SLAC Magnetic Measurements

Planar Insertion Device Analysis

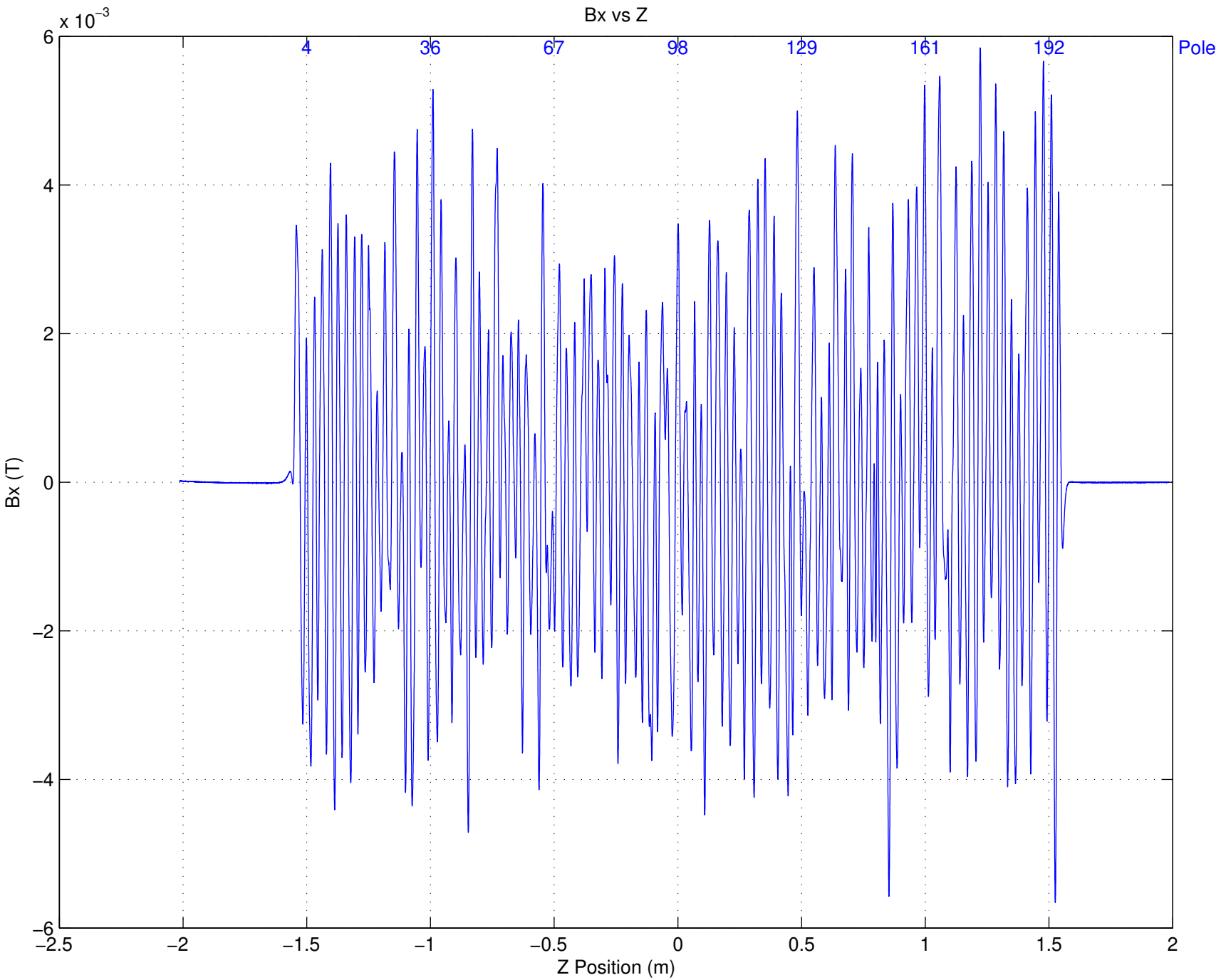
SLAC Magnetic Measurements
Date: 09−18−2014
Time: 09:01:45

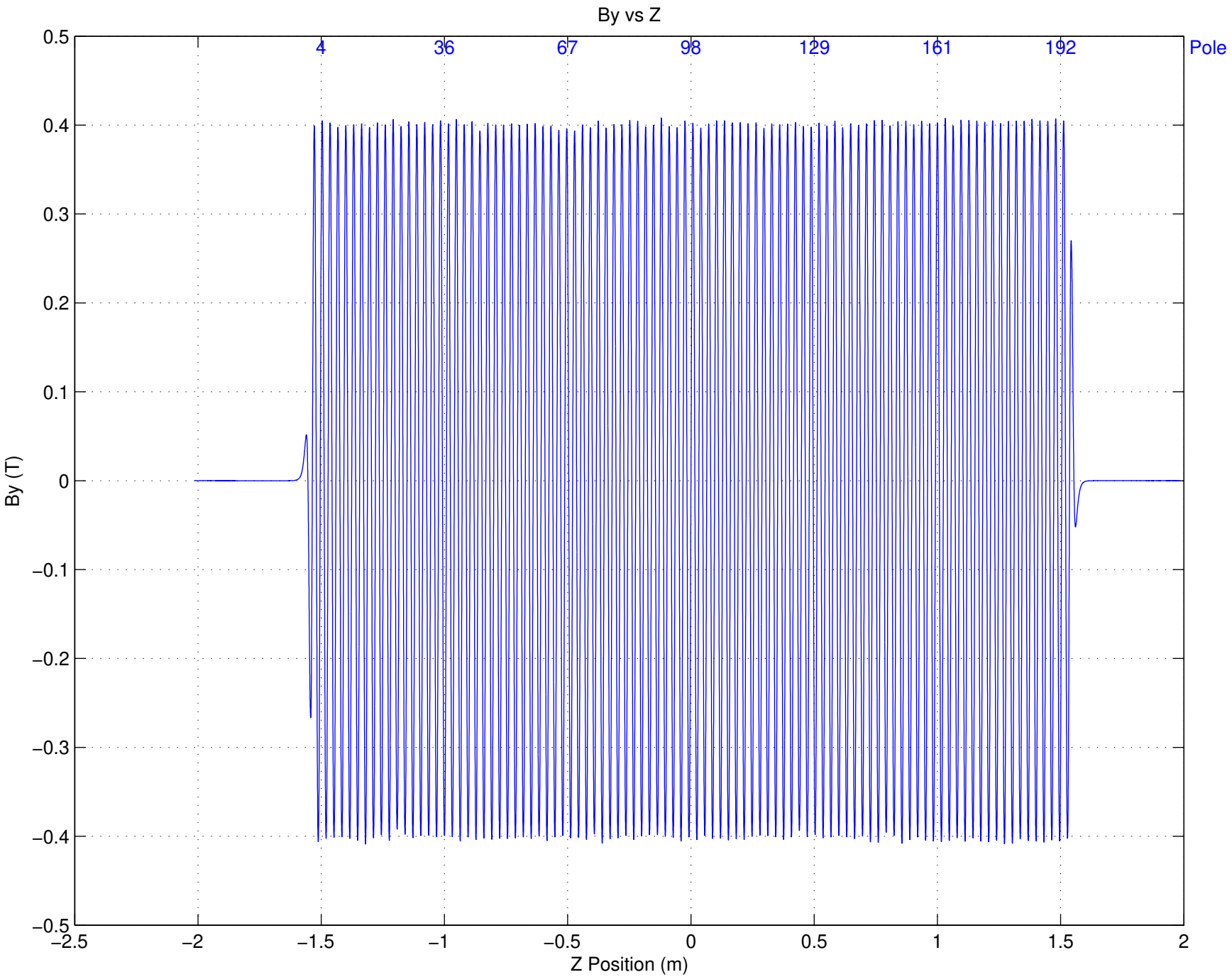
Project: LCLS
Device Type: Undulator
Data Type:
Serial Number: DELTA
DATASET Number: 7
Tuning Stage: Fine Tuning
Run Number: 7
Measurement Type: Z Scans
Operator: YL
Comment: Q4 tuning; #56 +30, #58 −20, #64,90 −2
Session first run: 3
Measurement Device x:
Measurement Device y: $SENTRON_4$41

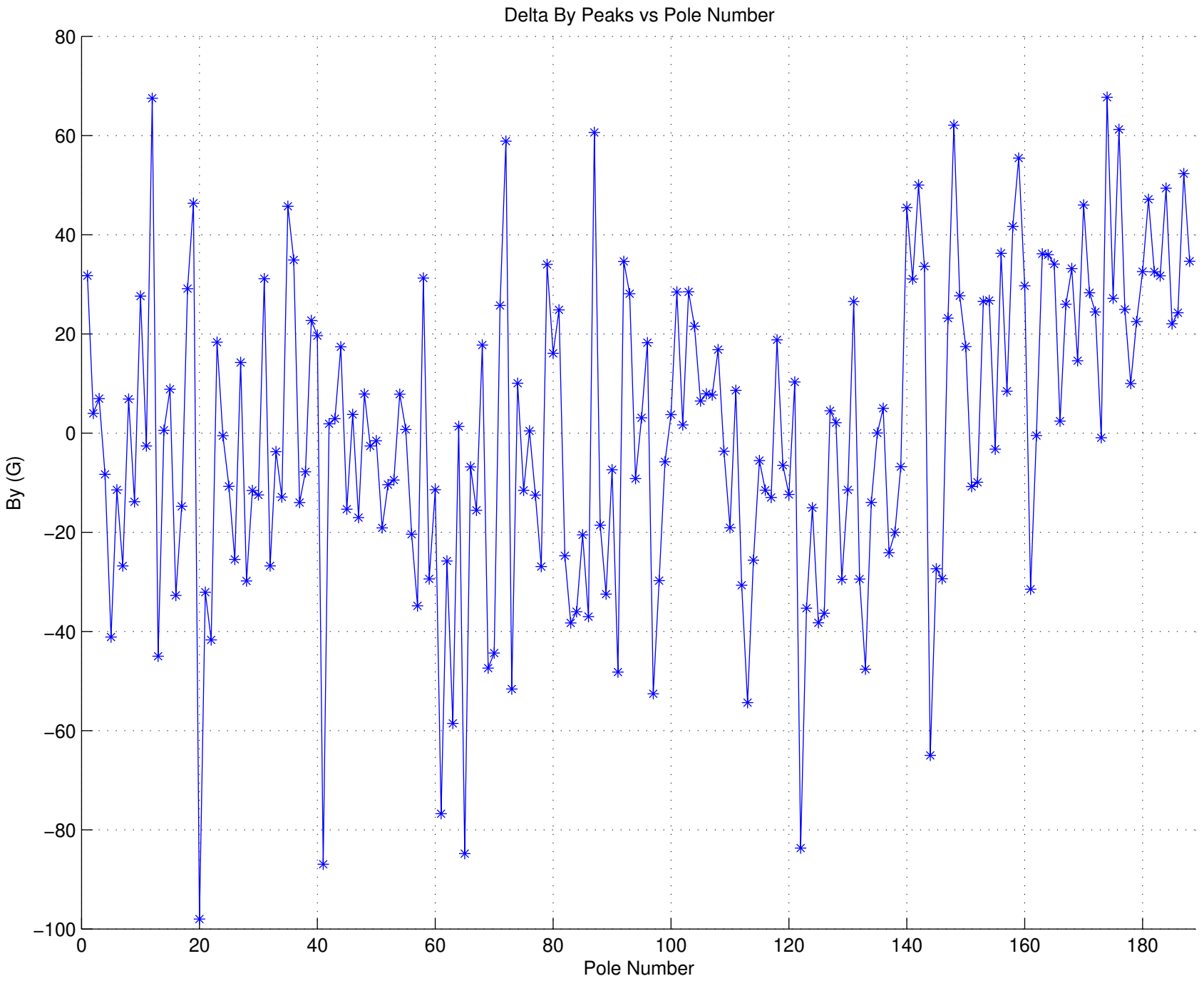
Data File: s:\magdata\LCLS\Undulator\DELTA\DATASET0007\Fine Tuning\Z Scans\Run 007\bscanz.dat

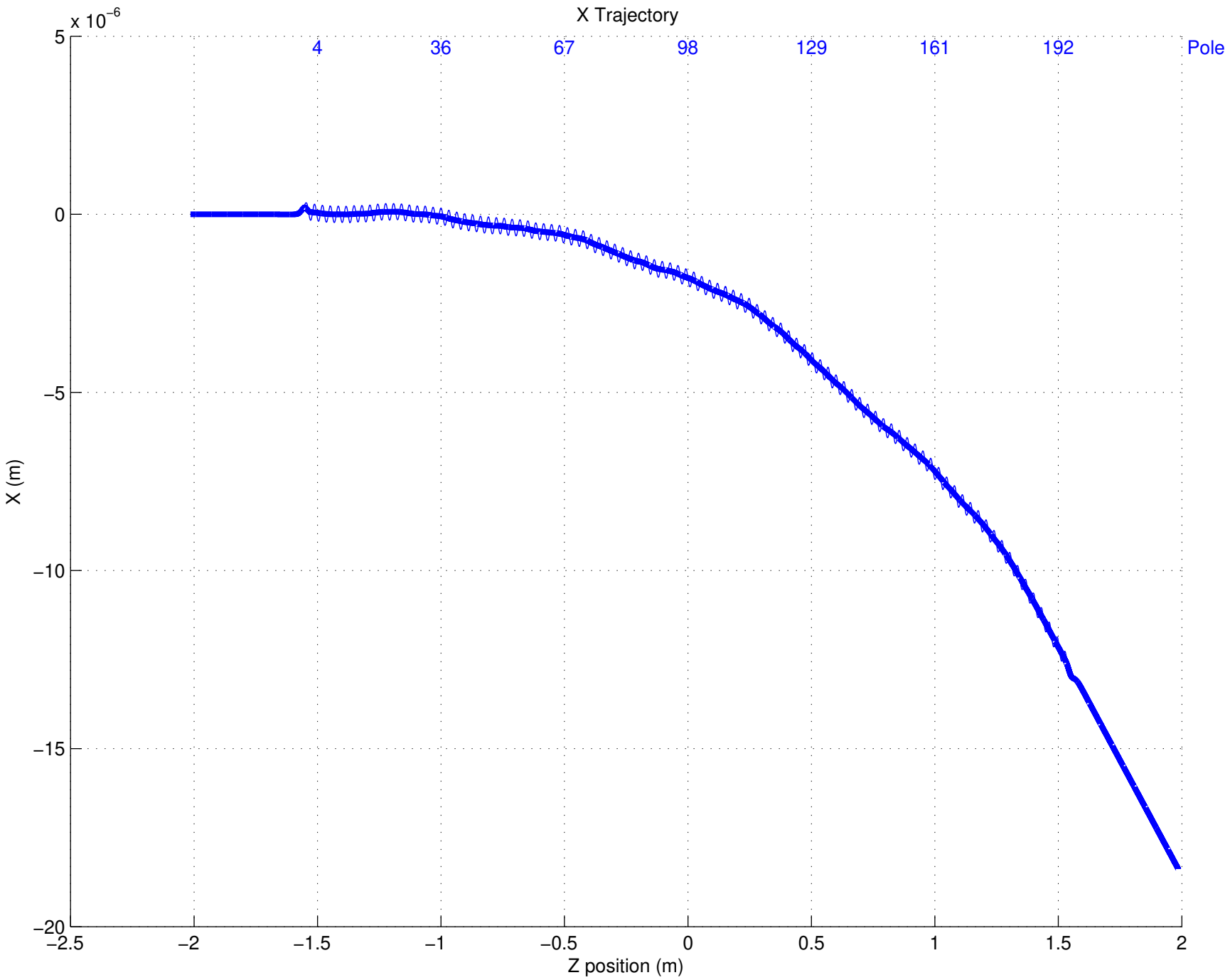
Temperature (C)
DELTA:−−> T1 20.12 −−> T2 20.12 −−> T5 20.02 −−> T3 20.09 −−> Air 20.05 −−> T4 20.10

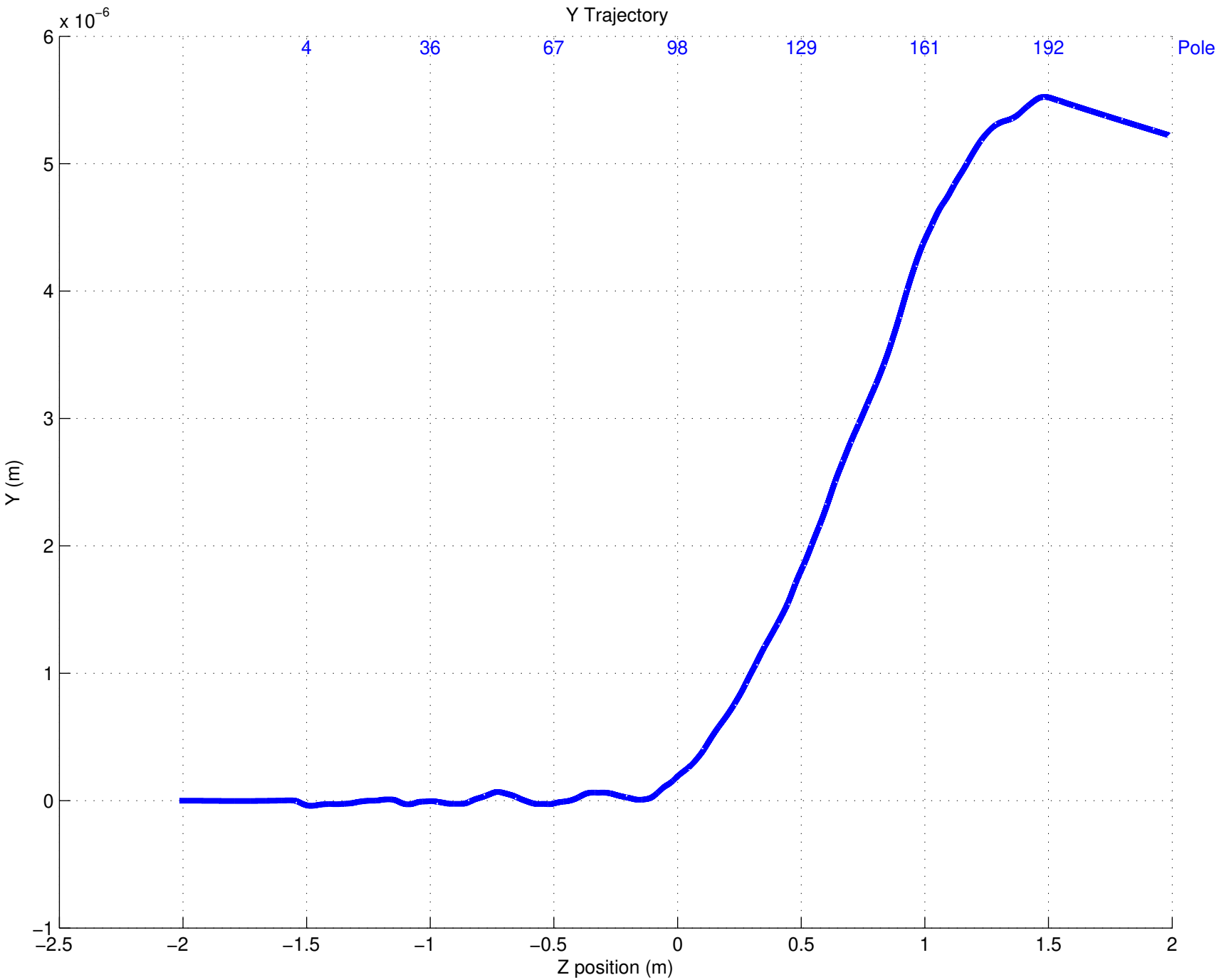
Axes position (m) X:0.021636 Y:0.000201
Initial Hall Probe Zero Measurements:
Vx_0i = 0.001155 V
Vy_0i = −0.002900 V

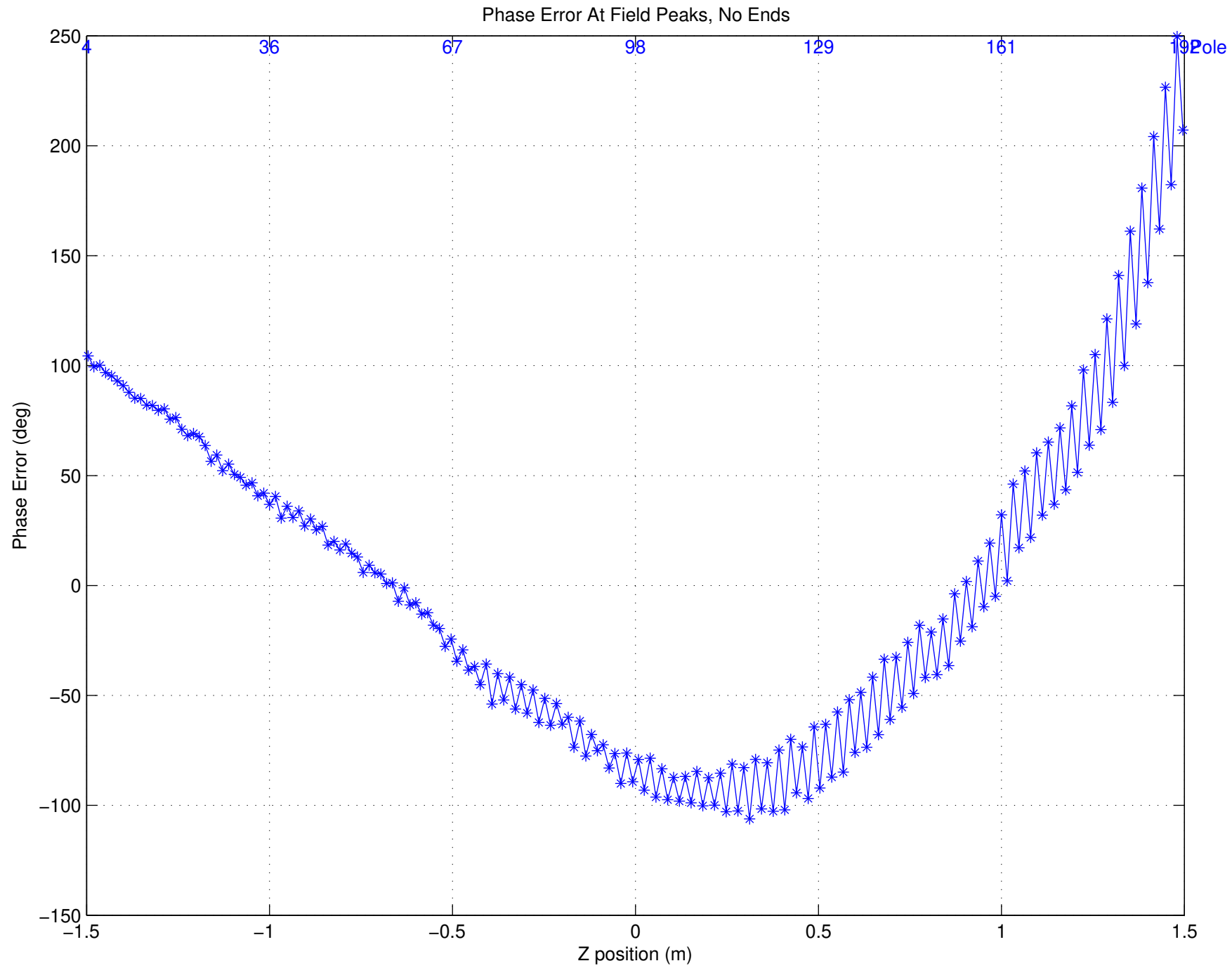

Bx vs Z
x 10^-3
6
4
2
0
−2
−4
−6
Bx (T)
4
36
67
98
129
161
192
Pole
−2.5
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
Z Position (m)


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)

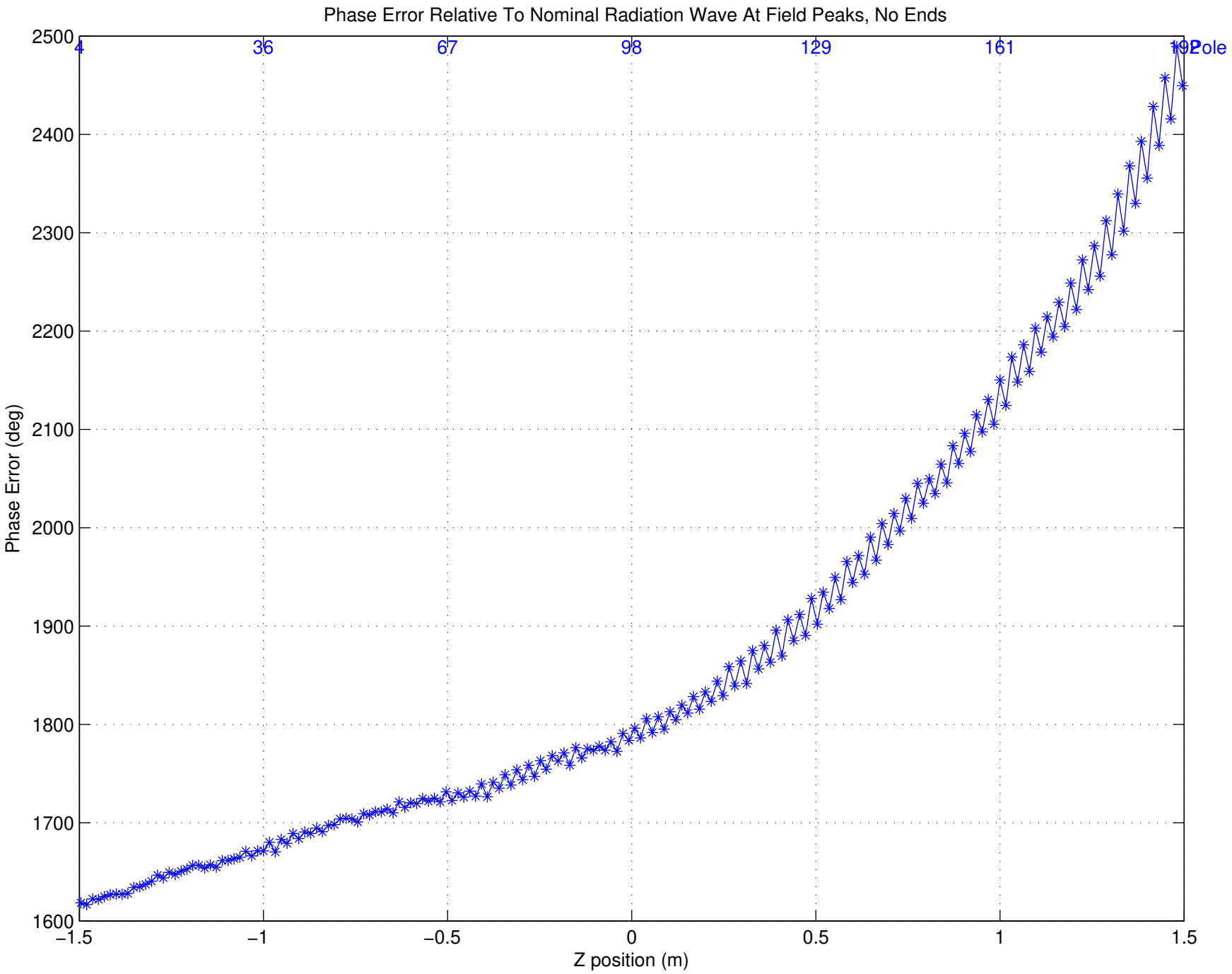

Delta By Peaks vs Pole Number
By (G)
Pole Number
80
60
40
20
0
−20
−40
−60
−80
−100
0
20
40
60
80
100
120
140
160
180


X Trajectory
x 10^-6
5
0
−5
−10
−15
−20
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
6
5
4
3
2
1
0
−1
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 = 76.415255 deg


Phase Error Relative To Nominal Radiation Wave At Field Peaks, No Ends
4
36
67
98
129
161
192
Pole
2500
2400
2300
2200
2100
2000
1900
1800
1700
1600
Phase Error (deg)
−1.5
−1
−0.5
0
0.5
1
1.5
Z position (m)