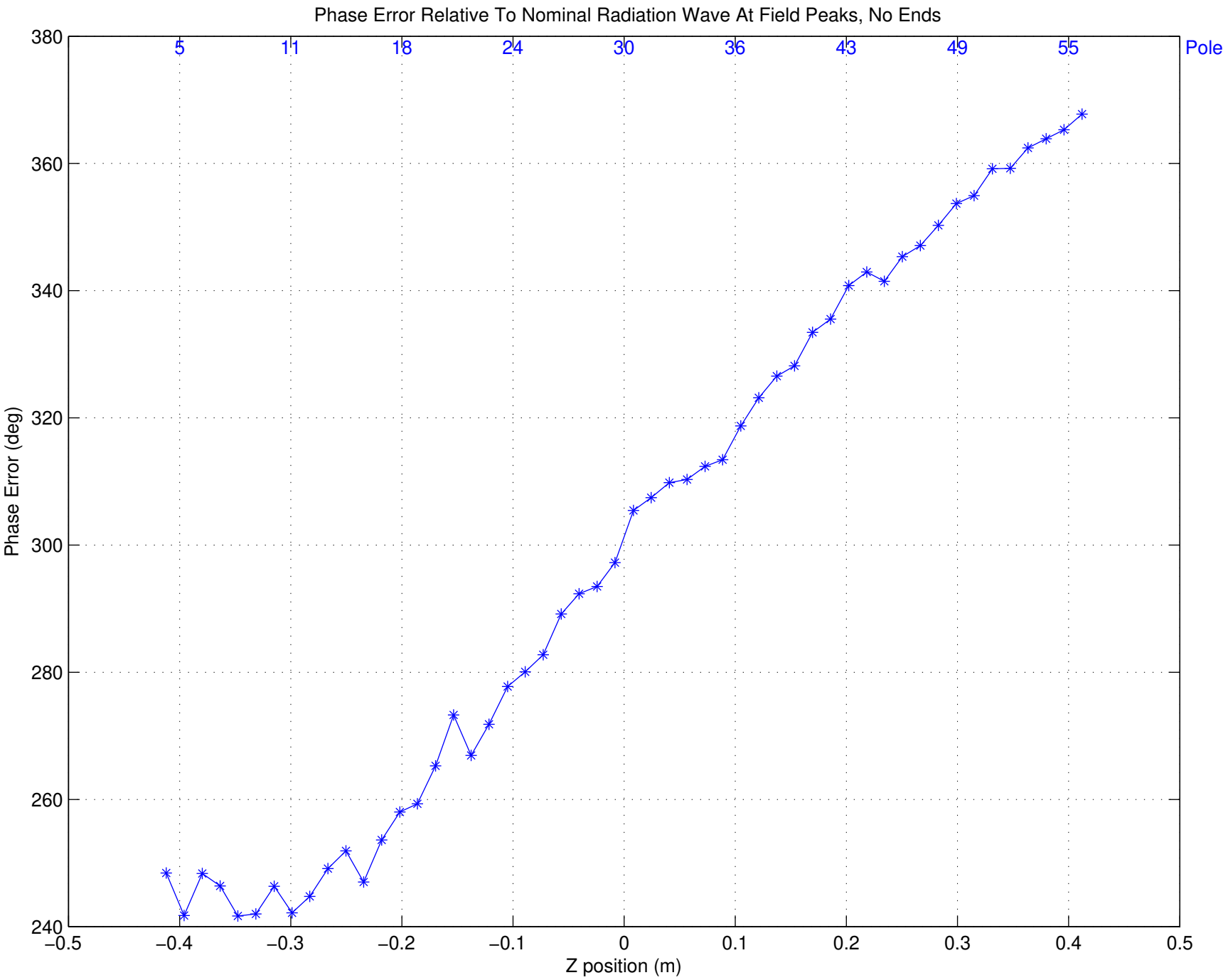

Delta By Peaks vs Pole Number
By (G)
Pole Number
100
50
0
−50
−100
−150
−200
0
5
10
15
20
25
30
35
40
45
50


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
0.5
0
−0.5
−1
−1.5
−2
−2.5
5
18
30
43
55
Pole
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 = 5.481635 deg


Phase Error Relative To Nominal Radiation Wave At Field Peaks, No Ends
5
11
18
24
30
36
43
49
55
Pole
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)