SLAC Magnetic Measurements

Planar Insertion Device Analysis

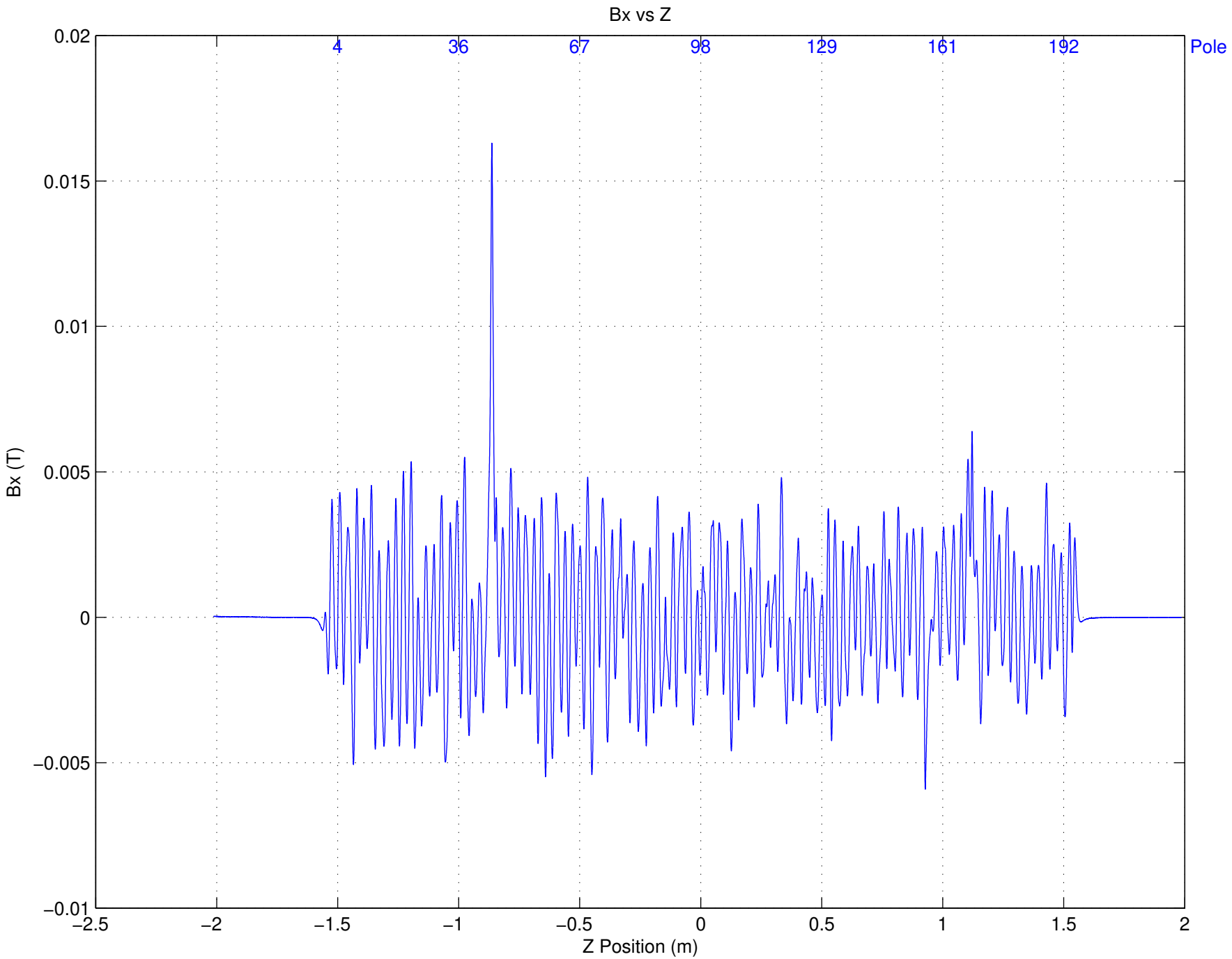
SLAC Magnetic Measurements
Date: 08–25–2014
Time: 10:31:17

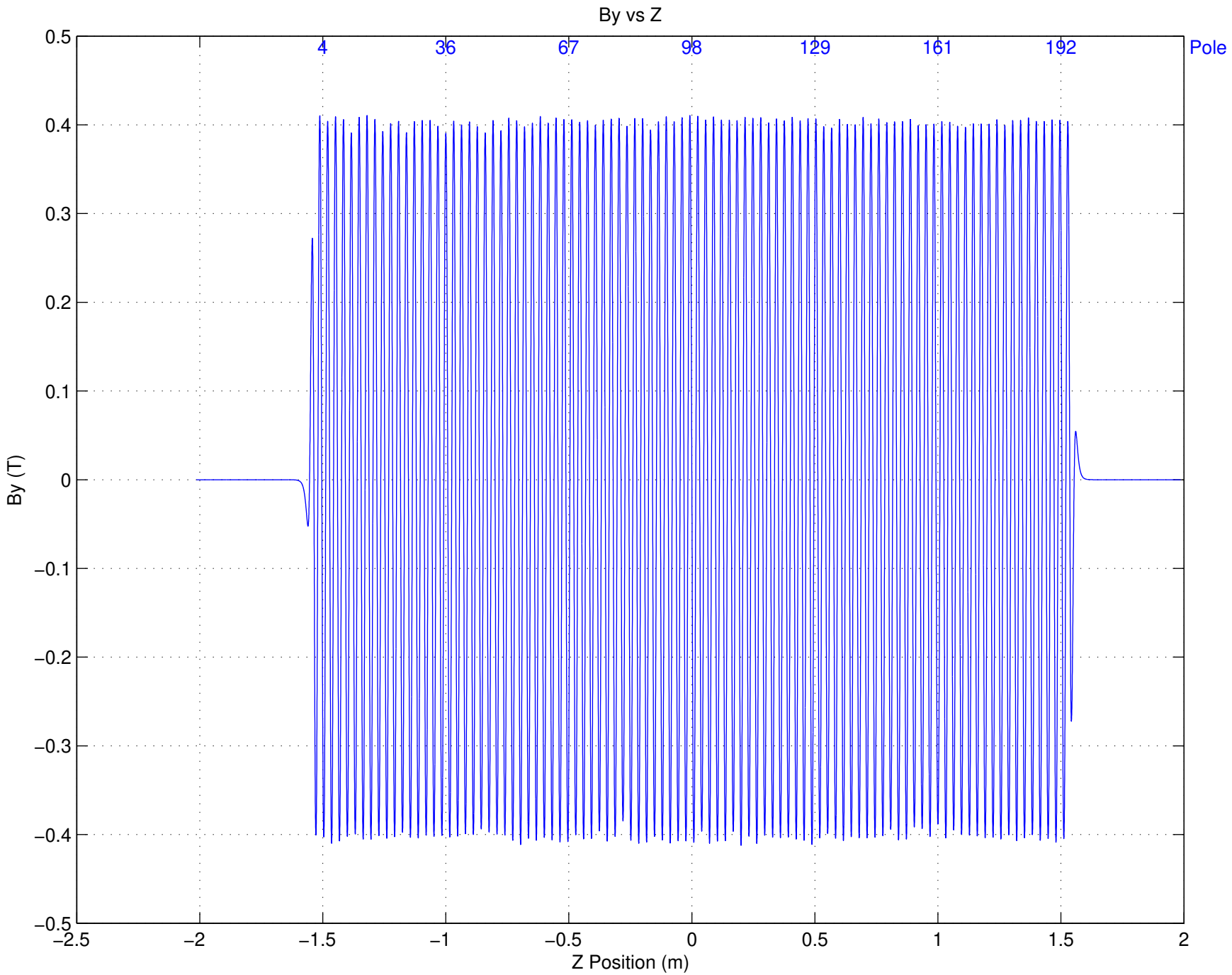
Project: LCLS
Device Type: Undulator
Data Type:
Serial Number: DELTA
DATASET Number: 4
Tuning Stage: Fine Tuning
Run Number: 9
Measurement Type: Z Scans
Operator: YL
Comment: magnet #176, 330 moved –3, #322 –7, C1531 replaced by C1536
Session first run: 8
Measurement Device x:
Measurement Device y: $SENTRON_4$41

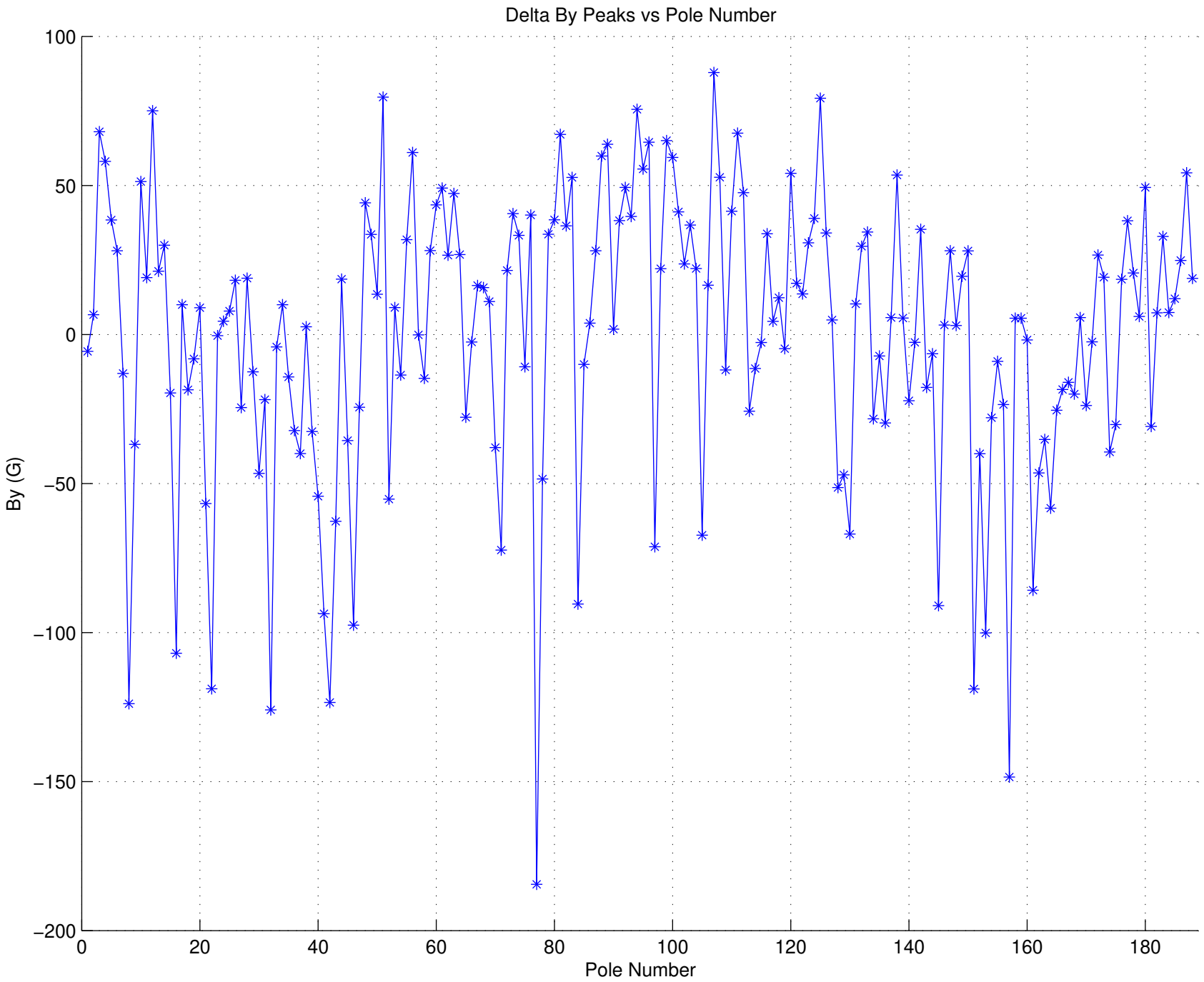
Data File: s:\magdata\LCLS\Undulator\DELTA\DATASET0004\Fine Tuning\Z Scans\Run 009\bscanz.dat

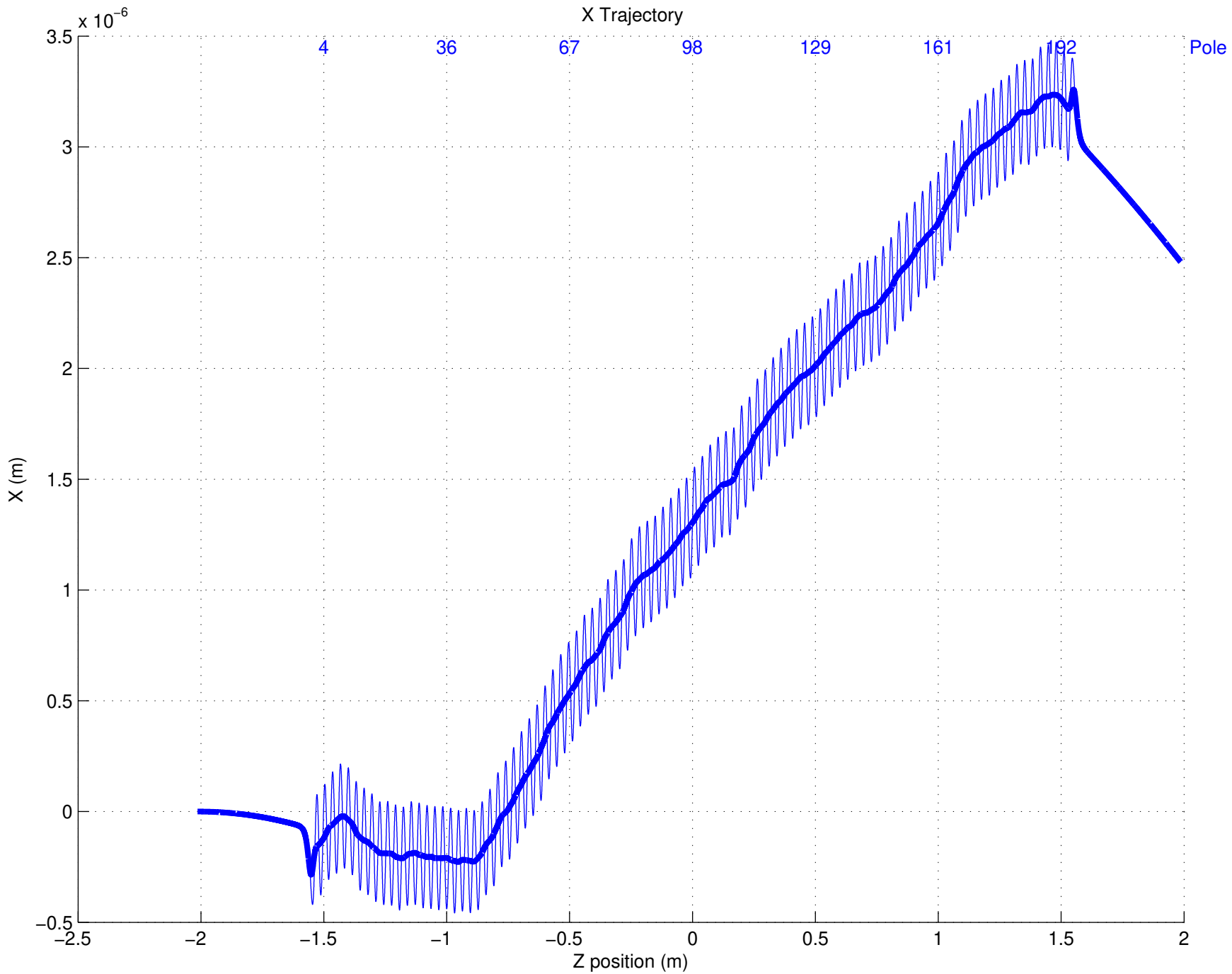
Temperature (C)
DELTA:––> T1 20.09 ––> T2 20.10 ––> T5 20.03 ––> T3 20.07 ––> Air 20.06 ––> T4 20.09

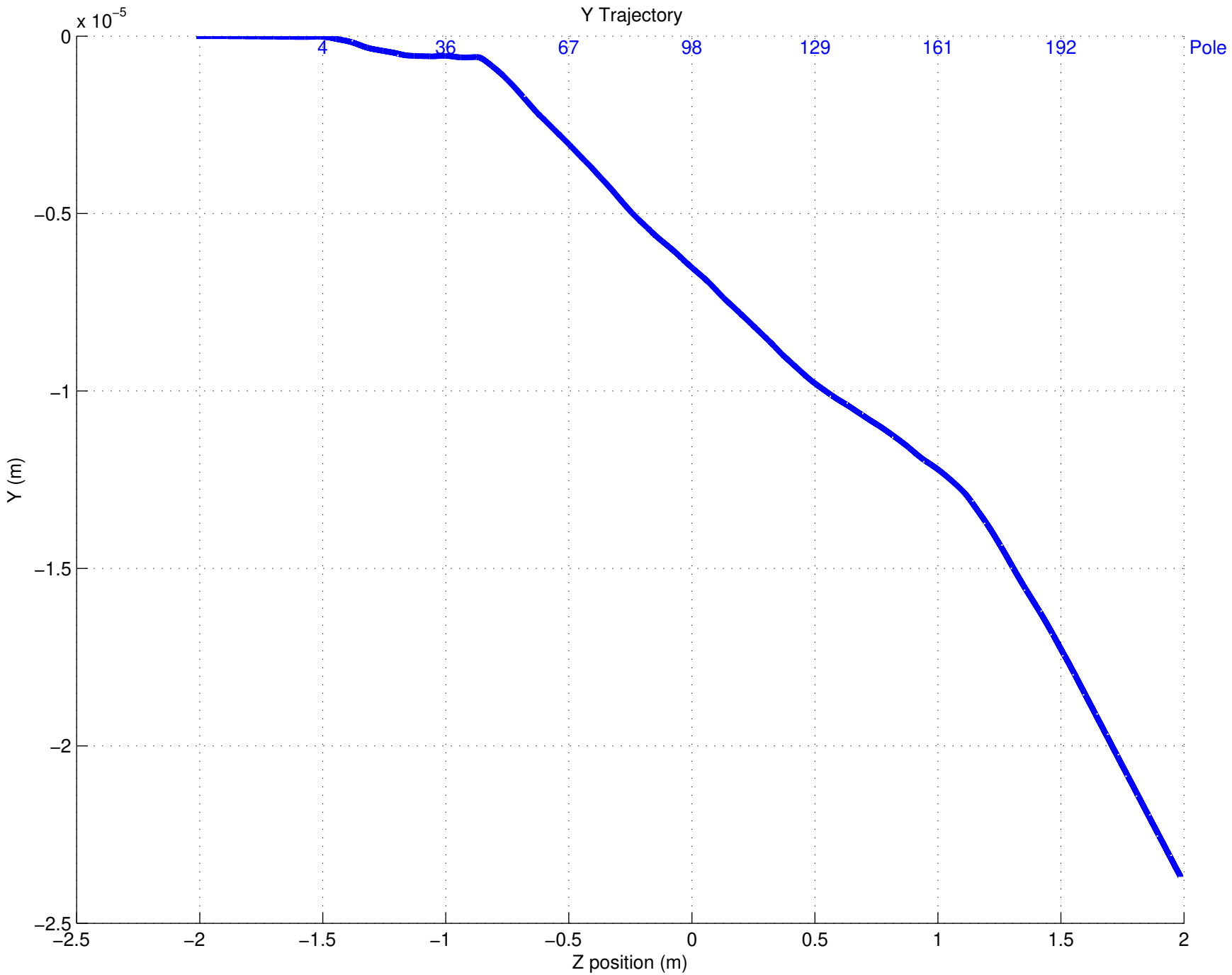
Axes position (m) X:0.021643 Y:0.000194
Initial Hall Probe Zero Measurements:
Vx_0i = 0.001144 V
Vy_0i = –0.002840 V

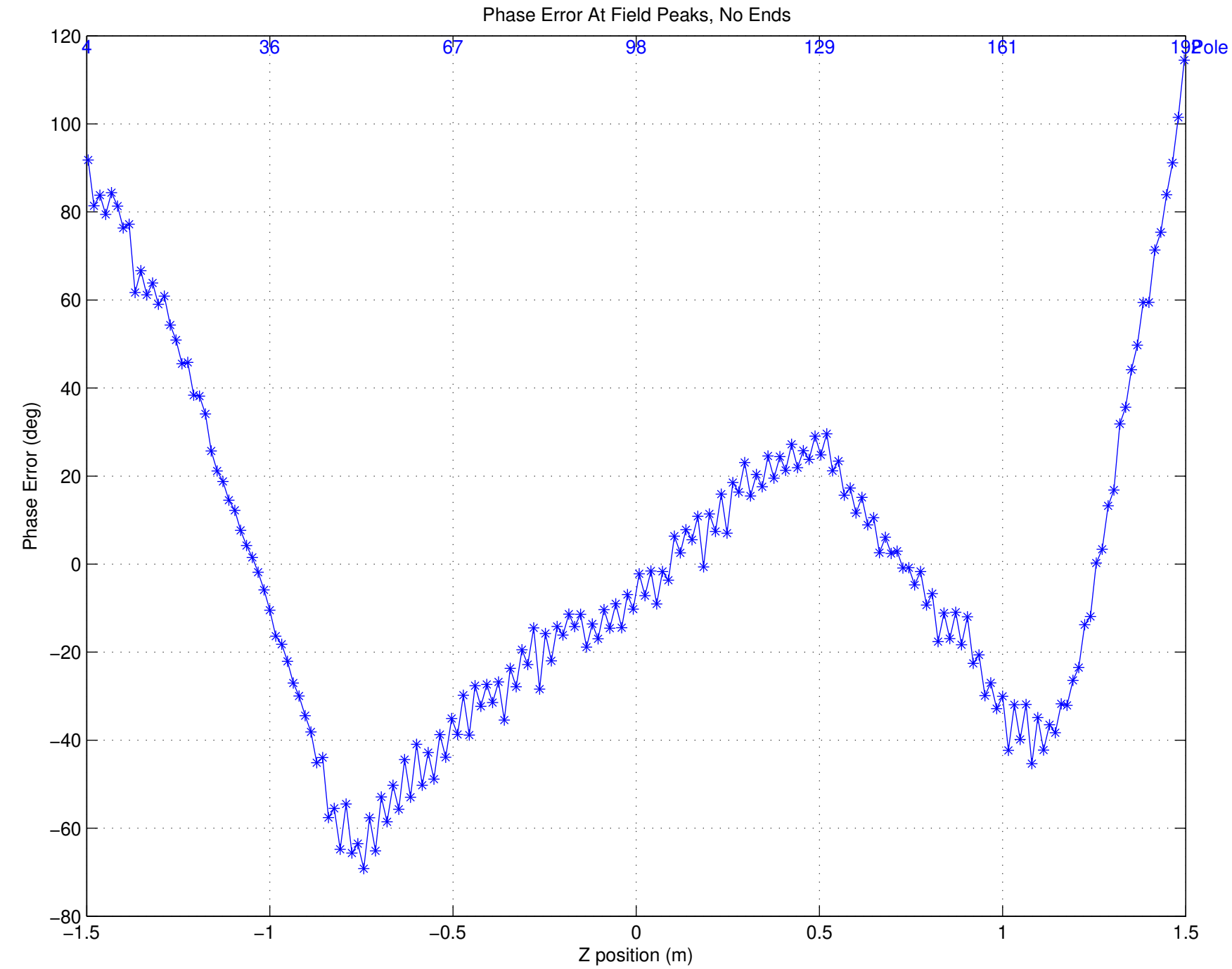

Bx vs Z
4
36
67
98
129
161
192
Pole
0.02
0.015
0.01
0.005
0
−0.005
−0.01
Bx (T)
−2.5
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
Z Position (m)


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)

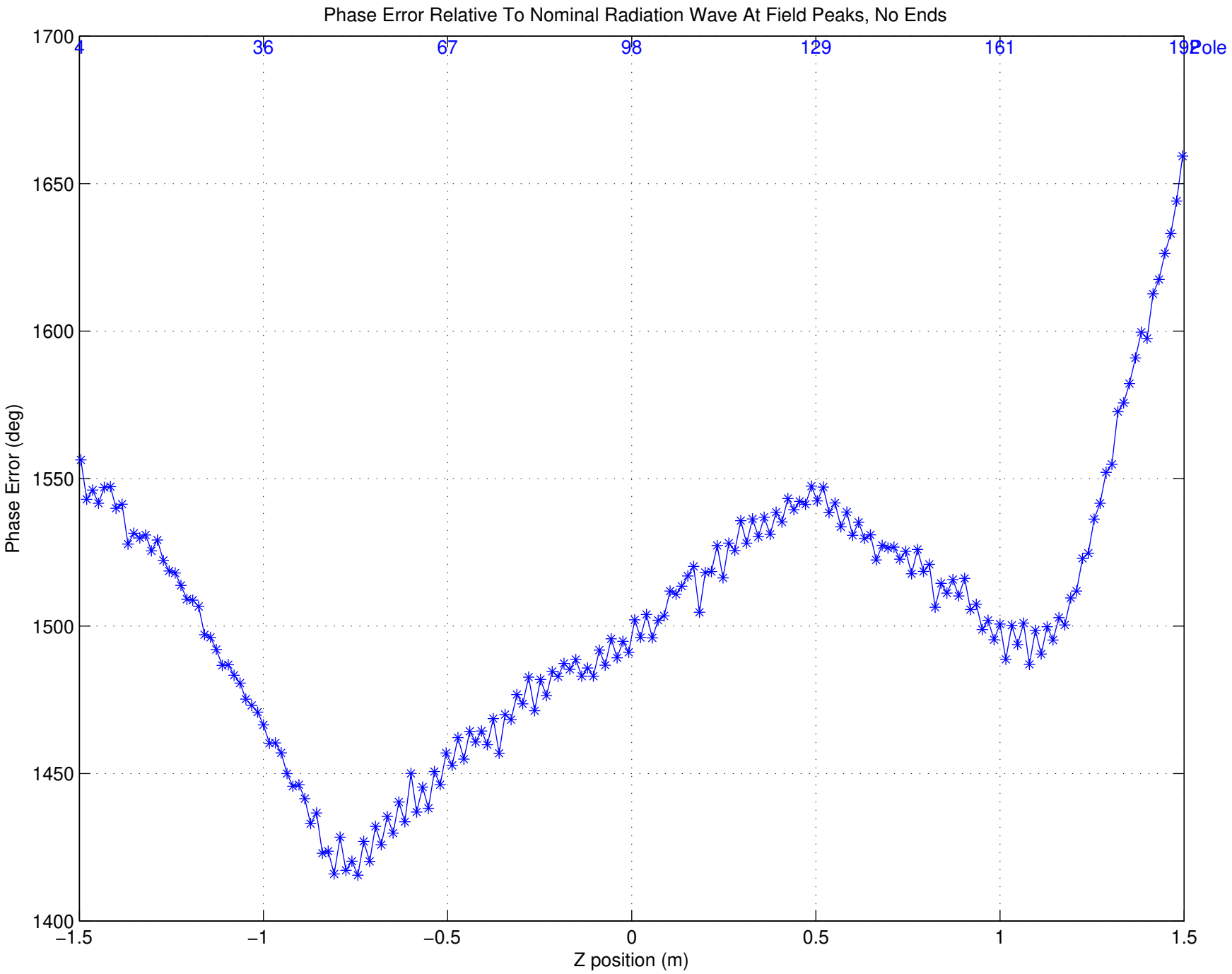

Delta By Peaks vs Pole Number
By (G)
Pole Number
100
50
0
−50
−100
−150
−200
0
20
40
60
80
100
120
140
160
180


X Trajectory
x 10^-6
3.5
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^-5
0
−0.5
−1
−1.5
−2
−2.5
Y (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)



Phase Error: Ave = −0.000000 deg, RMS = 38.755365 deg


Phase Error Relative To Nominal Radiation Wave At Field Peaks, No Ends
4
36
67
98
129
161
192
Pole
1700
1650
1600
1550
1500
1450
1400
Phase Error (deg)
−1.5
−1
−0.5
0
0.5
1
1.5
Z position (m)