SLAC Magnetic Measurements

Planar Insertion Device Analysis

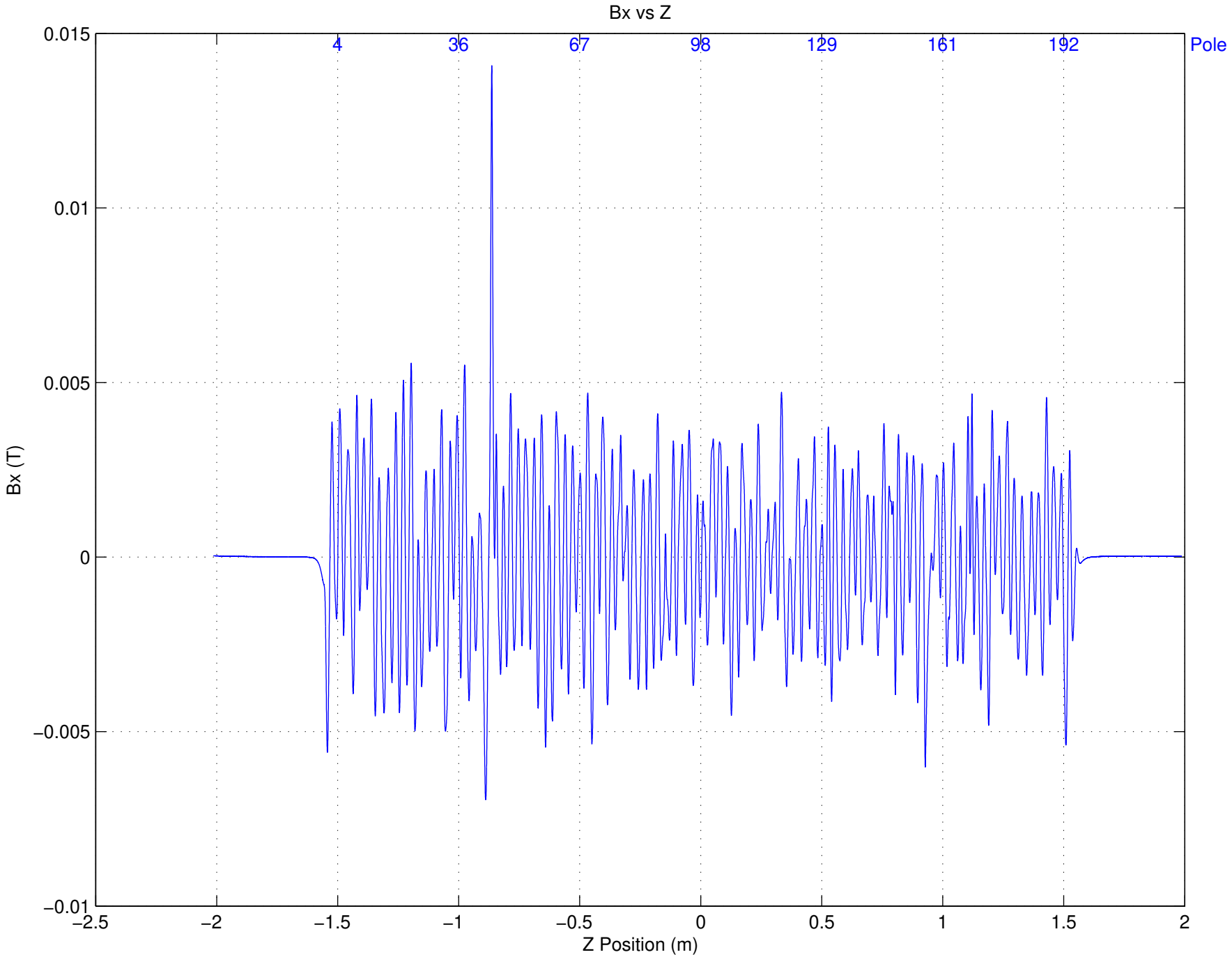
SLAC Magnetic Measurements
Date: 08–26–2014
Time: 10:50:37

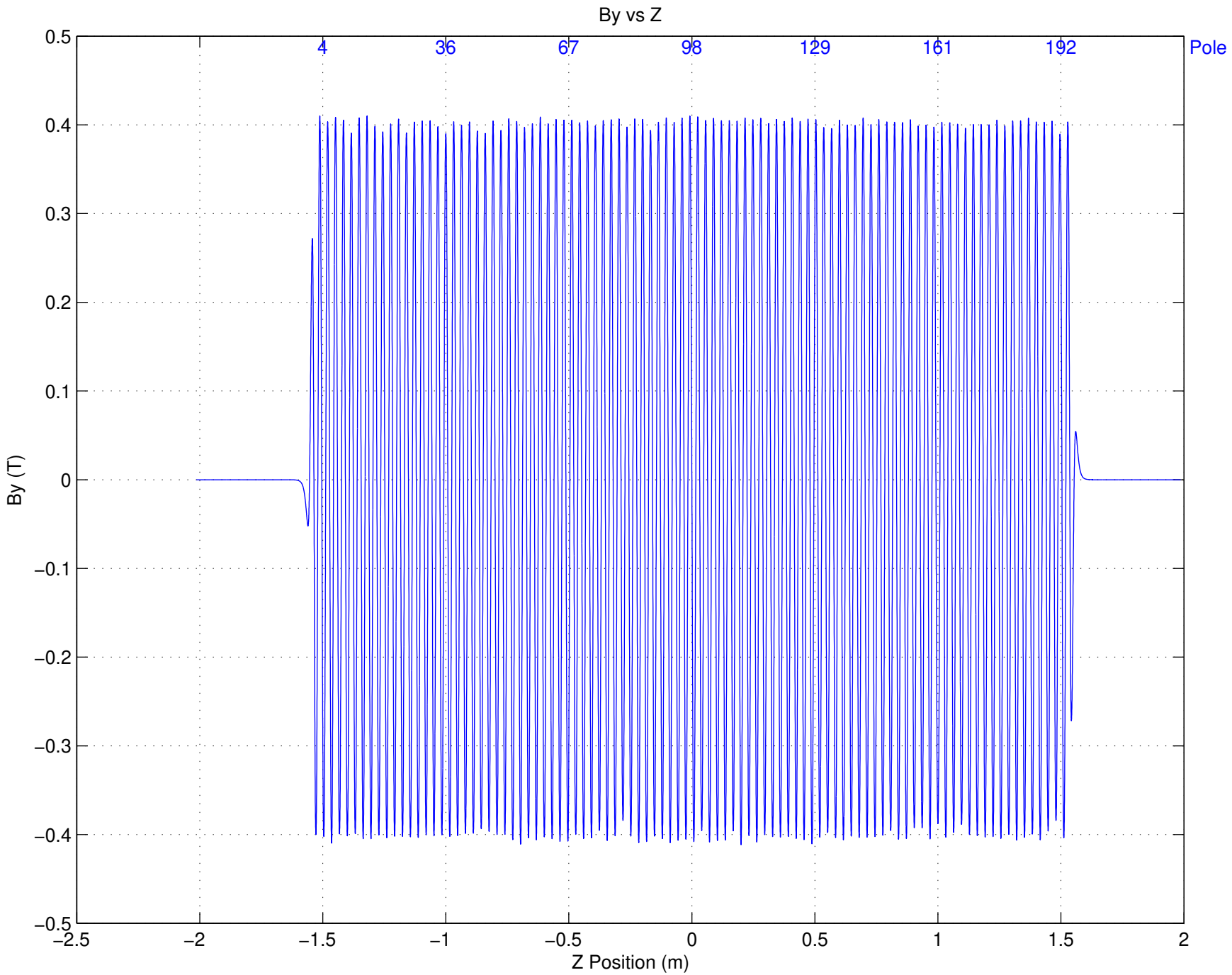
Project: LCLS
Device Type: Undulator
Data Type:
Serial Number: DELTA
DATASET Number: 4
Tuning Stage: Fine Tuning
Run Number: 40
Measurement Type: Z Scans
Operator: YL
Comment: Phase corrections: #48, 50, 89, 99 +2, #127 –2, #183, 195, 207, 229 –3, #297, 311 +1, #309, 318, 320, 330, 332 +2
Session first run: 39
Measurement Device x:
Measurement Device y: $SENTRON_4$41

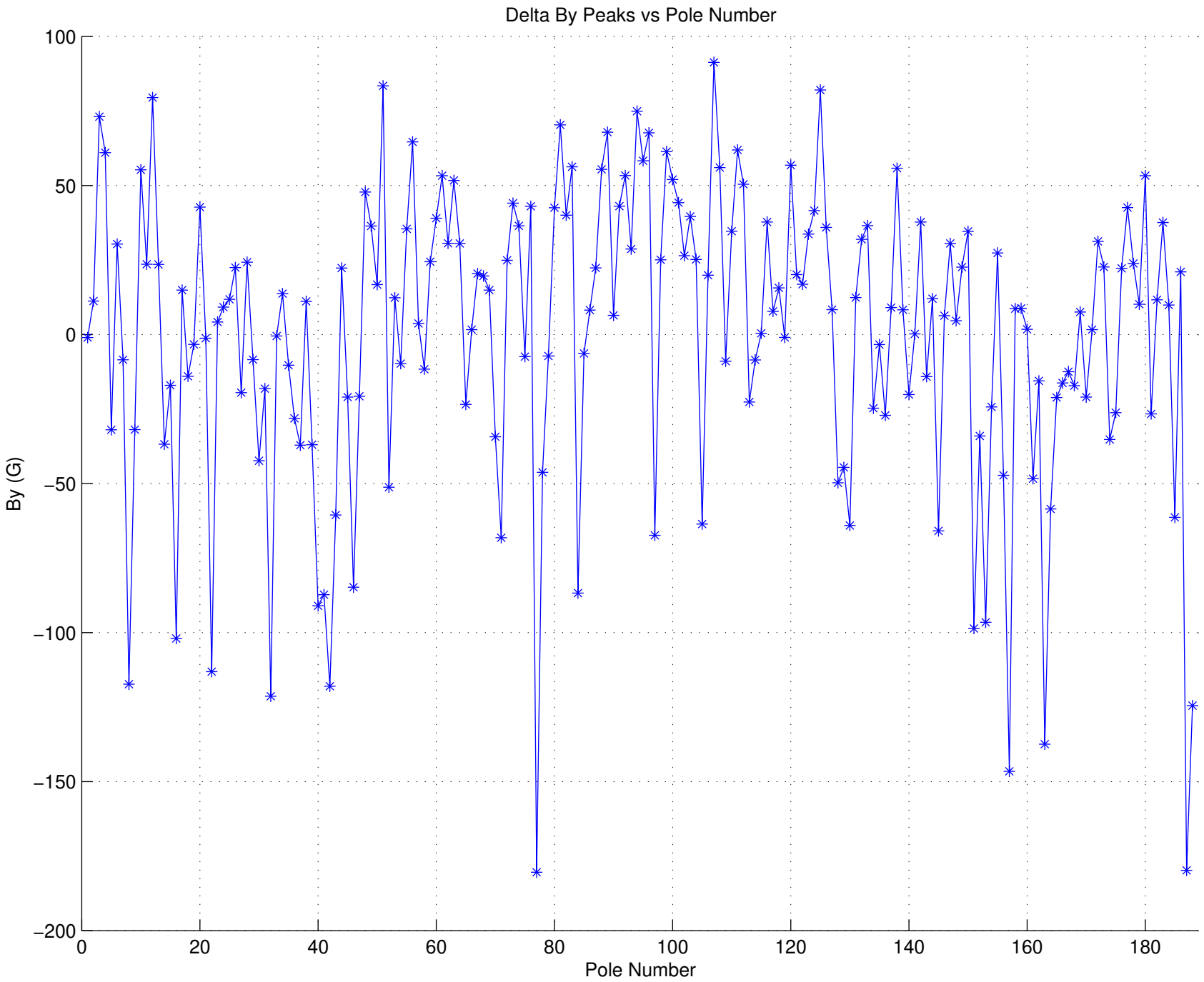
Data File: s:\magdata\LCLS\Undulator\DELTA\DATASET0004\Fine Tuning\Z Scans\Run 040\bscanz.dat

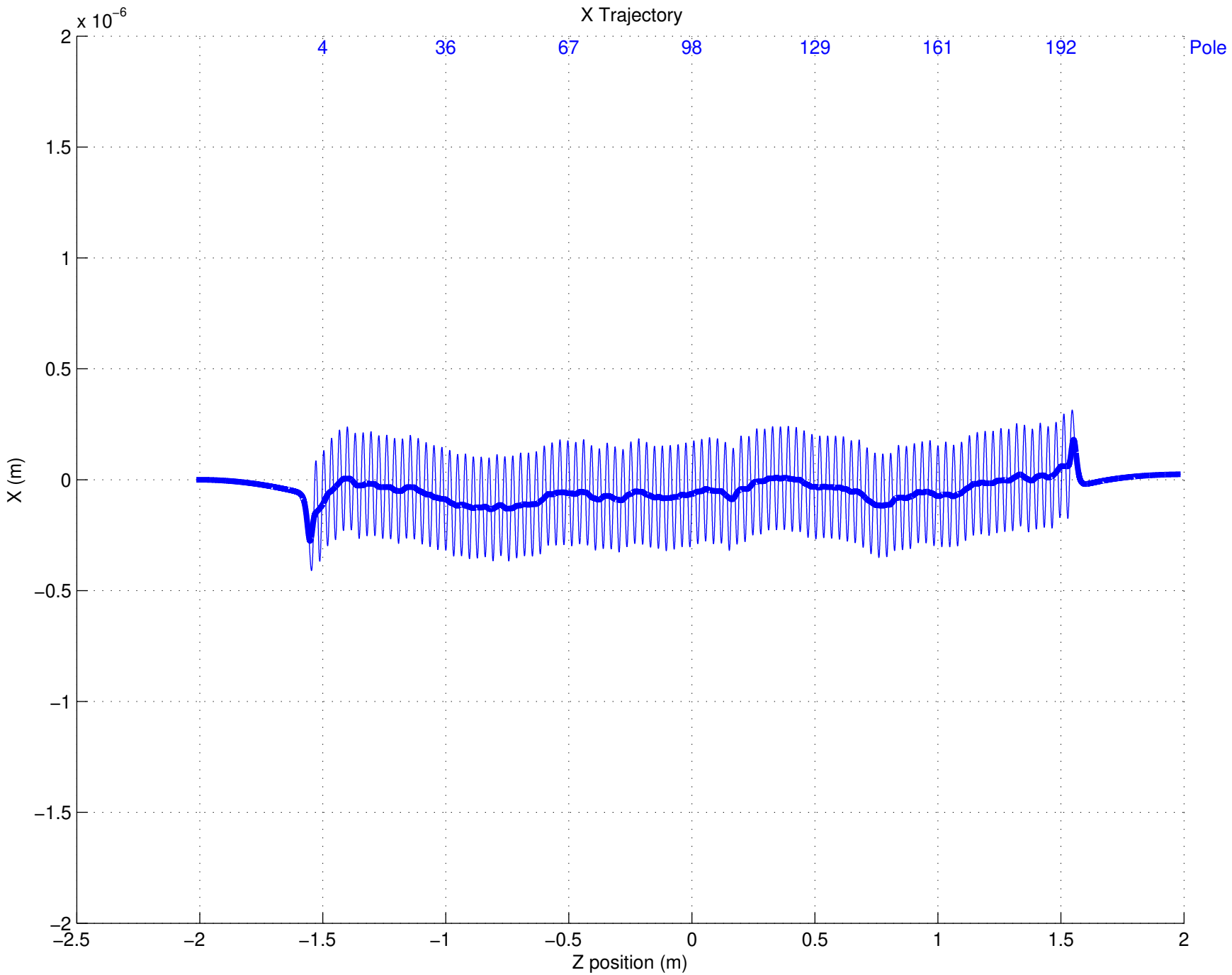
Temperature (C)
DELTA:––> T1 20.10 –––> T2 20.13 –––> T5 20.03 –––> T3 20.11 –––> Air 20.06 –––> T4 20.11

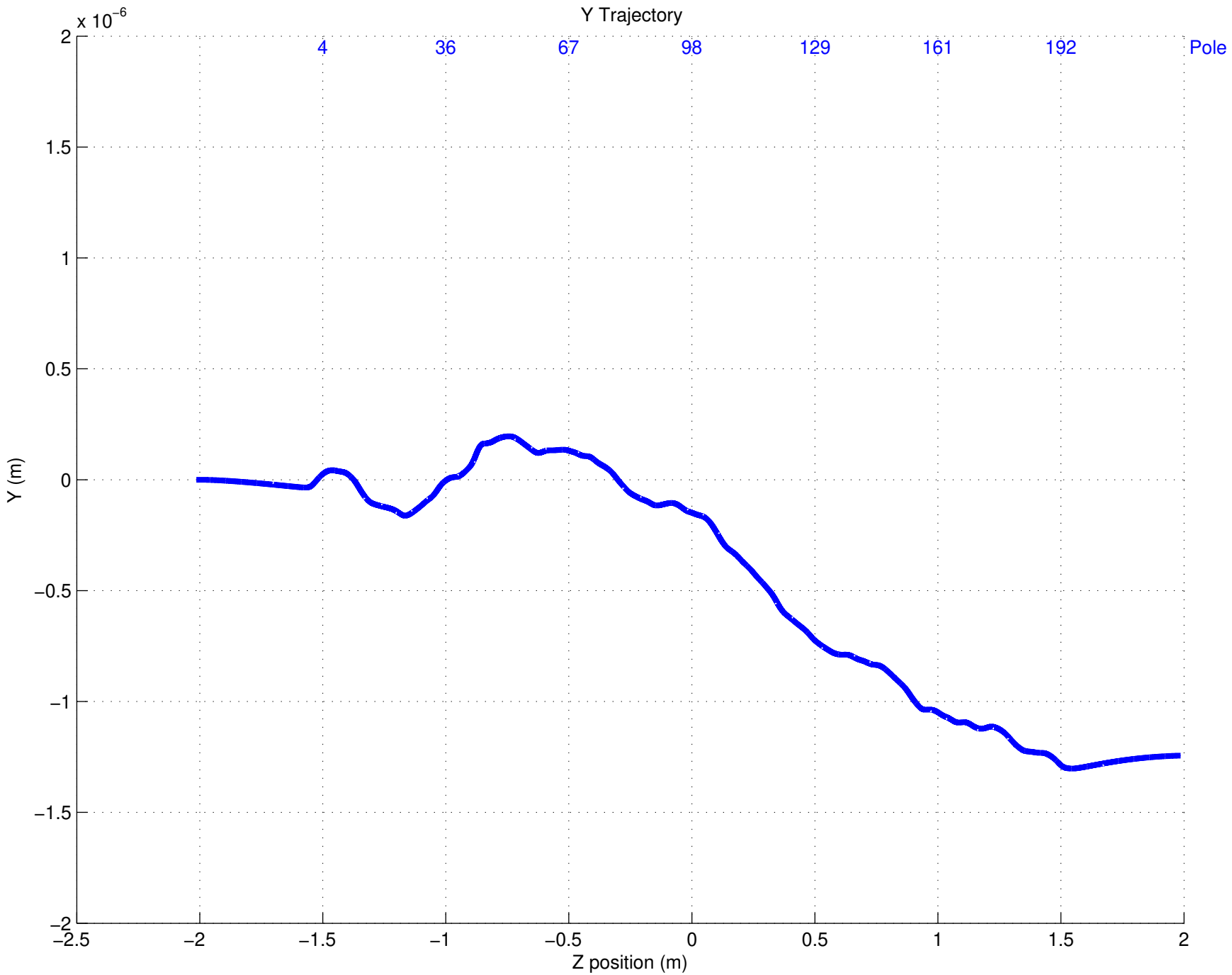
Axes position (m) X:0.021643 Y:0.000194
Initial Hall Probe Zero Measurements:
Vx_0i = 0.001102 V
Vy_0i = –0.002913 V

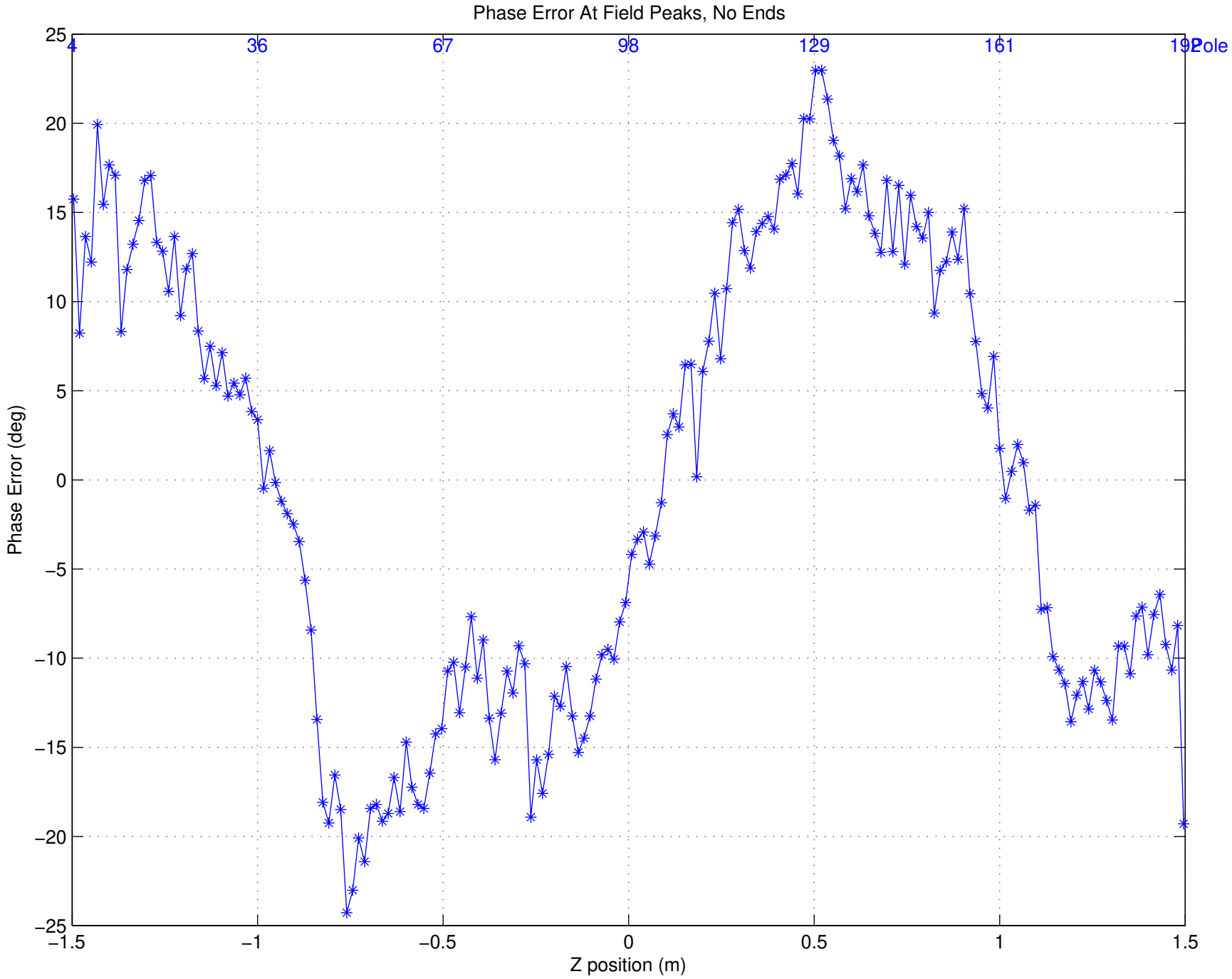

Bx vs Z
4
36
67
98
129
161
192
Pole
0.015
0.01
0.005
0
−0.005
−0.01
Bx (T)
−2.5
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
Z Position (m)


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)

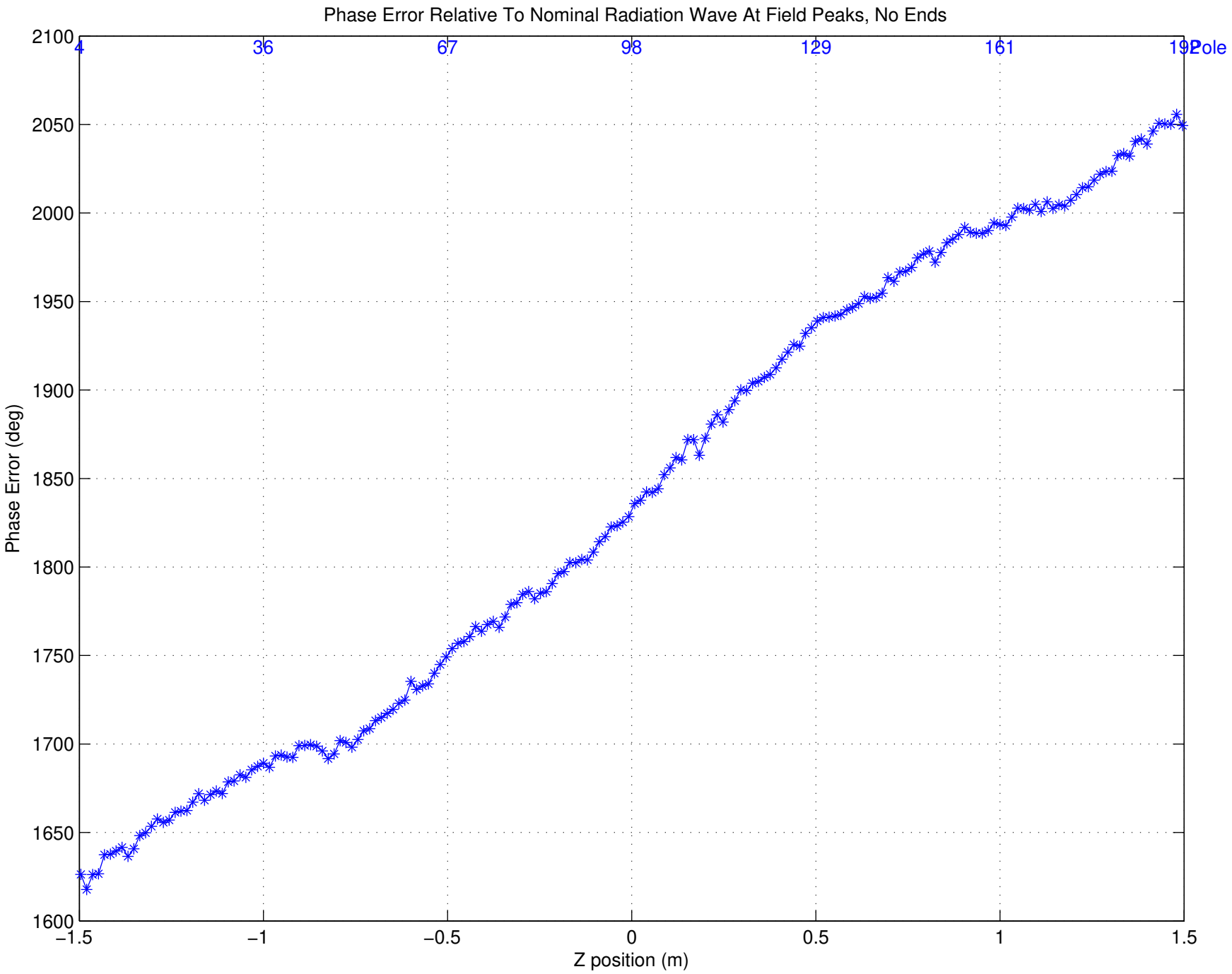

Delta By Peaks vs Pole Number
By (G)
Pole Number
100
50
0
−50
−100
−150
−200
0
20
40
60
80
100
120
140
160
180


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


Y Trajectory
x 10^-6
4
36
67
98
129
161
192
Pole
2
1.5
1
0.5
0
−0.5
−1
−1.5
−2
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 = 12.751877 deg


Phase Error Relative To Nominal Radiation Wave At Field Peaks, No Ends
4
36
67
98
129
161
192
Pole
2100
2050
2000
1950
1900
1850
1800
1750
1700
1650
1600
Phase Error (deg)
−1.5
−1
−0.5
0
0.5
1
1.5
Z position (m)