SLAC Magnetic Measurements

Planar Insertion Device Analysis

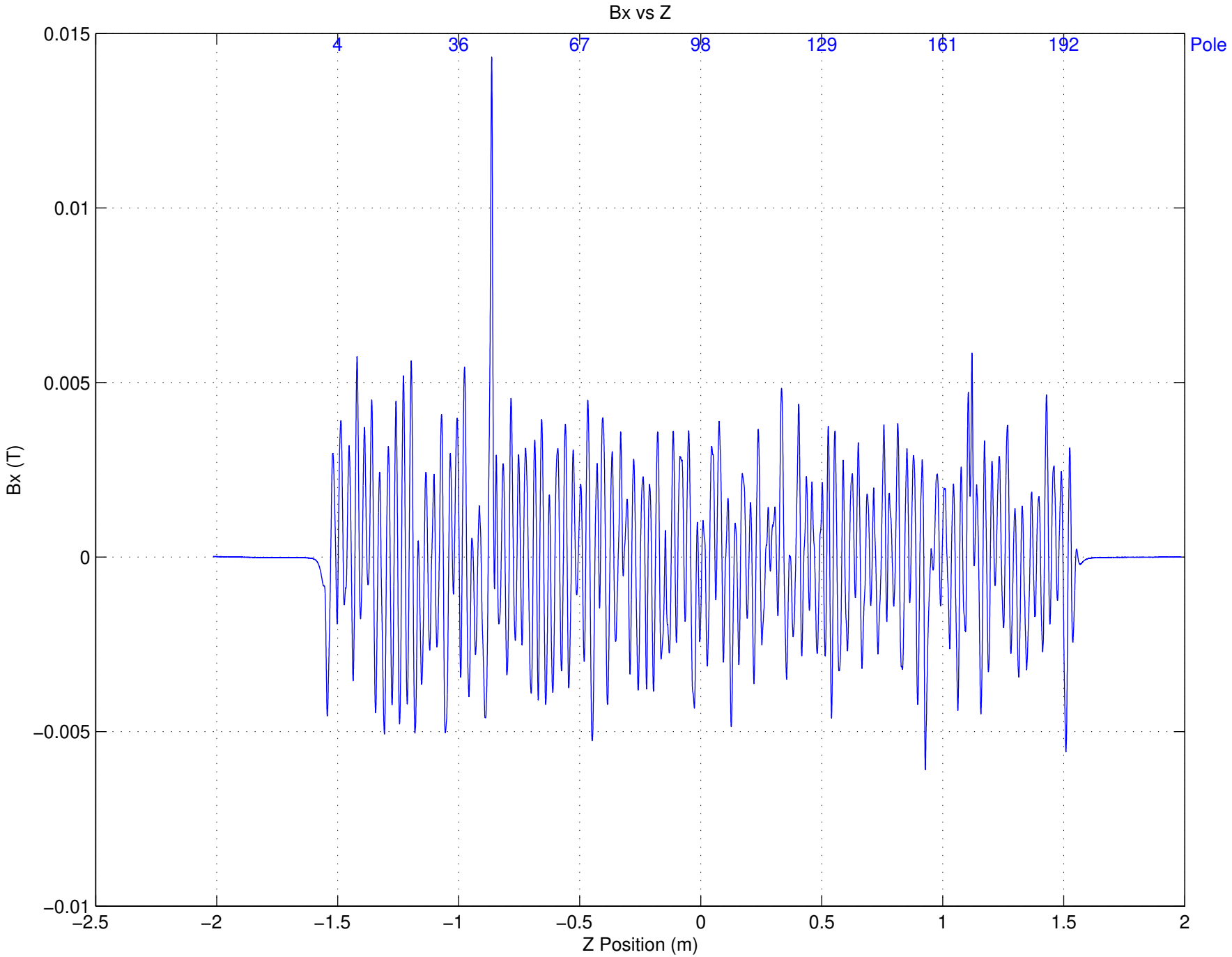
SLAC Magnetic Measurements
Date: 09−09−2014
Time: 16:36:25

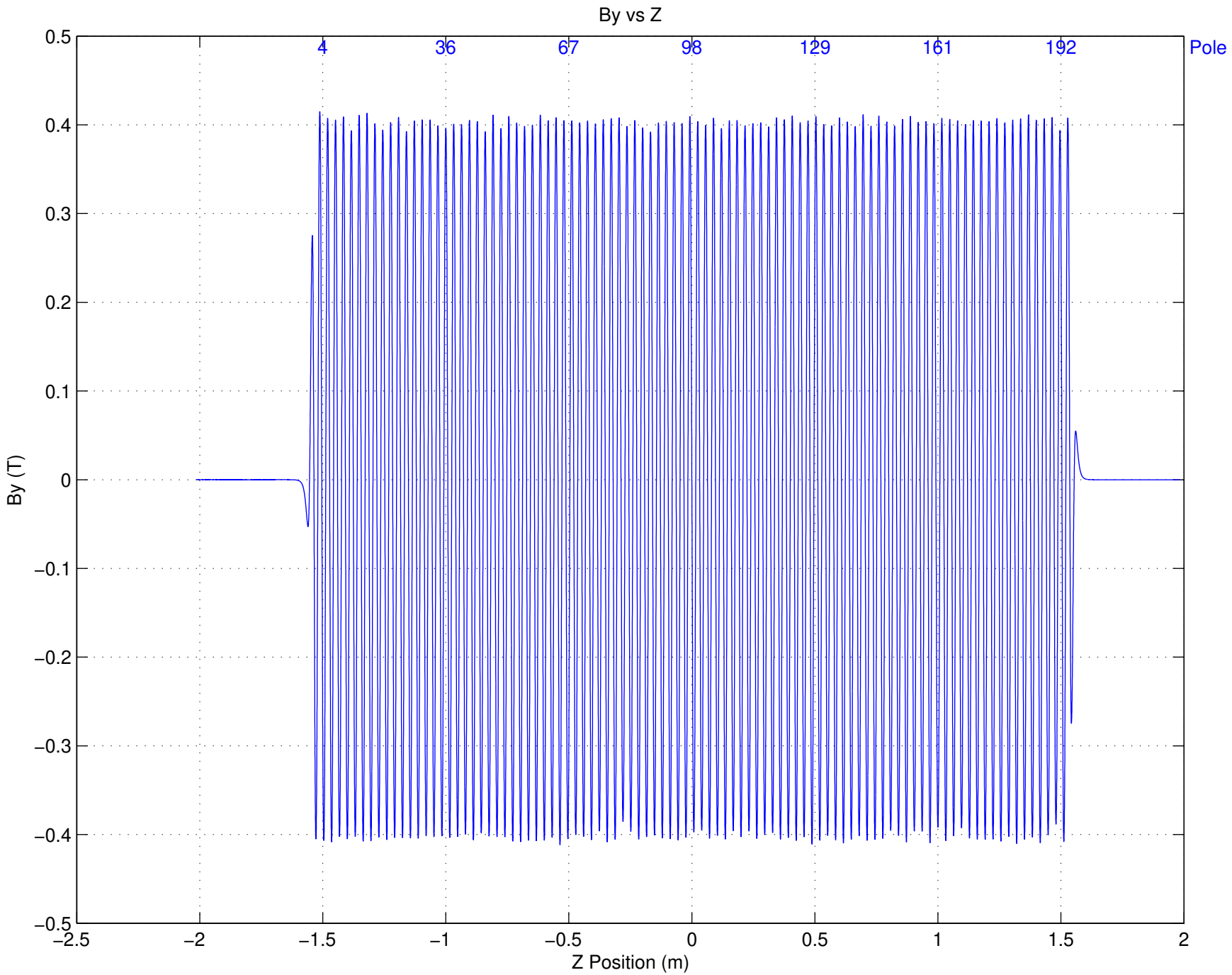
Project: LCLS
Device Type: Undulator
Data Type:
Serial Number: DELTA
DATASET Number: 5
Tuning Stage: Fine Tuning
Run Number: 42
Measurement Type: Z Scans
Operator: YL
Comment: Q2 final tuning; change #96,128,194,196,212,214 +2, #72 +3
Session first run: 38
Measurement Device x:
Measurement Device y: $SENTRON_4$41

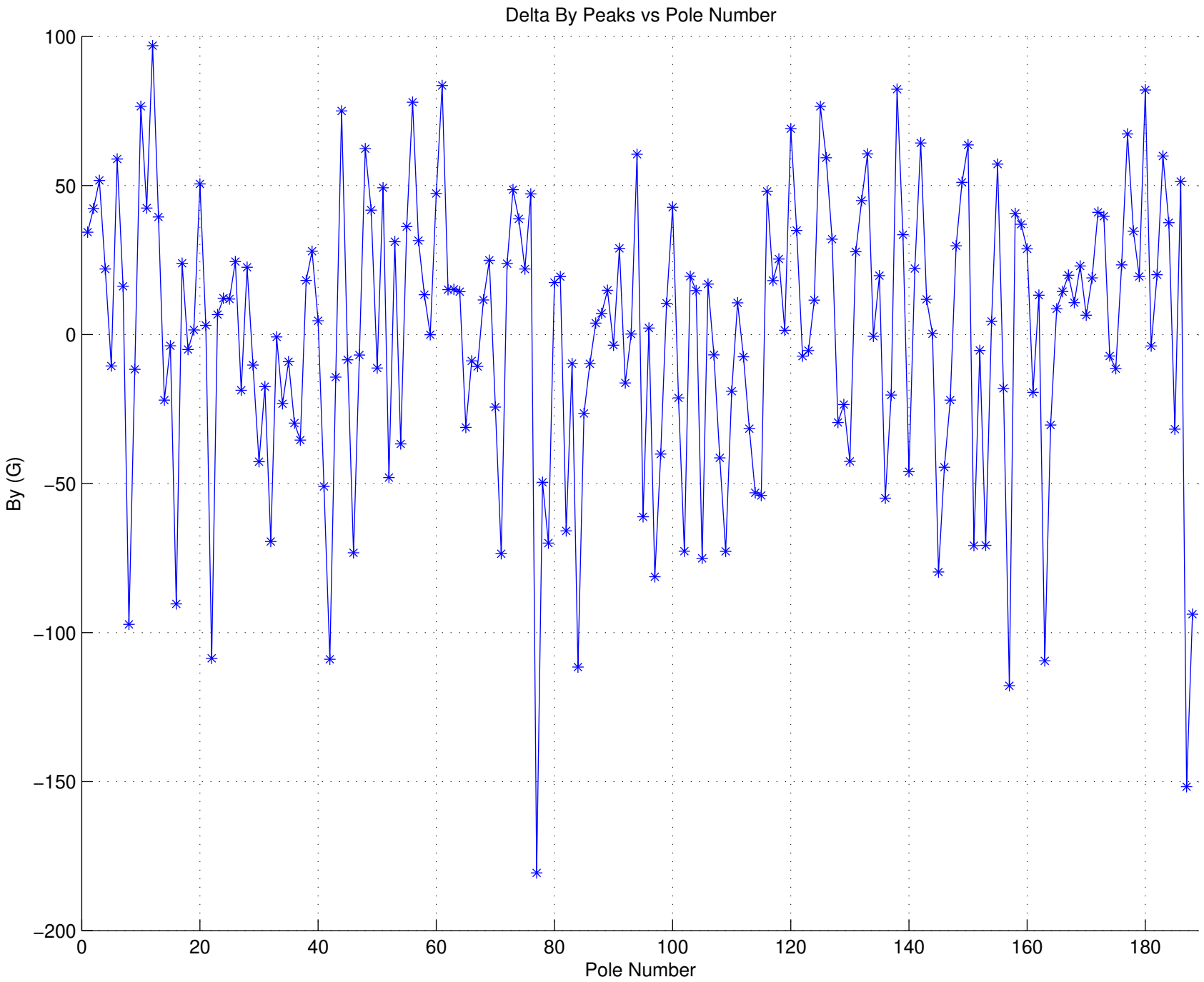
Data File: s:\magdata\LCLS\Undulator\DELTA\DATASET0005\Fine Tuning\Z Scans\Run 042\bscanz.dat

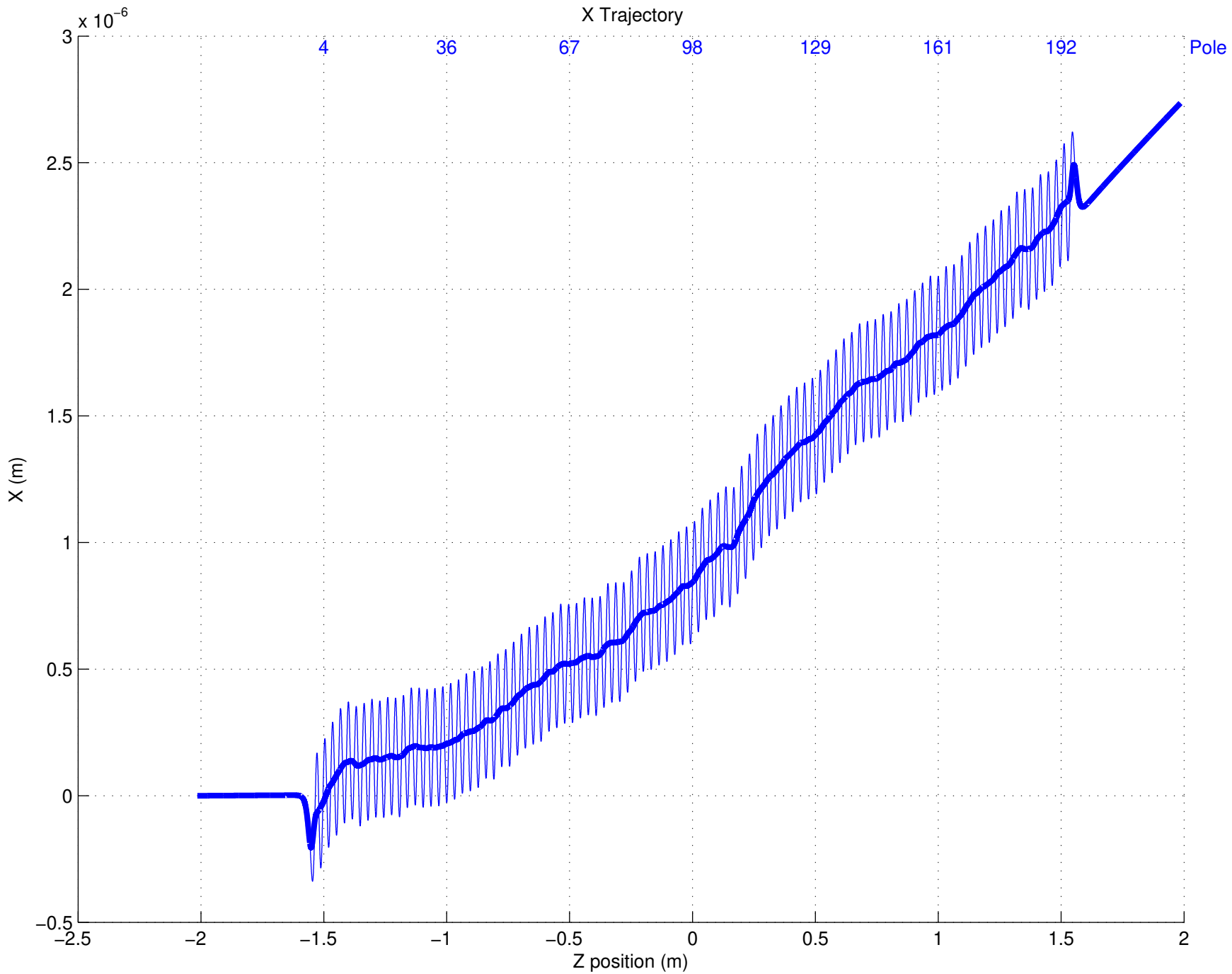
Temperature (C)
DELTA:−−> T1 20.11 −−> T2 20.19 −−> T5 20.03 −−> T3 20.13 −−> Air 20.07 −−> T4 20.15

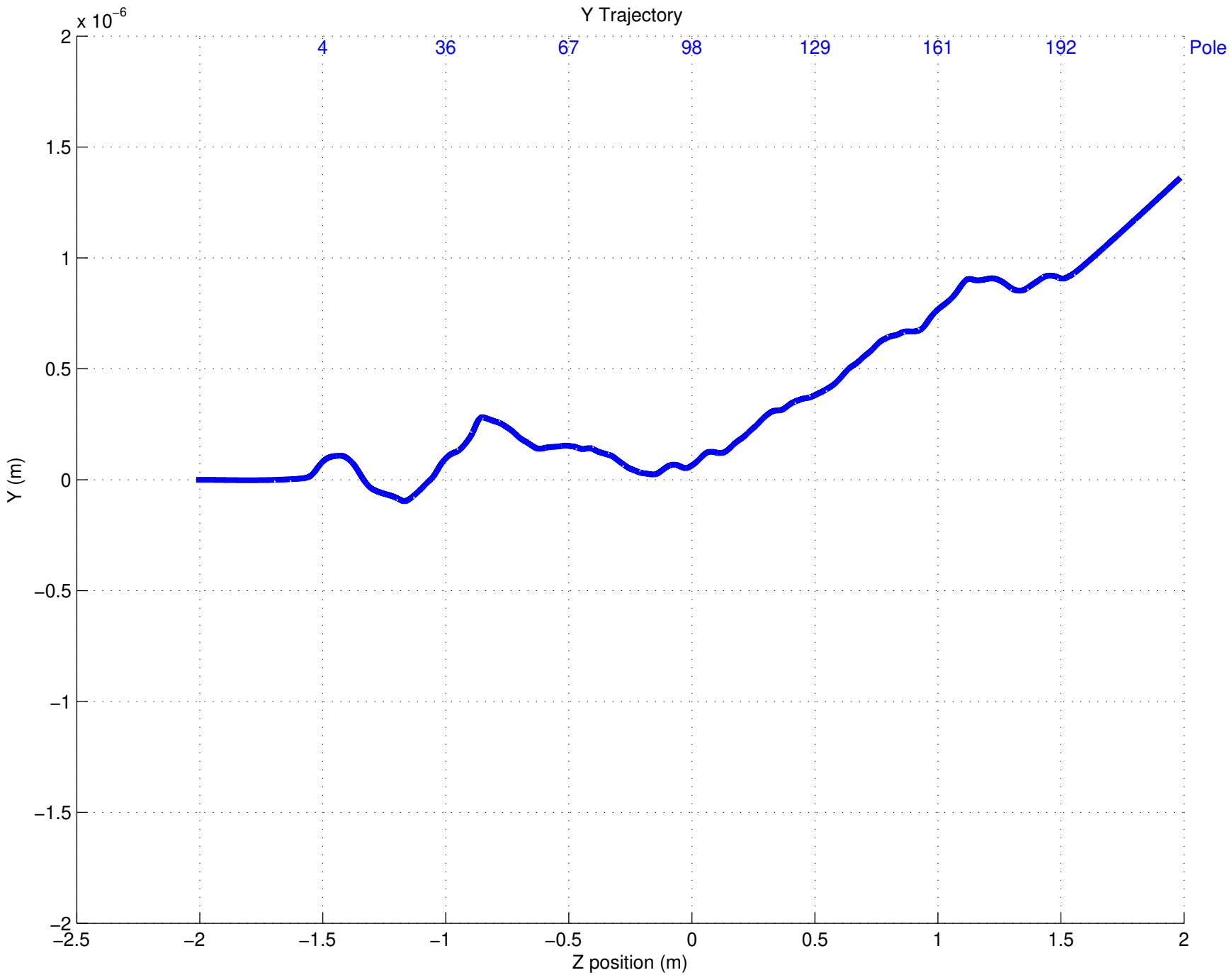
Axes position (m) X:0.021618 Y:0.000152
Initial Hall Probe Zero Measurements:
Vx_0i = 0.001131 V
Vy_0i = −0.002955 V

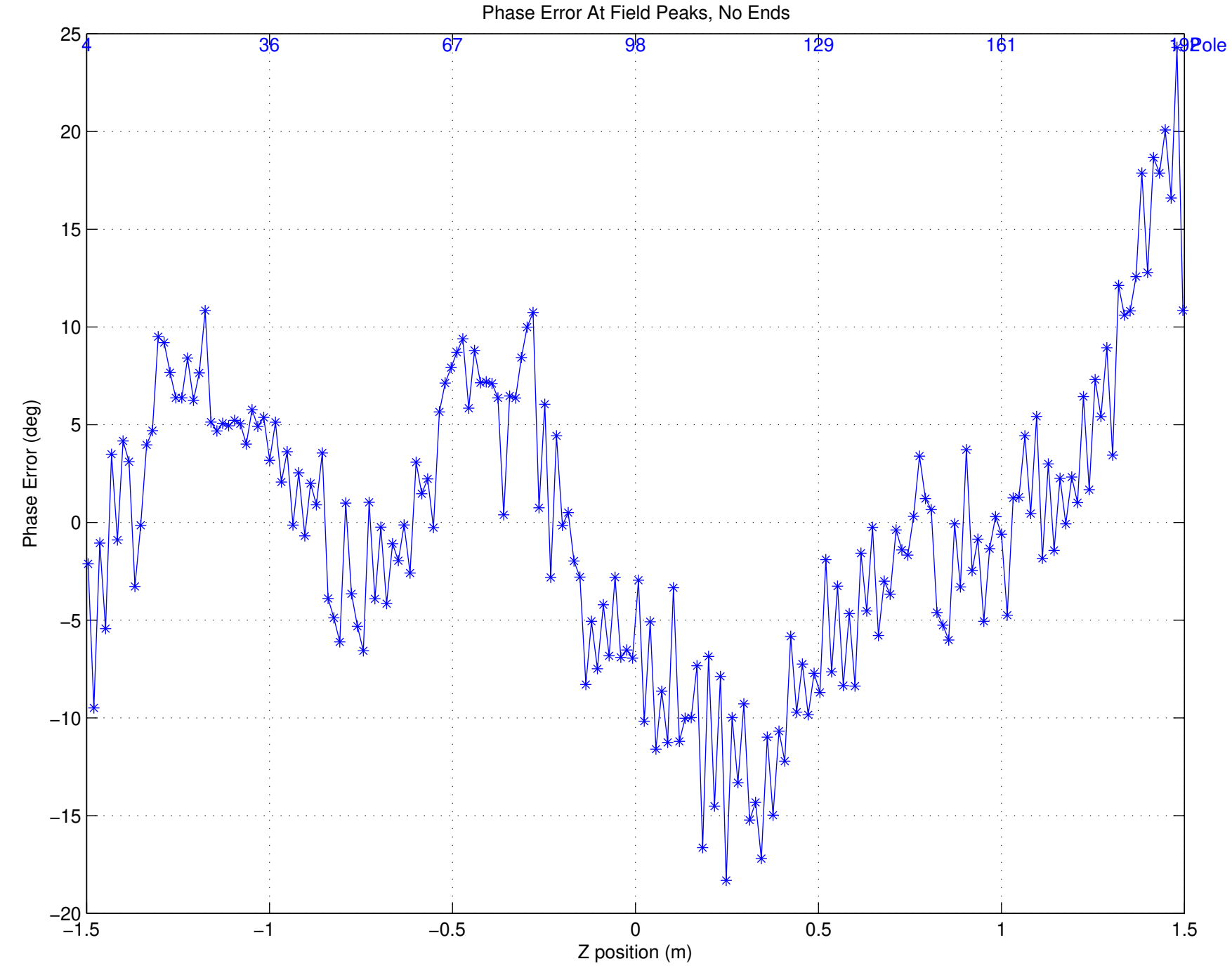

Bx vs Z
0.015
0.01
0.005
0
−0.005
−0.01
Bx (T)
4
36
67
98
129
161
192
Pole
−2.5
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
Z Position (m)


By vs Z
4
36
67
98
129
161
192
Pole
0.5
0.4
0.3
0.2
0.1
0
−0.1
−0.2
−0.3
−0.4
−0.5
By (T)
−2.5
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
Z Position (m)

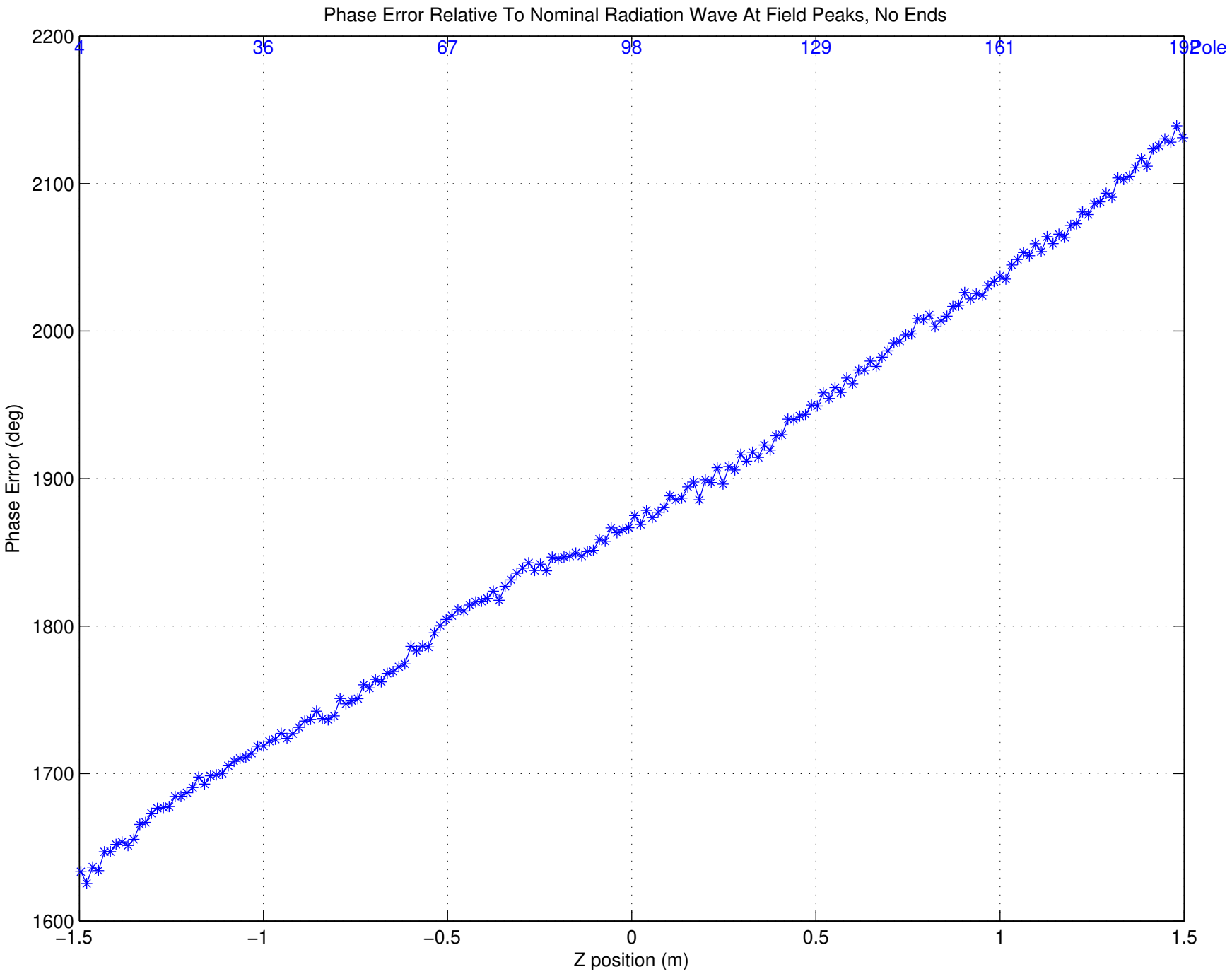

Delta By Peaks vs Pole Number
By (G)
Pole Number
100
50
0
−50
−100
−150
−200
0
20
40
60
80
100
120
140
160
180


X Trajectory
x 10^-6
3
2.5
2
1.5
1
0.5
0
−0.5
X (m)
4
36
67
98
129
161
192
Pole
−2.5
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
Z position (m)


Y Trajectory
x 10^-6
2
1.5
1
0.5
0
−0.5
−1
−1.5
−2
4
36
67
98
129
161
192
Pole
Y (m)
−2.5
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
Z position (m)



Phase Error: Ave = −0.000000 deg, RMS = 7.519361 deg


Phase Error Relative To Nominal Radiation Wave At Field Peaks, No Ends
Phase Error (deg)
Z position (m)
Pole
4
36
67
98
129
161
192
2200
2100
2000
1900
1800
1700
1600
−1.5
−1
−0.5
0
0.5
1
1.5