SLAC Magnetic Measurements

Planar Insertion Device Analysis

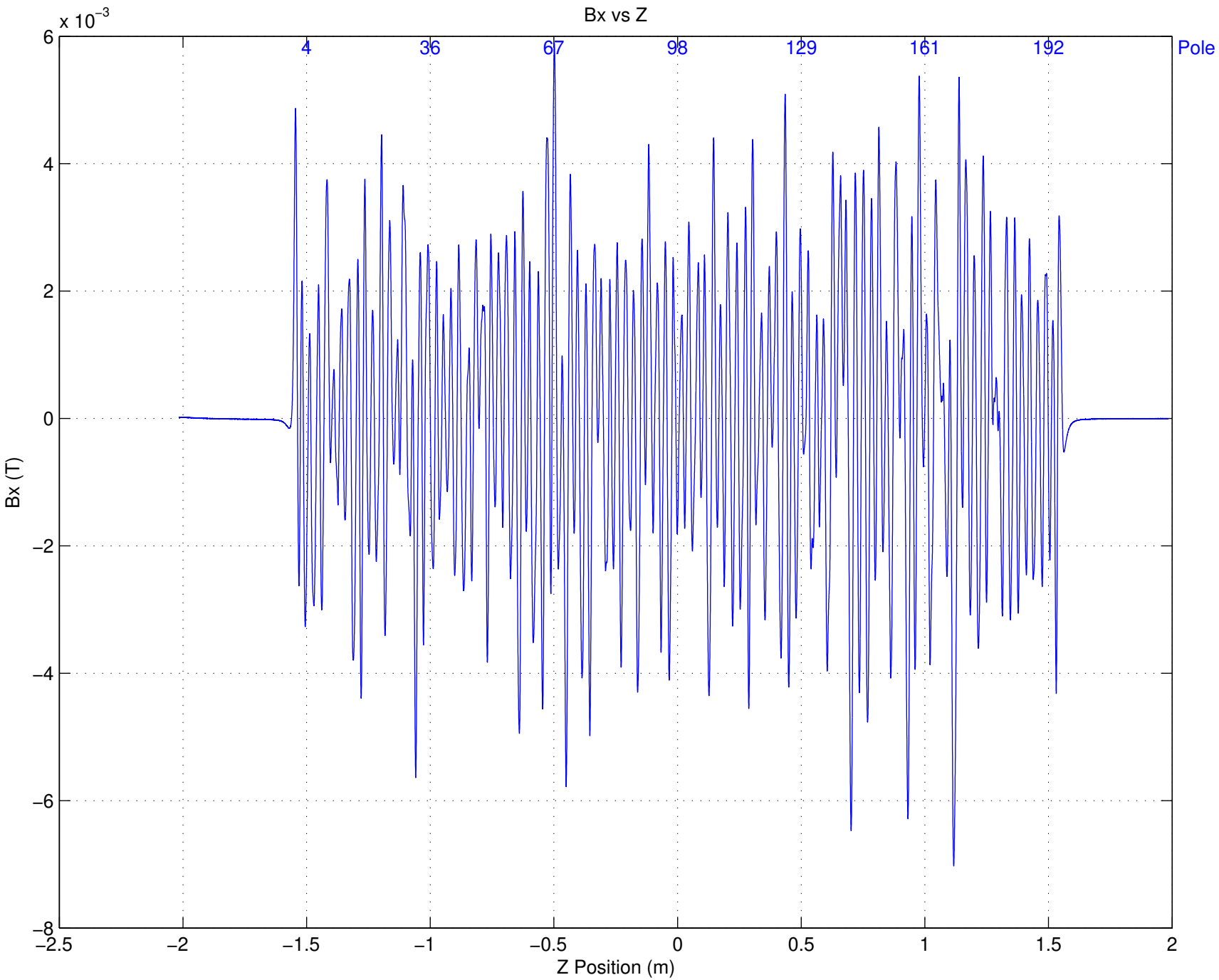
SLAC Magnetic Measurements
Date: 09−15−2014
Time: 15:40:11

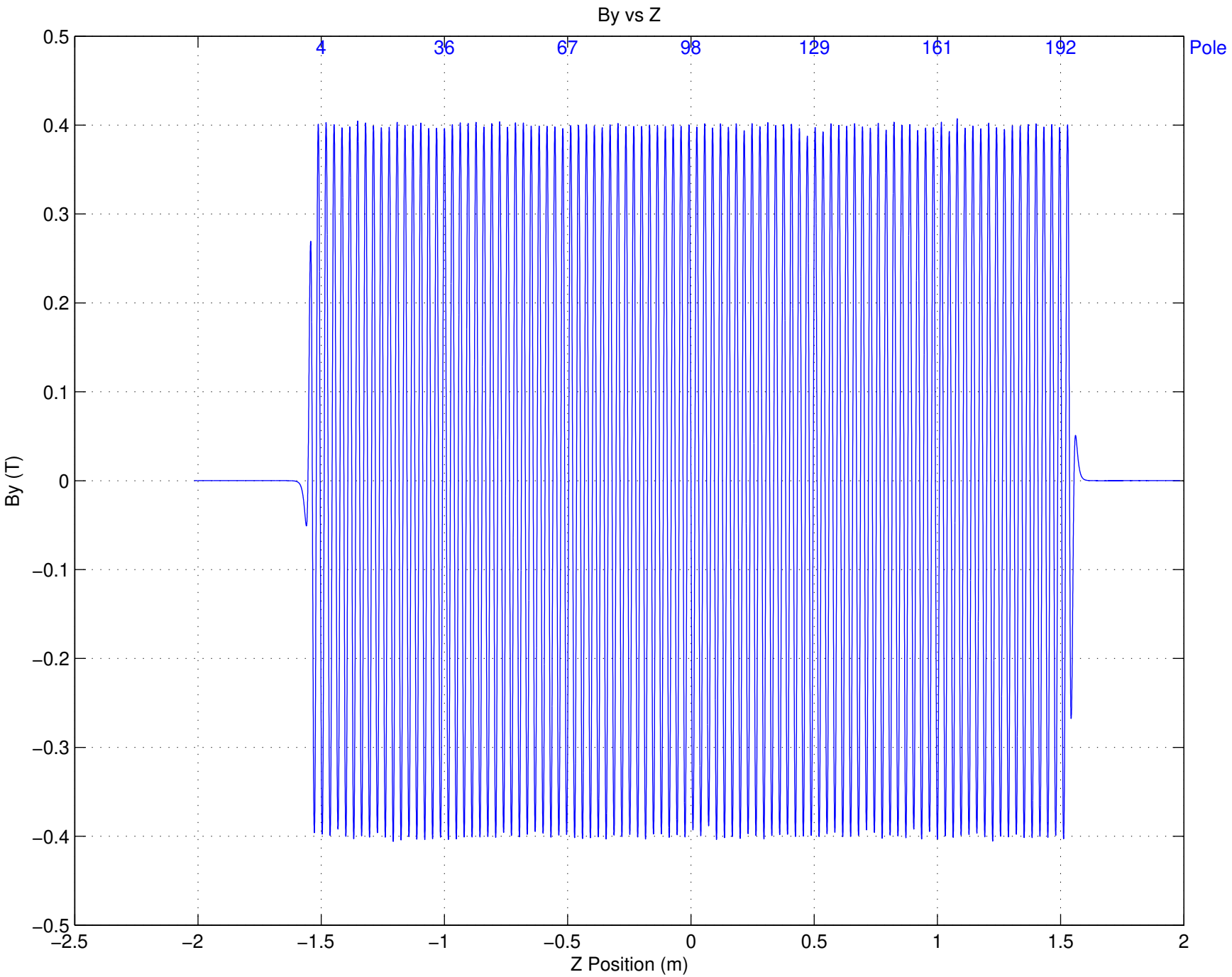
Project: LCLS
Device Type: Undulator
Data Type:
Serial Number: DELTA
DATASET Number: 6
Tuning Stage: Fine Tuning
Run Number: 24
Measurement Type: Z Scans
Operator: YL
Comment: Q3 final check; find first pole position
Session first run: 24
Measurement Device x:
Measurement Device y: $SENTRON_4$41

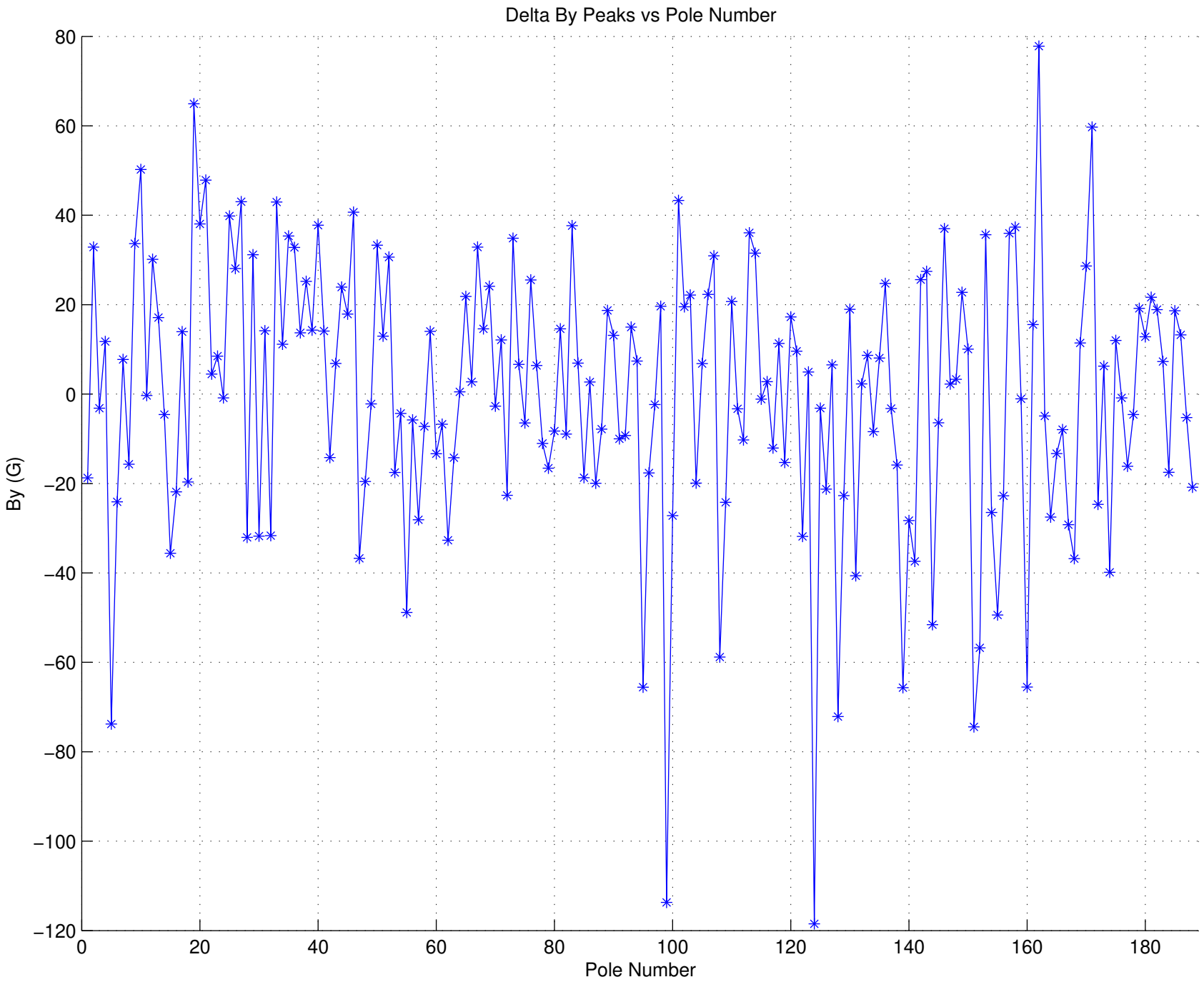
Data File: s:\magdata\LCLS\Undulator\DELTA\DATASET0006\Fine Tuning\Z Scans\Run 024\bscanz.dat

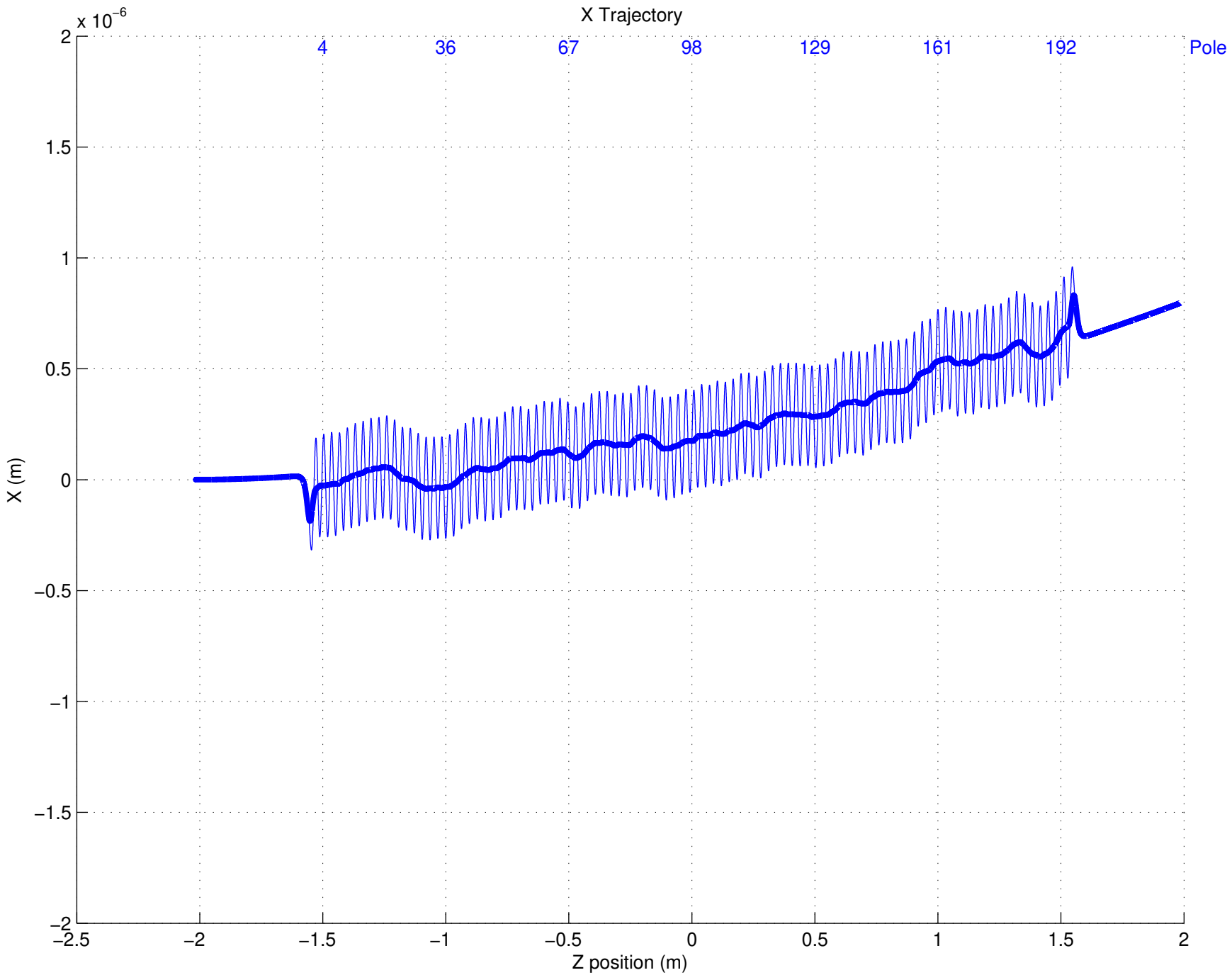
Temperature (C)
DELTA:−−> T1 20.14 −−> T2 20.17 −−> T5 20.03 −−> T3 20.12 −−> Air 20.09 −−> T4 20.16

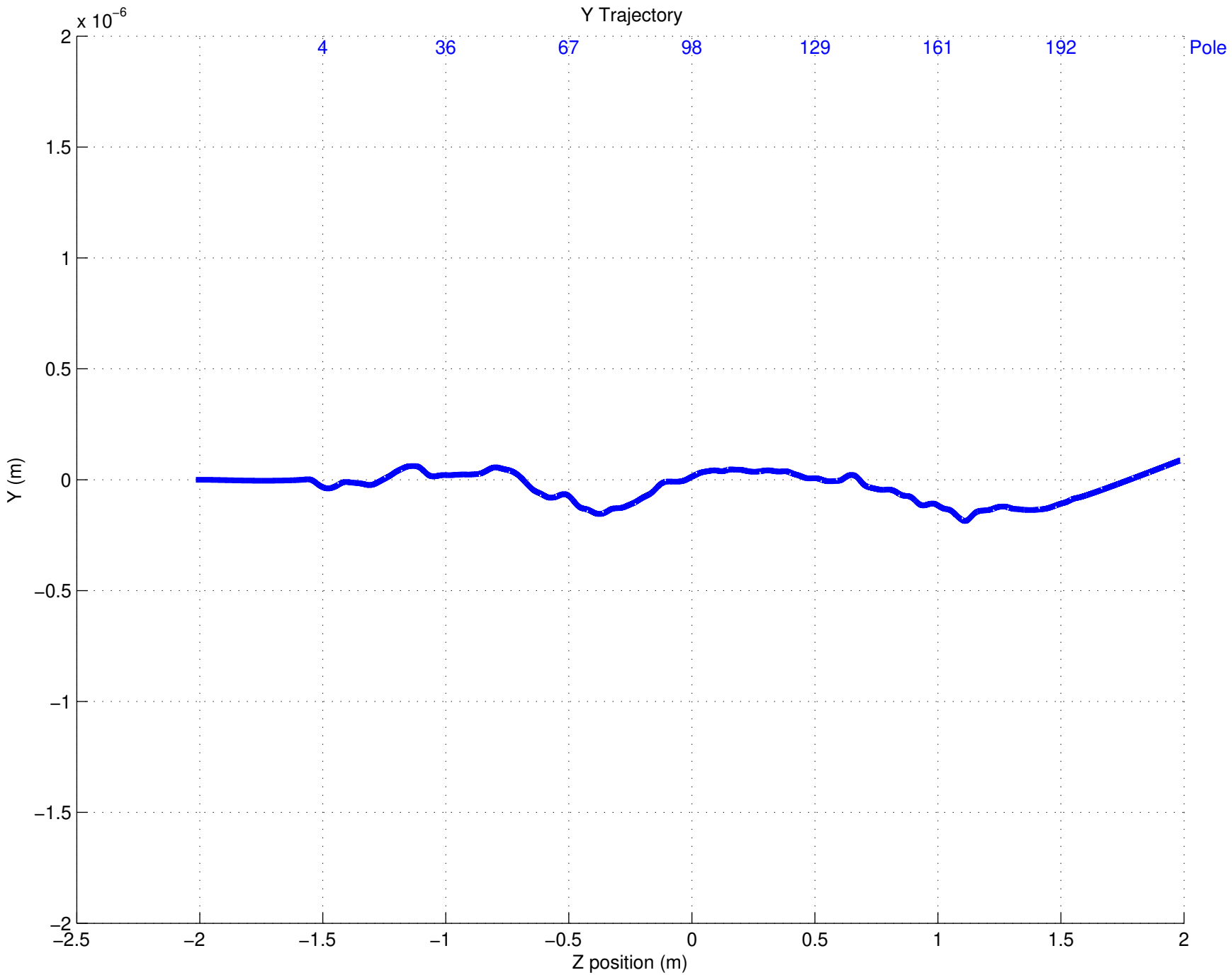
Axes position (m) X:0.021607 Y:0.000206
Initial Hall Probe Zero Measurements:
Vx_0i = 0.001121 V
Vy_0i = −0.002905 V

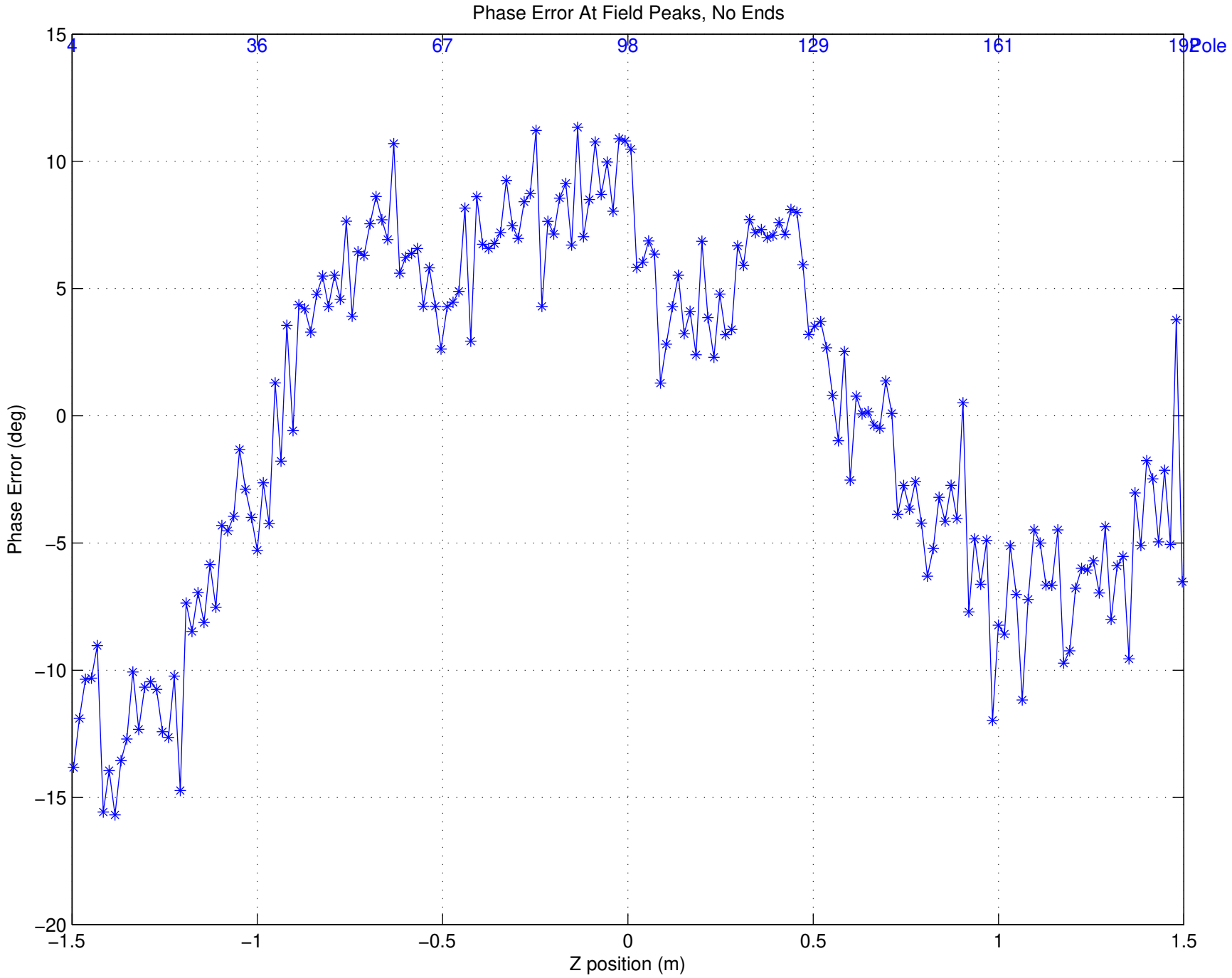

Bx vs Z
x 10^-3
6
4
2
0
−2
−4
−6
−8
4
36
67
98
129
161
192
Pole
Bx (T)
−2.5
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
Z Position (m)


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)

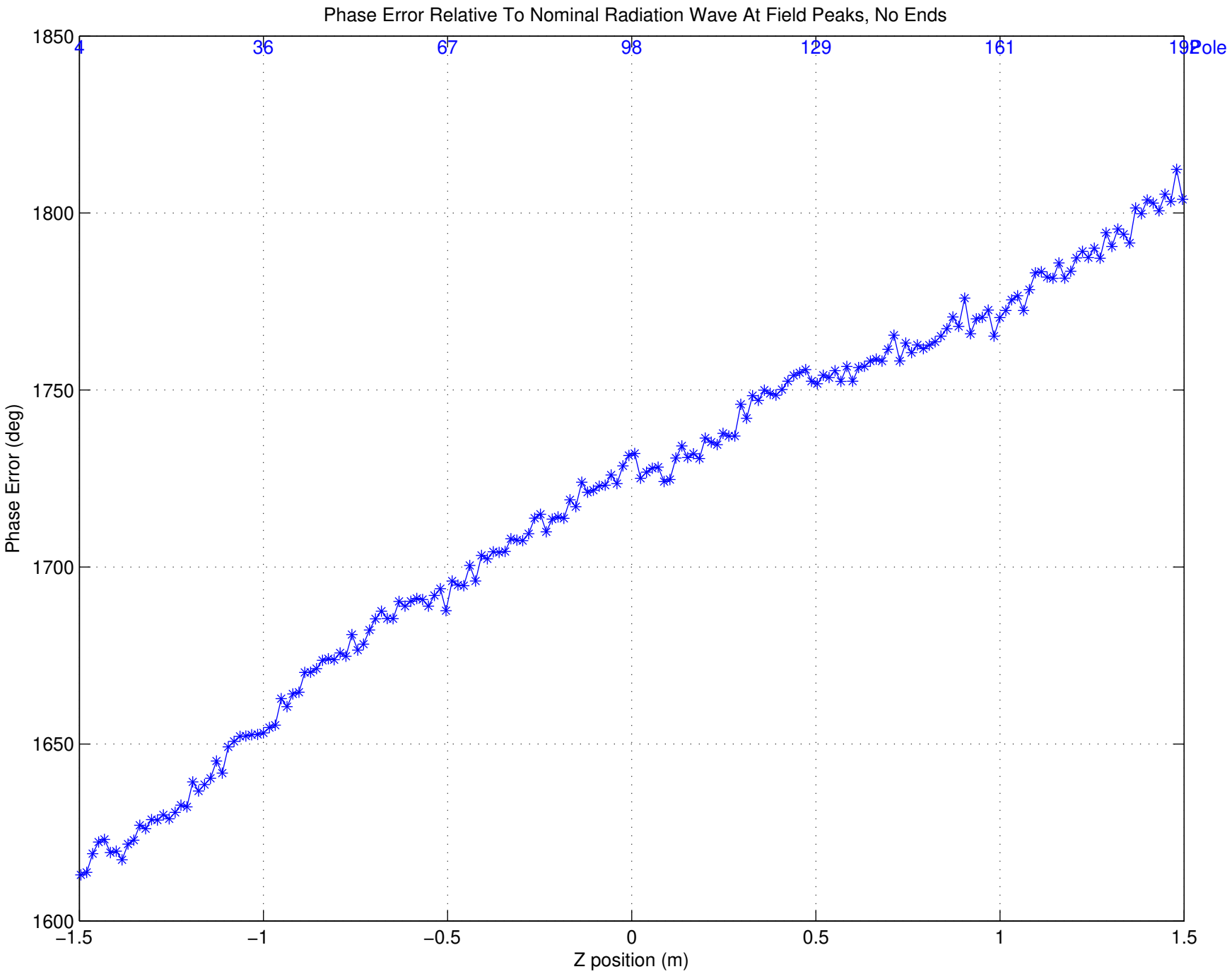

Delta By Peaks vs Pole Number
By (G)
Pole Number
80
60
40
20
0
−20
−40
−60
−80
−100
−120
0
20
40
60
80
100
120
140
160
180


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
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 = 7.034108 deg


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