SLAC Magnetic Measurements

Planar Insertion Device Analysis

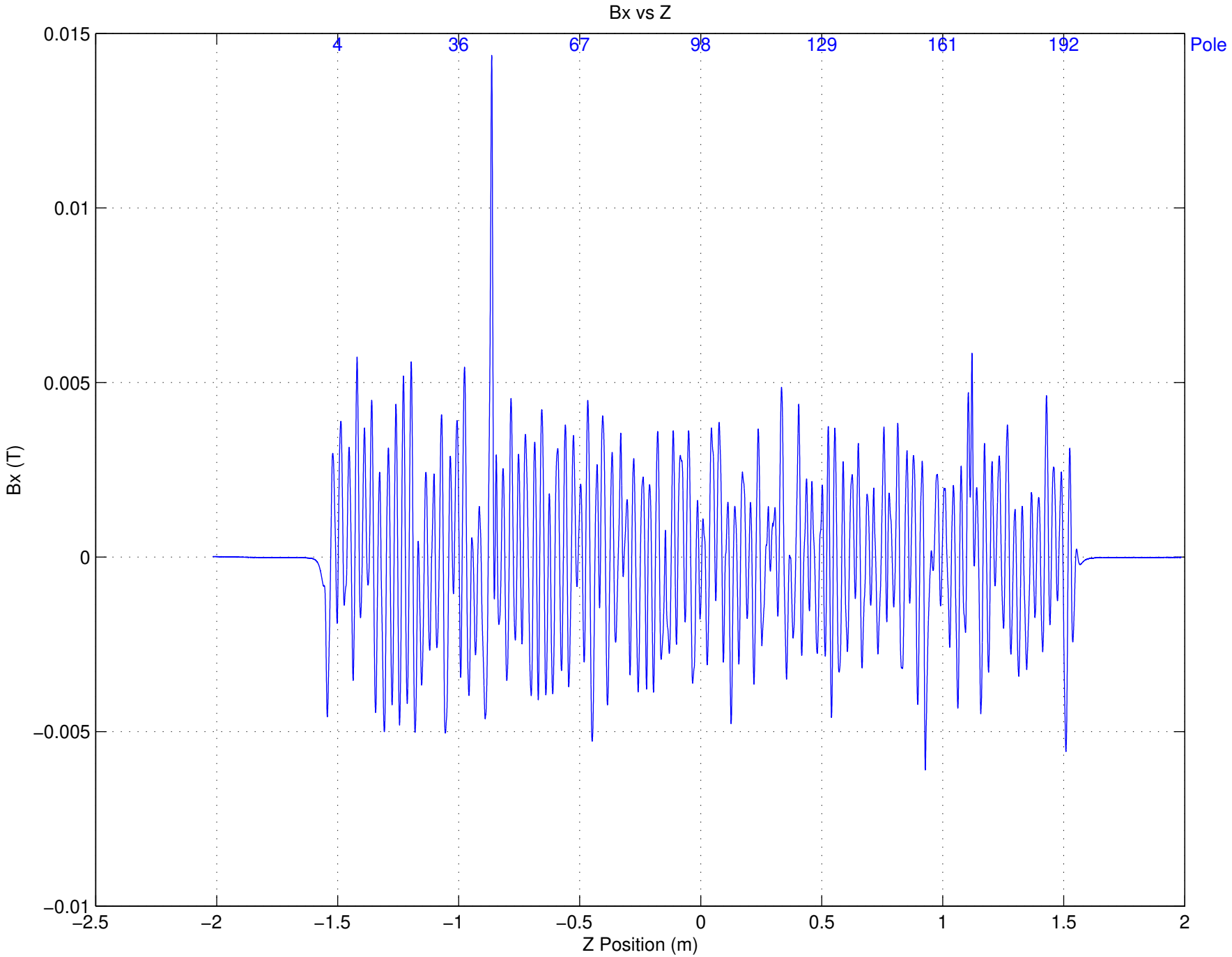
SLAC Magnetic Measurements
Date: 09−09−2014
Time: 15:27:01

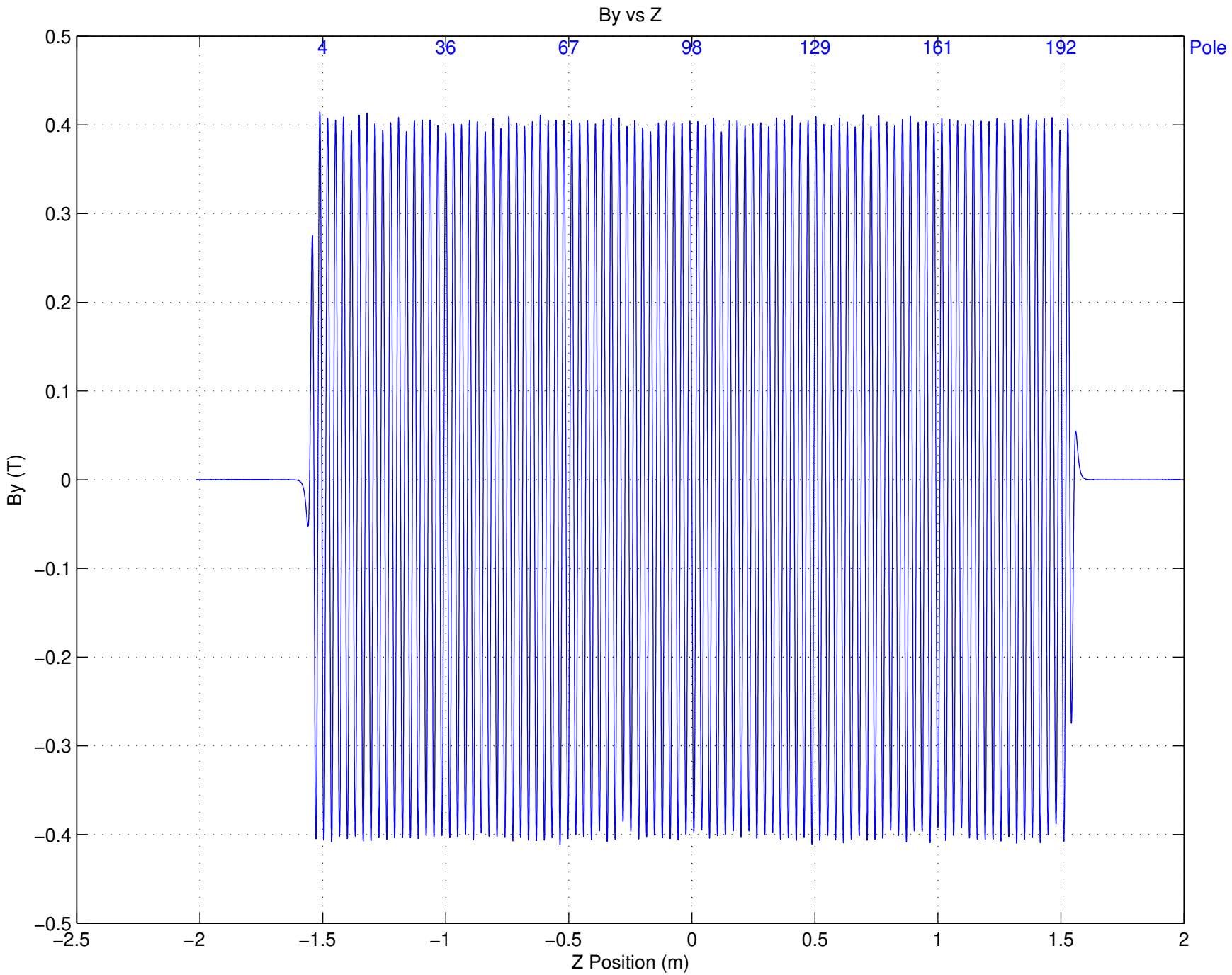
Project: LCLS
Device Type: Undulator
Data Type:
Serial Number: DELTA
DATASET Number: 5
Tuning Stage: Fine Tuning
Run Number: 40
Measurement Type: Z Scans
Operator: YL
Comment: Q2 final tuning; change #108 −20, #110 +20, #288,119,126,128,257,271 −3, #171,175 +3,#166,245,359,365 −2
Session first run: 38
Measurement Device x:
Measurement Device y: $SENTRON_4$41

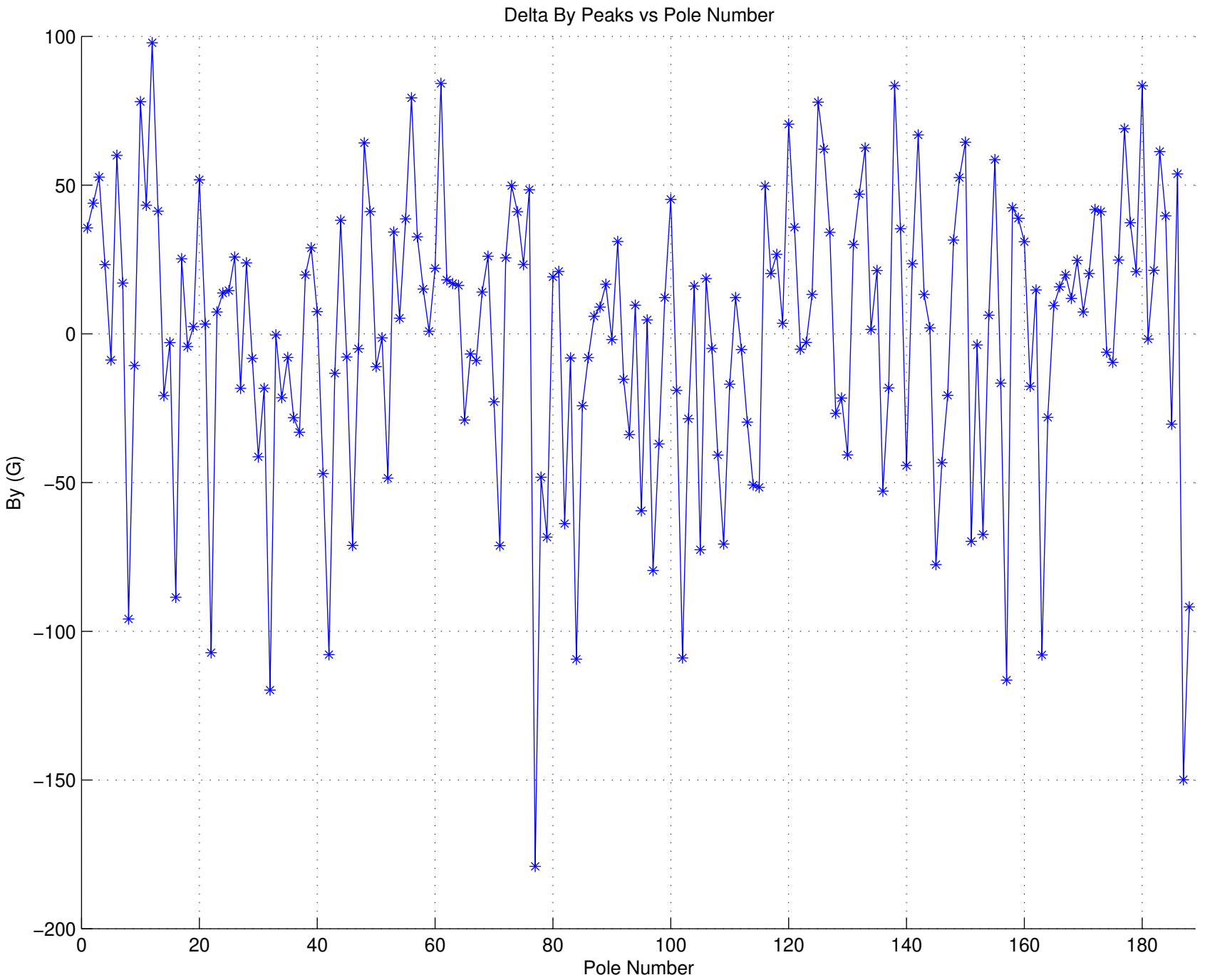
Data File: s:\magdata\LCLS\Undulator\DELTA\DATASET0005\Fine Tuning\Z Scans\Run 040\bscanz.dat

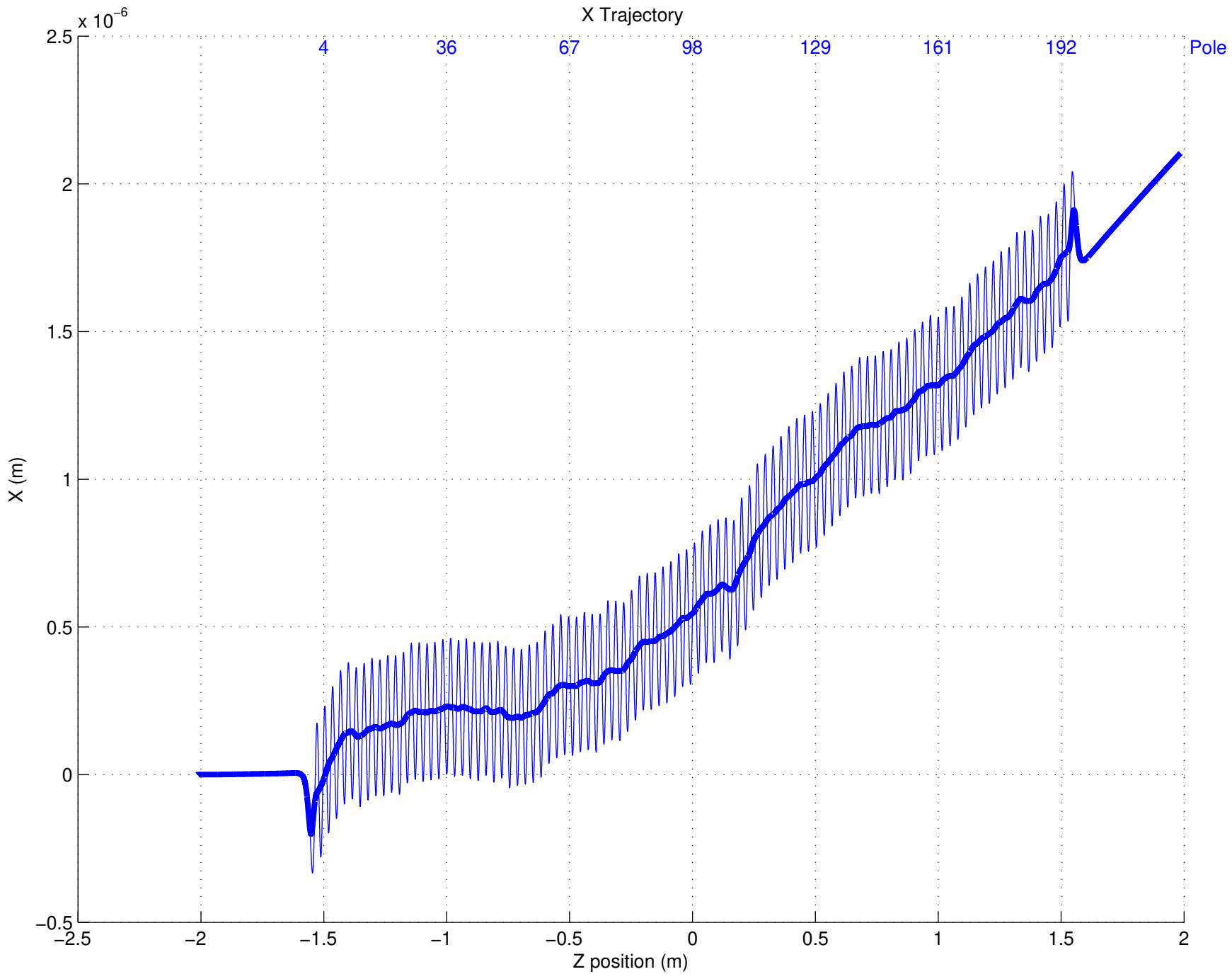
Temperature (C)
DELTA:−−> T1 20.09 −−> T2 20.15 −−> T5 20.01 −−> T3 20.09 −−> Air 20.06 −−> T4 20.11

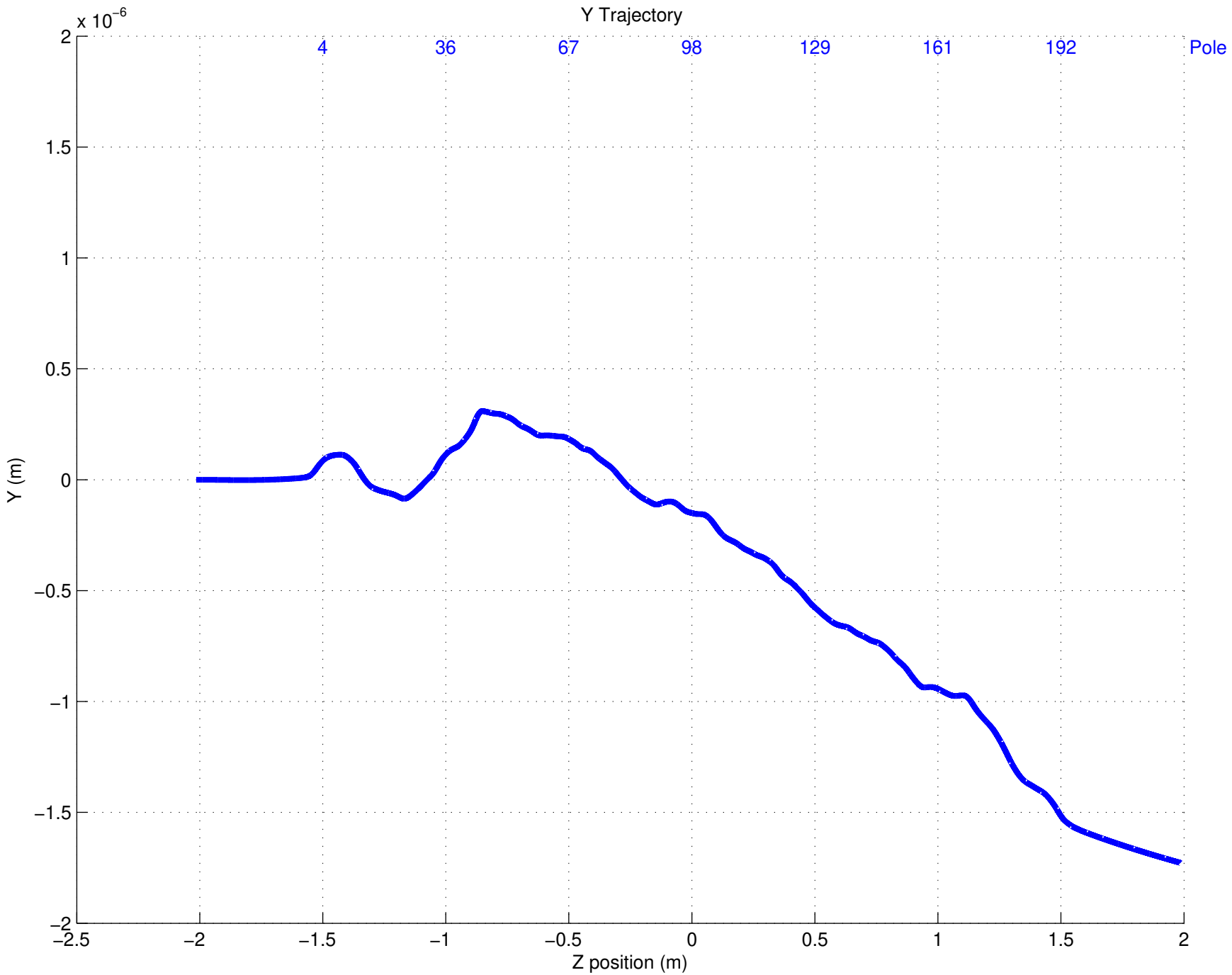
Axes position (m) X:0.021618 Y:0.000152
Initial Hall Probe Zero Measurements:
Vx_0i = 0.001158 V
Vy_0i = −0.002994 V

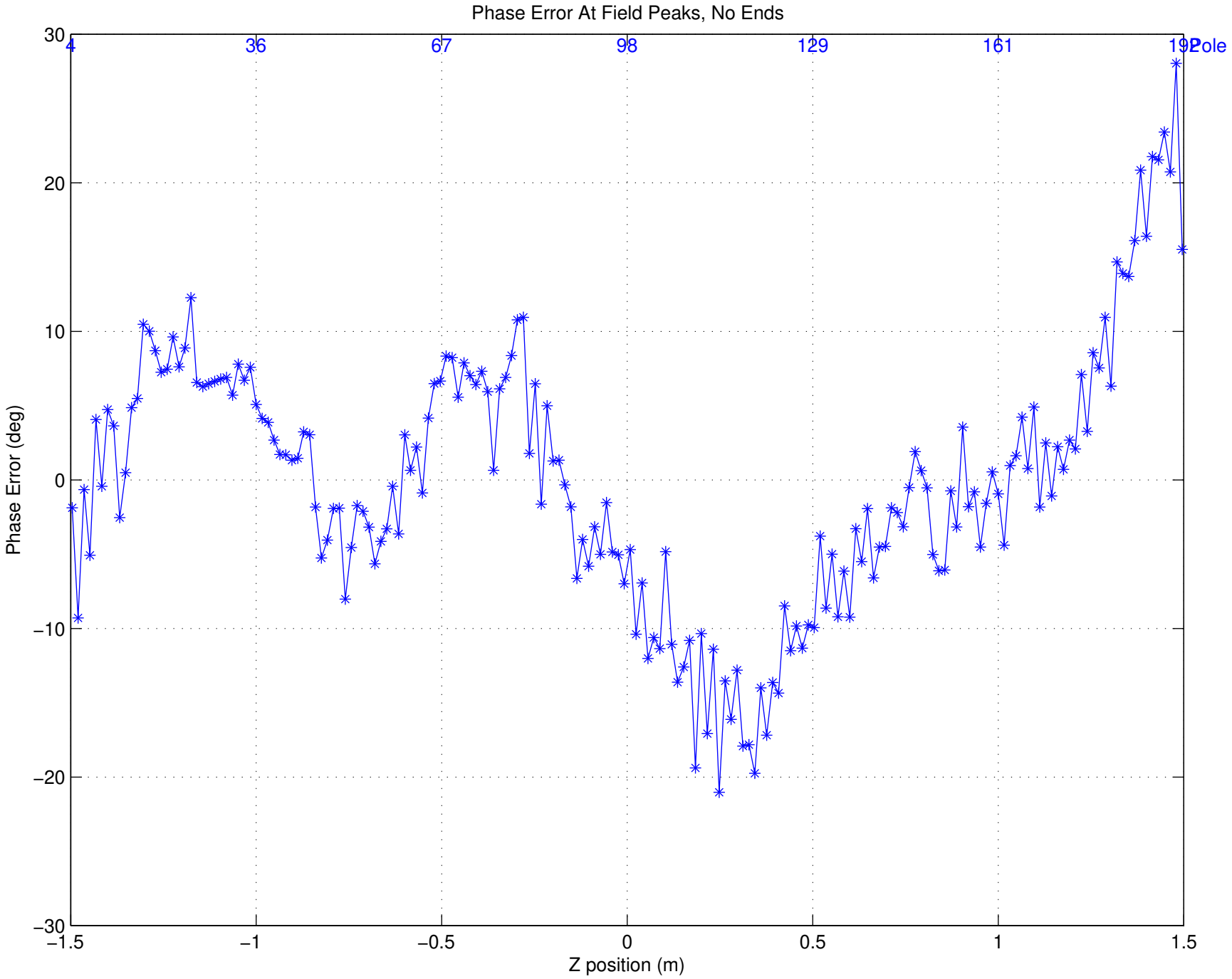

Bx vs Z
4
36
67
98
129
161
192
Pole
0.015
0.01
0.005
0
−0.005
−0.01
Bx (T)
−2.5
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
Z Position (m)


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)

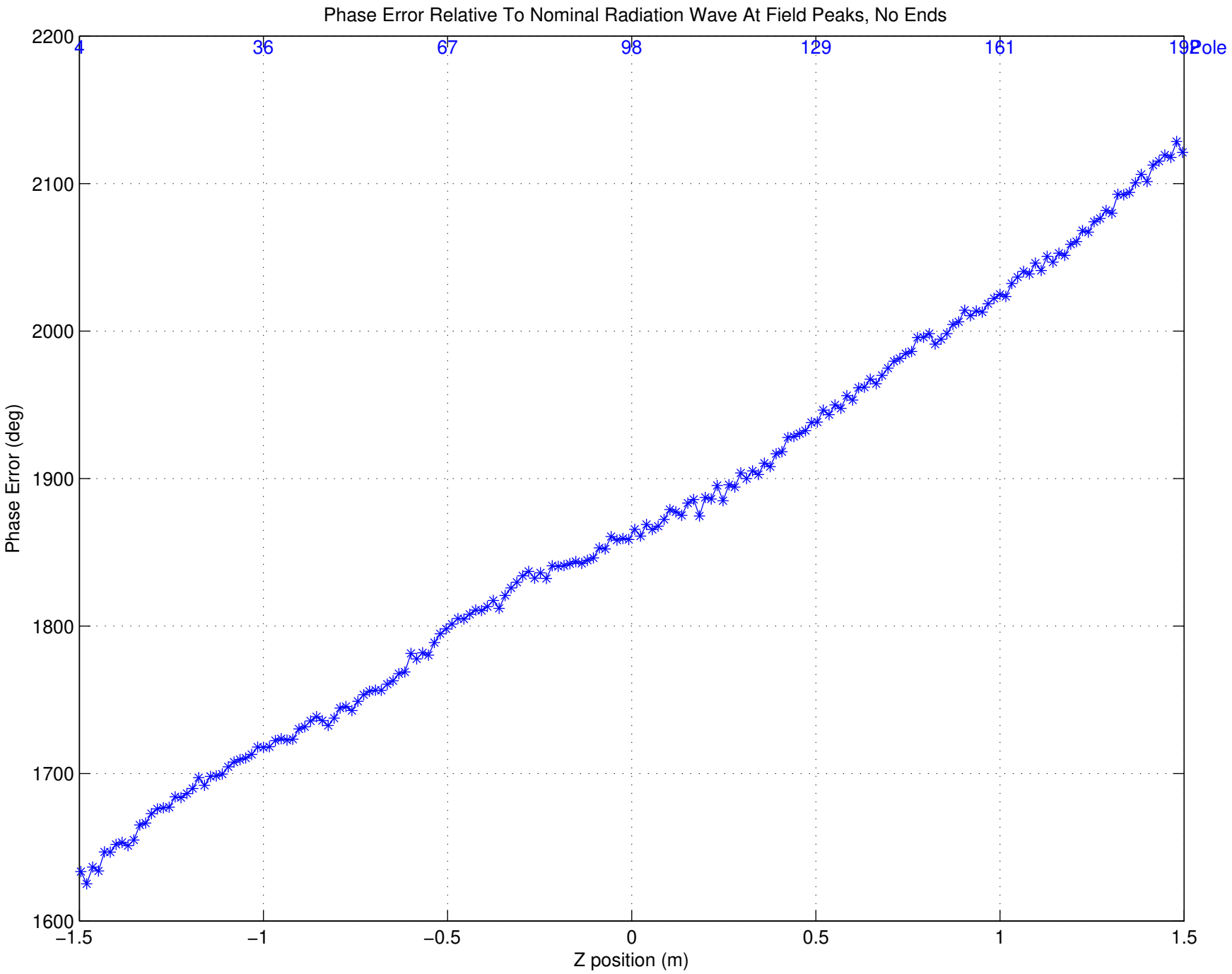

Delta By Peaks vs Pole Number
By (G)
Pole Number
100
50
0
−50
−100
−150
−200
0
20
40
60
80
100
120
140
160
180


X Trajectory
x 10^-6
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
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 = 8.725876 deg


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