SLAC Magnetic Measurements

Planar Insertion Device Analysis

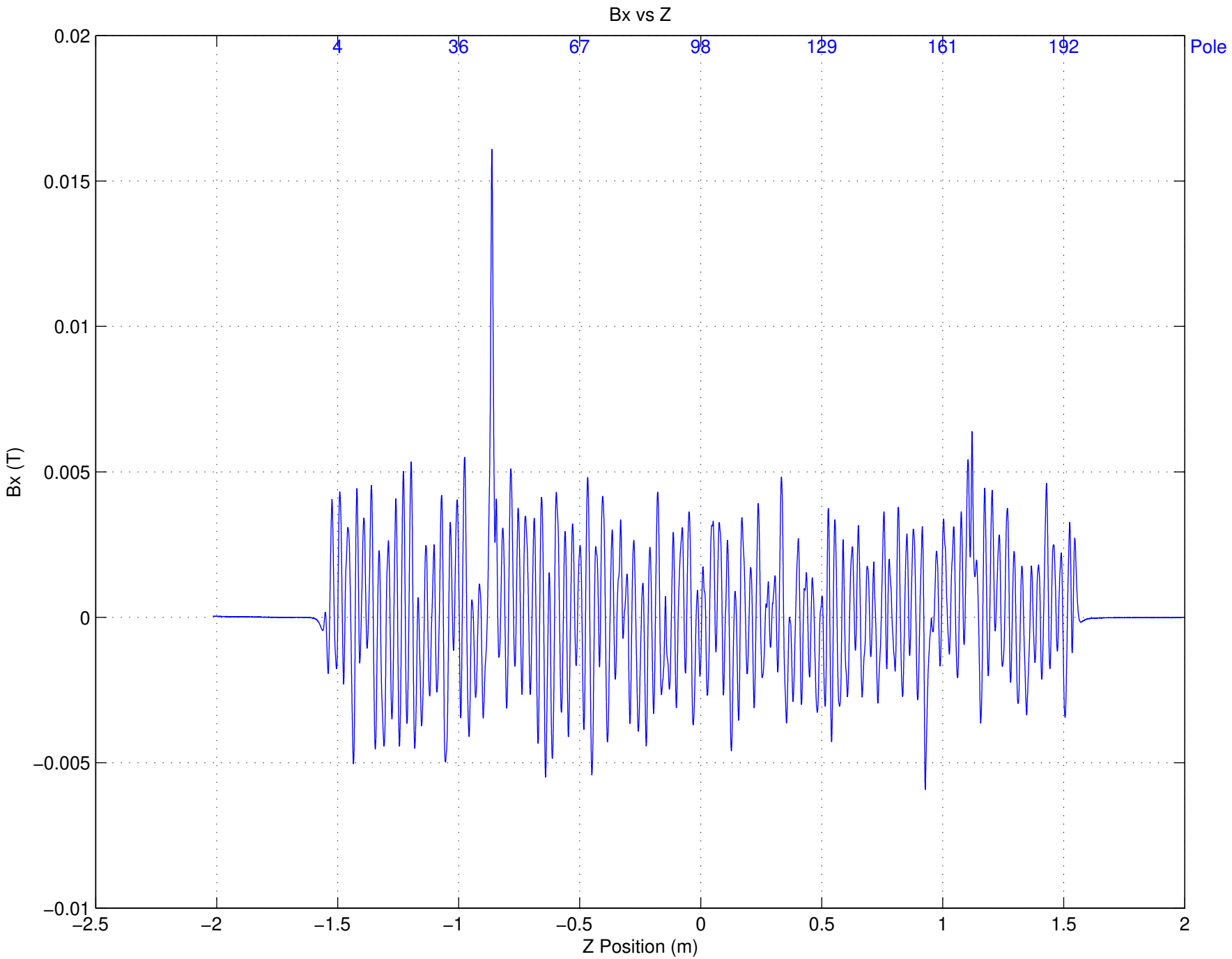
SLAC Magnetic Measurements
Date: 08–25–2014
Time: 09:26:02

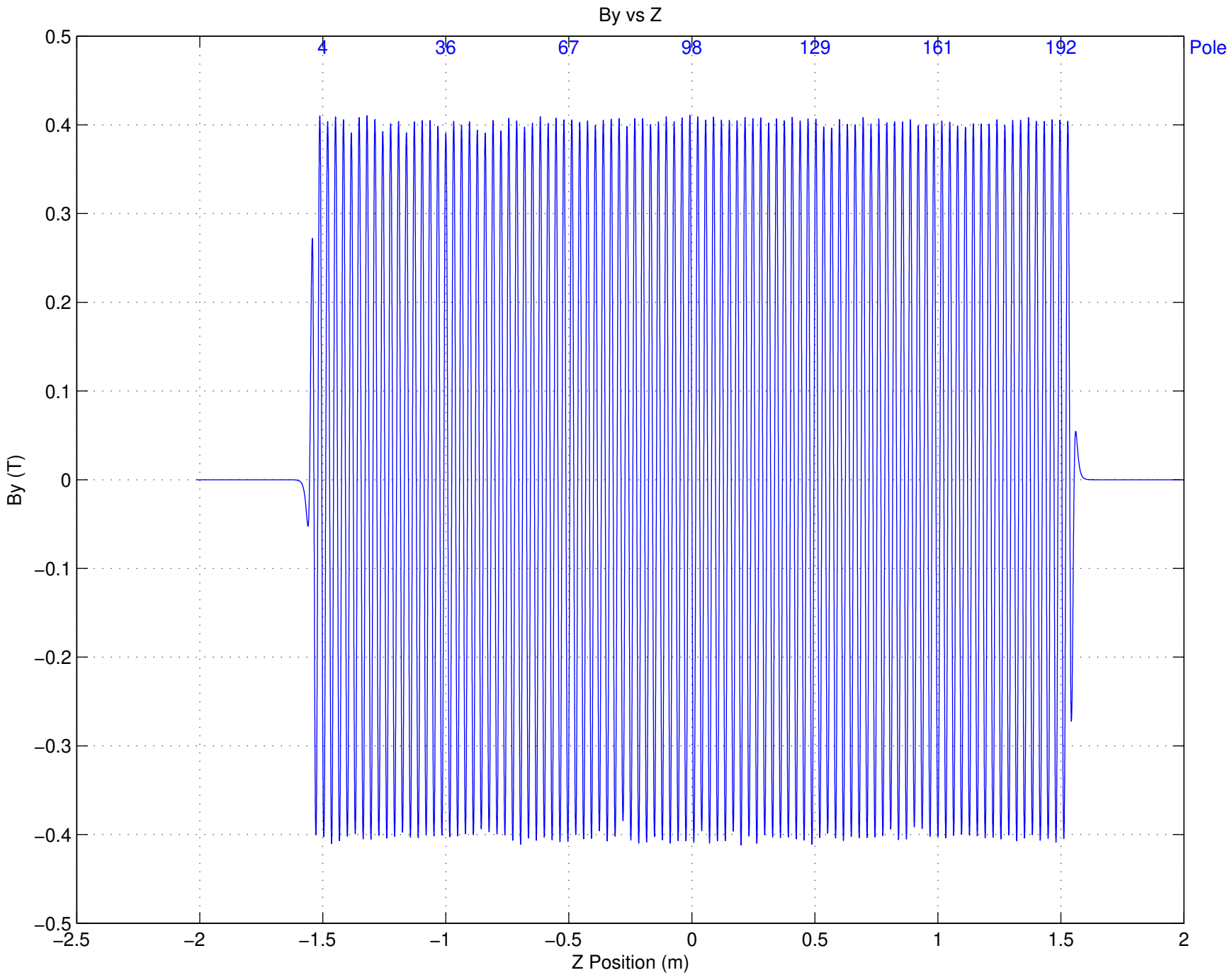
Project: LCLS
Device Type: Undulator
Data Type:
Serial Number: DELTA
DATASET Number: 4
Tuning Stage: Fine Tuning
Run Number: 8
Measurement Type: Z Scans
Operator: YL
Comment: magnet #310 moved –6, #298 –4, #266 –3
Session first run: 8
Measurement Device x:
Measurement Device y: $SENTRON_4$41

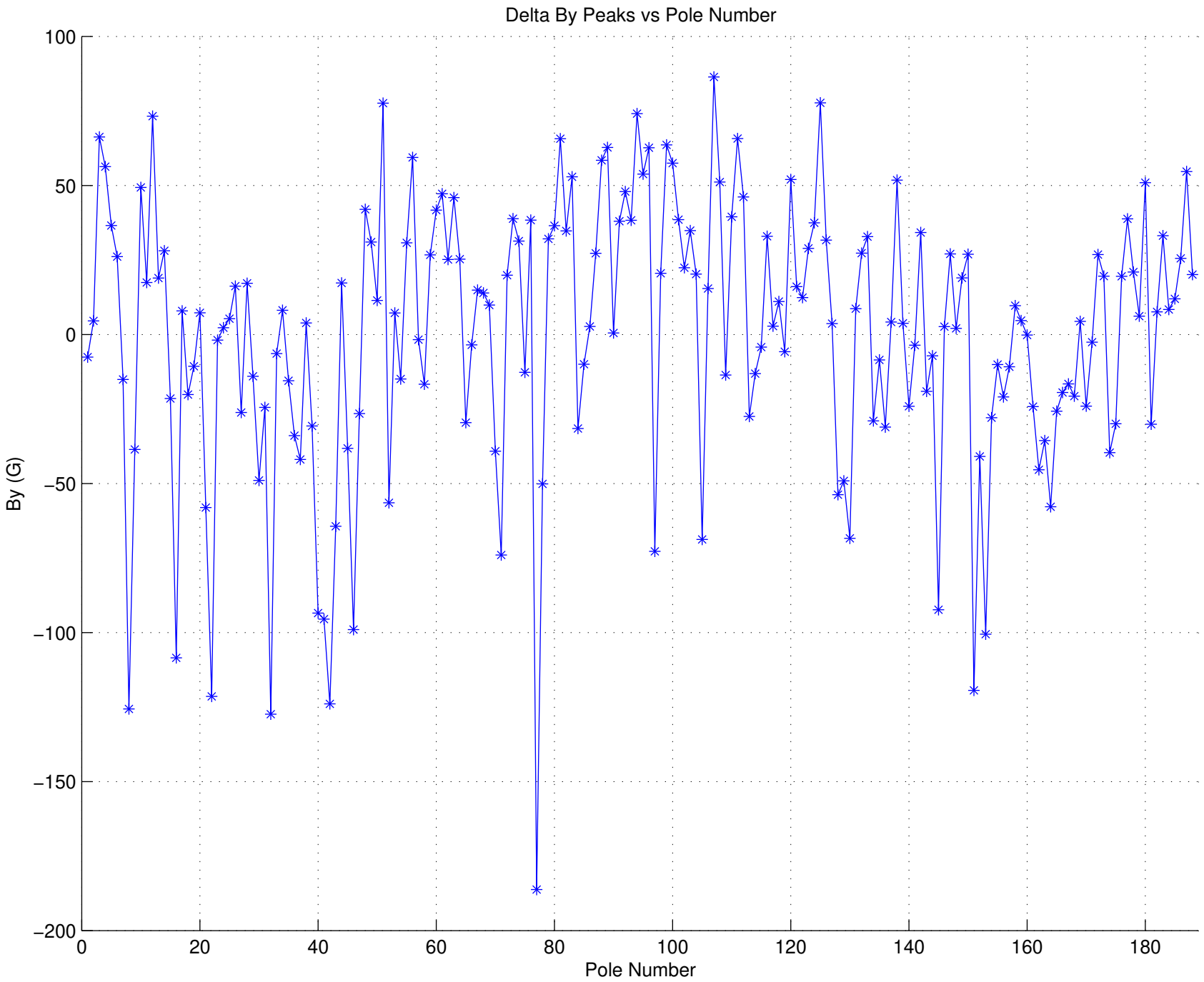
Data File: s:\magdata\LCLS\Undulator\DELTA\DATASET0004\Fine Tuning\Z Scans\Run 008\bscanz.dat

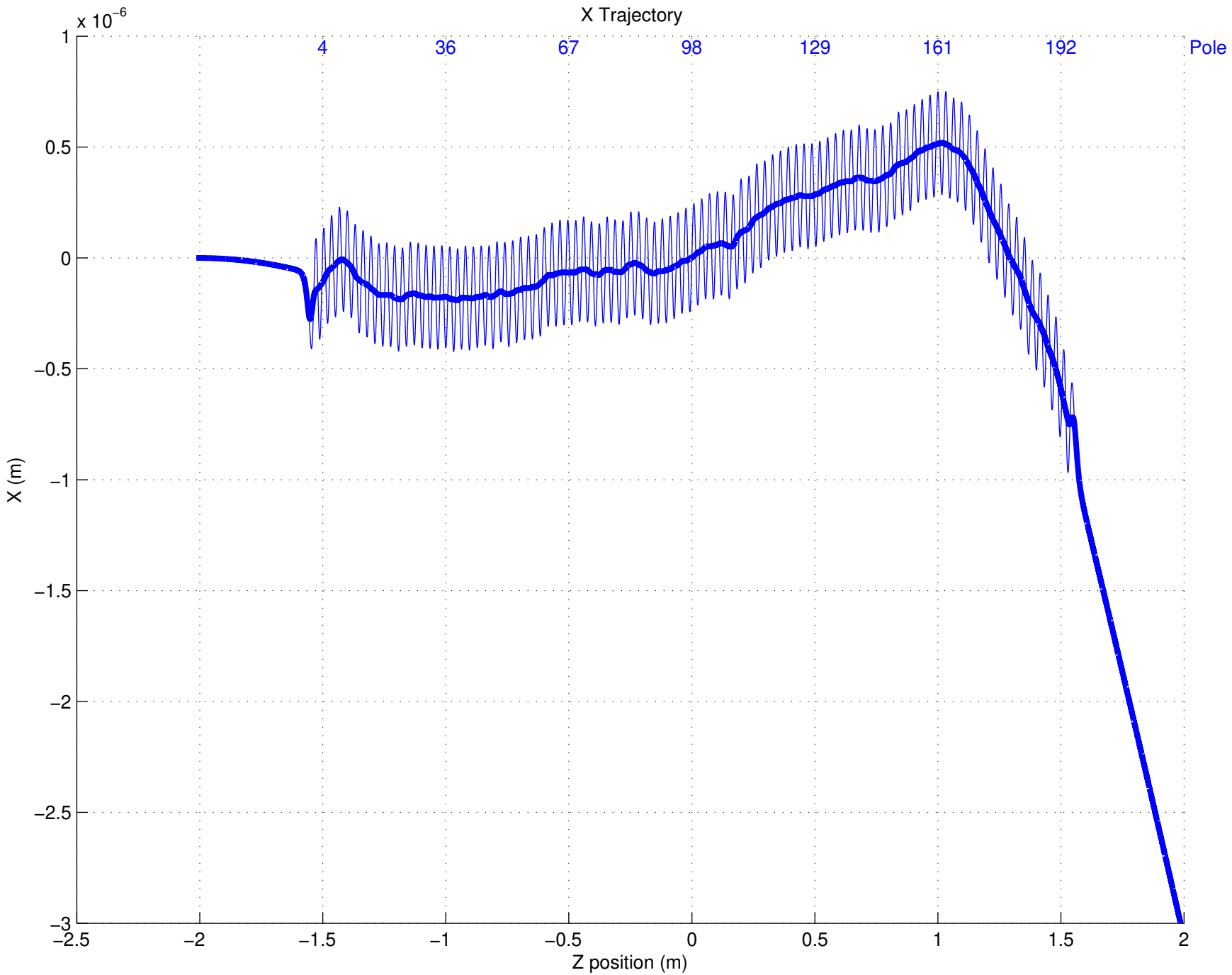
Temperature (C)
DELTA:––> T1 20.07 ––> T2 20.08 ––> T5 20.02 ––> T3 20.05 ––> Air 20.05 ––> T4 20.08

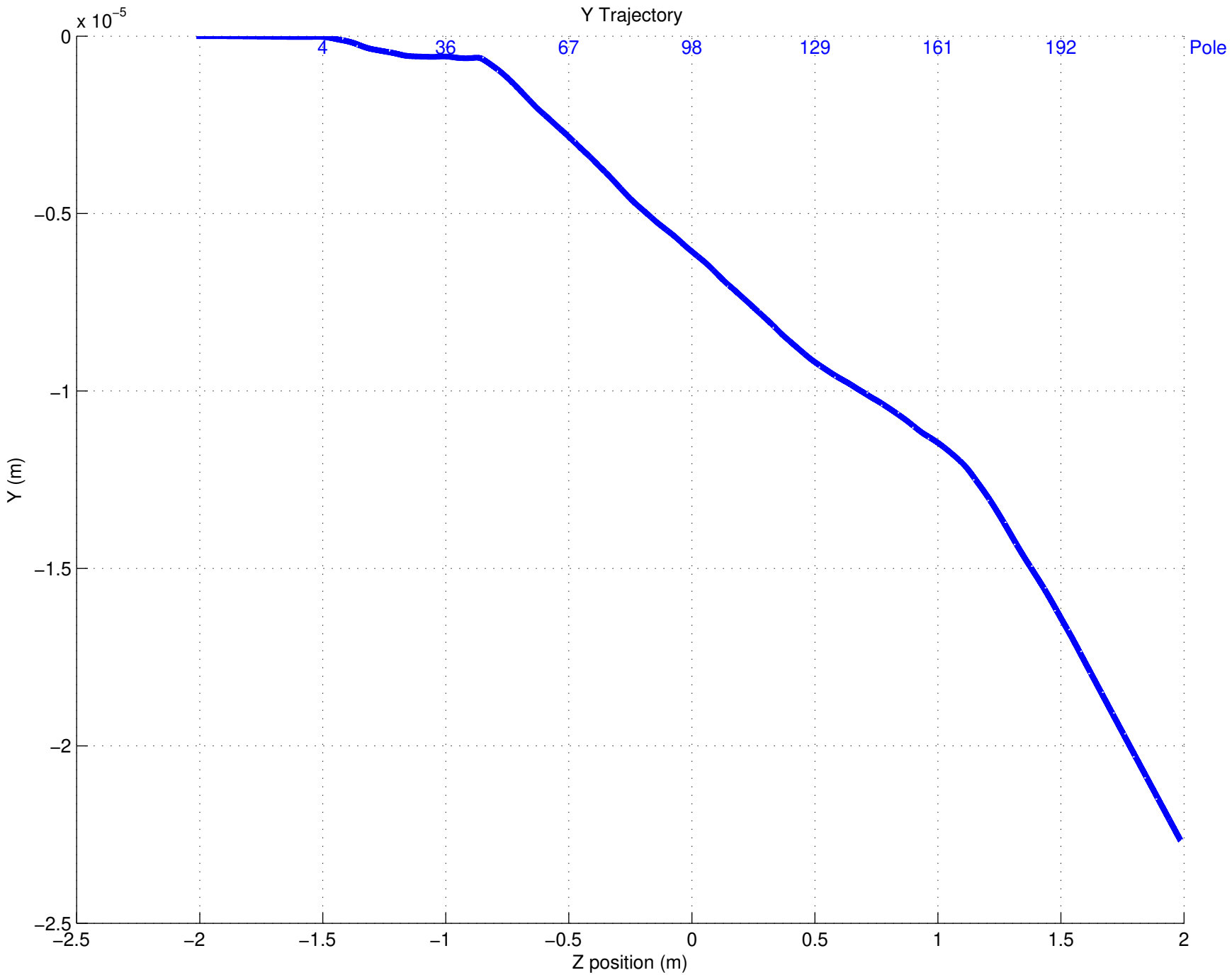
Axes position (m) X:0.021644 Y:0.000194
Initial Hall Probe Zero Measurements:
$Vx_0i$ = 0.001073 V
$Vy_0i$ = –0.002850 V

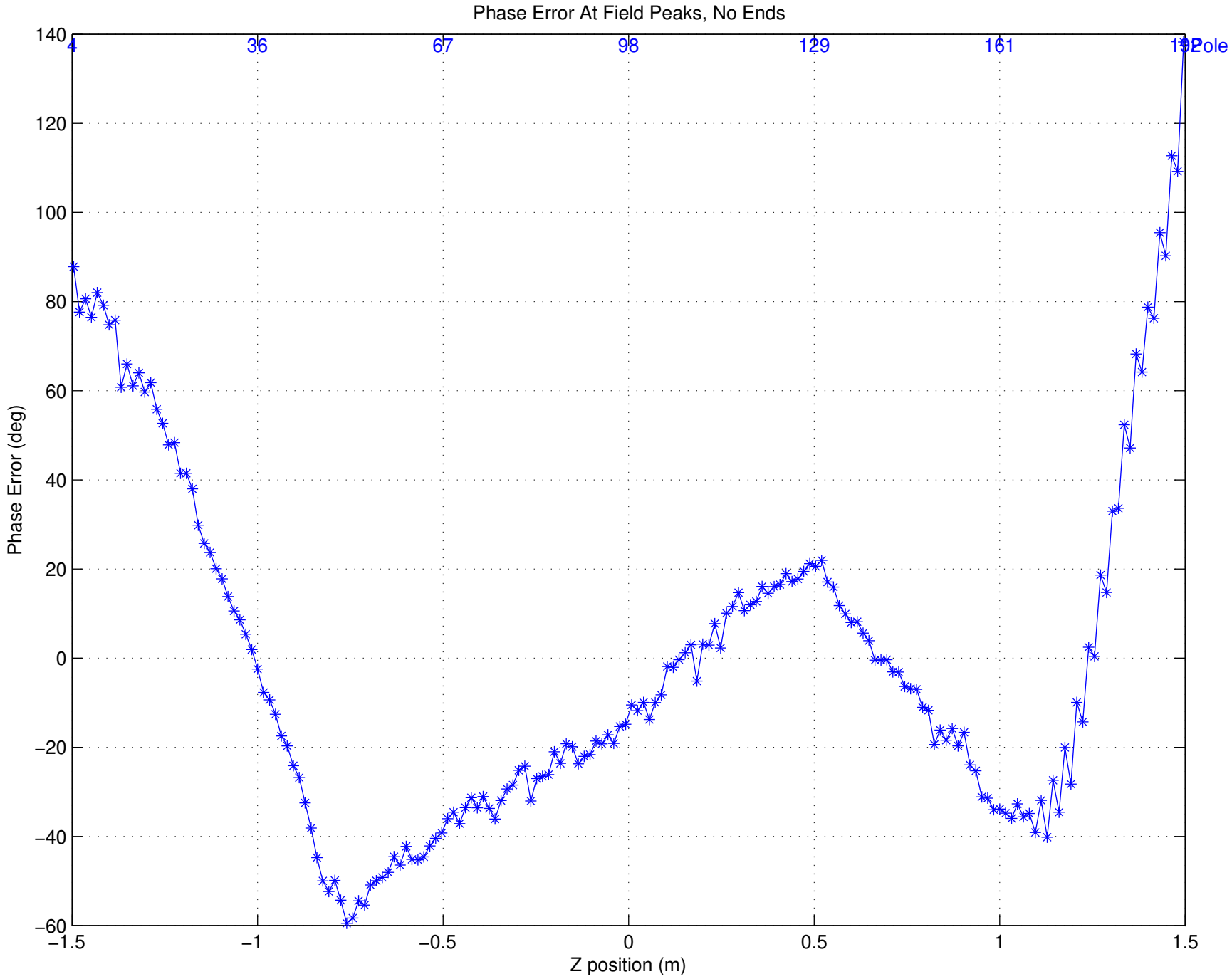

Bx vs Z
4
36
67
98
129
161
192
Pole
0.02
0.015
0.01
0.005
0
−0.005
−0.01
Bx (T)
−2.5
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
Z Position (m)


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)

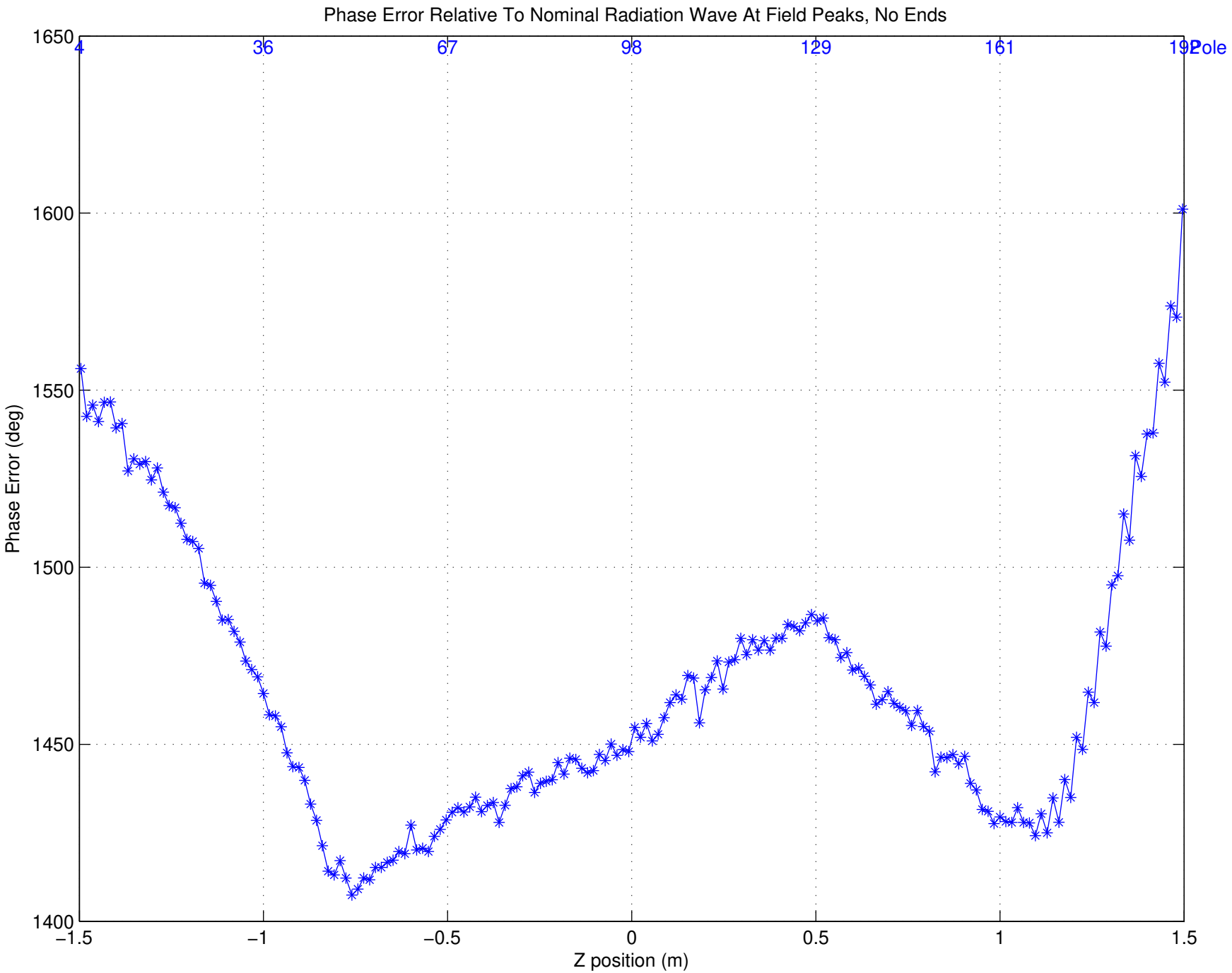

Delta By Peaks vs Pole Number
By (G)
Pole Number
100
50
0
−50
−100
−150
−200
0
20
40
60
80
100
120
140
160
180


X Trajectory
x 10^-6
4
36
67
98
129
161
192
Pole
1
0.5
0
−0.5
−1
−1.5
−2
−2.5
−3
X (m)
−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 = 39.353052 deg


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