SLAC Magnetic Measurements

Planar Insertion Device Analysis

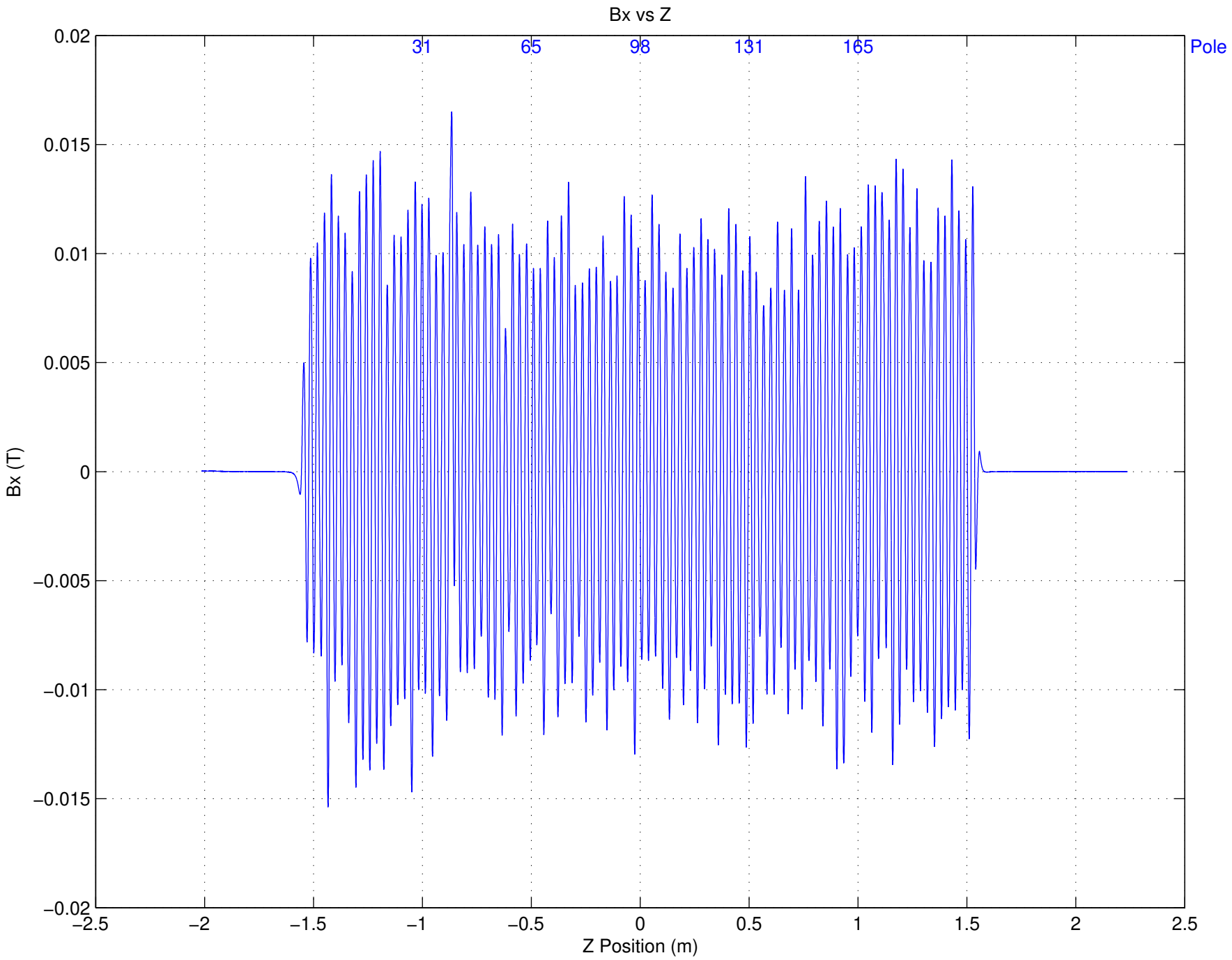
SLAC Magnetic Measurements
Date: 08–20–2014
Time: 15:06:10

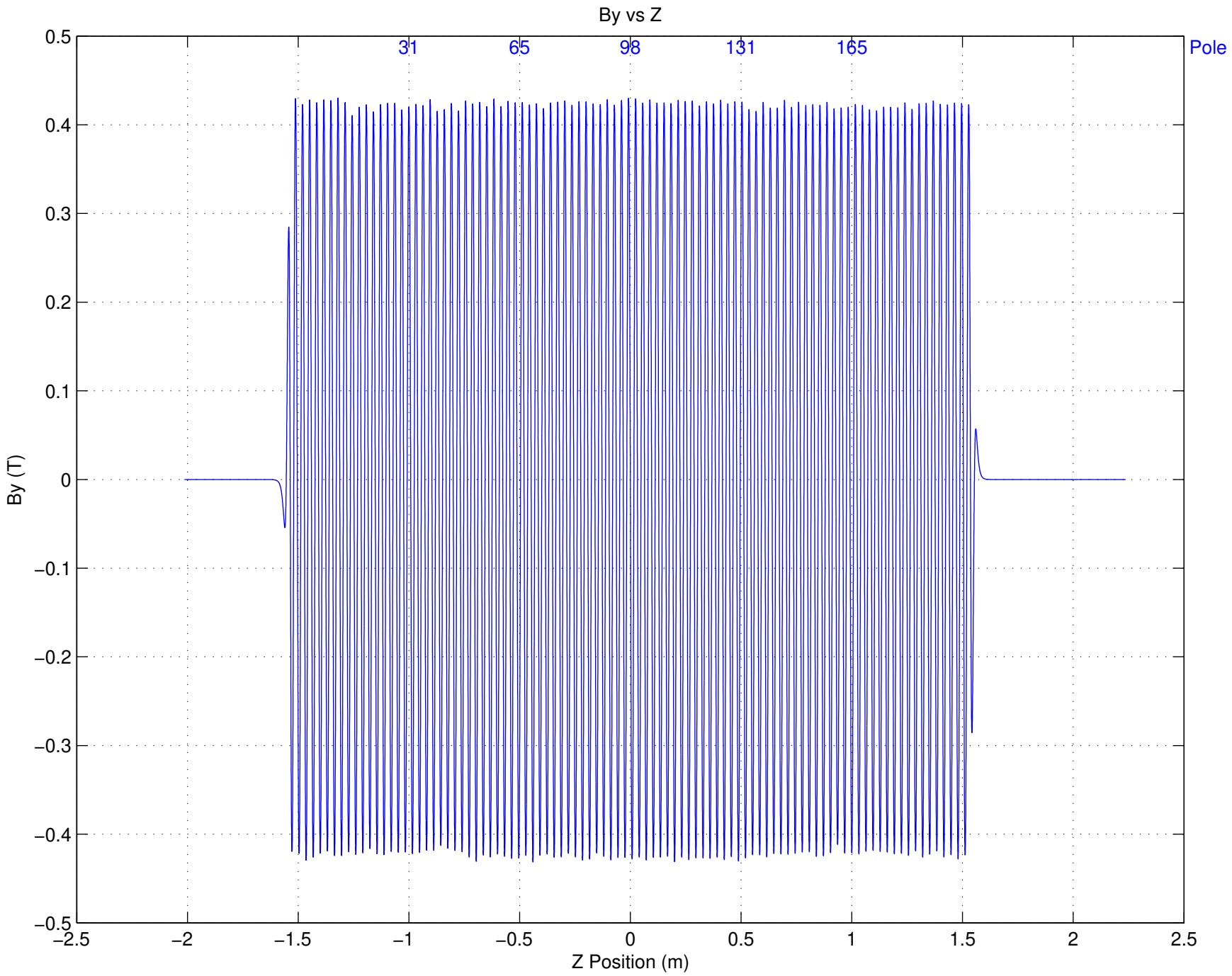
Project: LCLS
Device Type: Undulator
Data Type:
Serial Number: DELTA
DATASET Number: 3
Tuning Stage: Fine Tuning
Run Number: 25
Measurement Type: Z Scans
Operator: YL
Comment: magnet #40 moved –0.006"
Session first run: 24
Measurement Device x:
Measurement Device y: $SENTRON_4$41

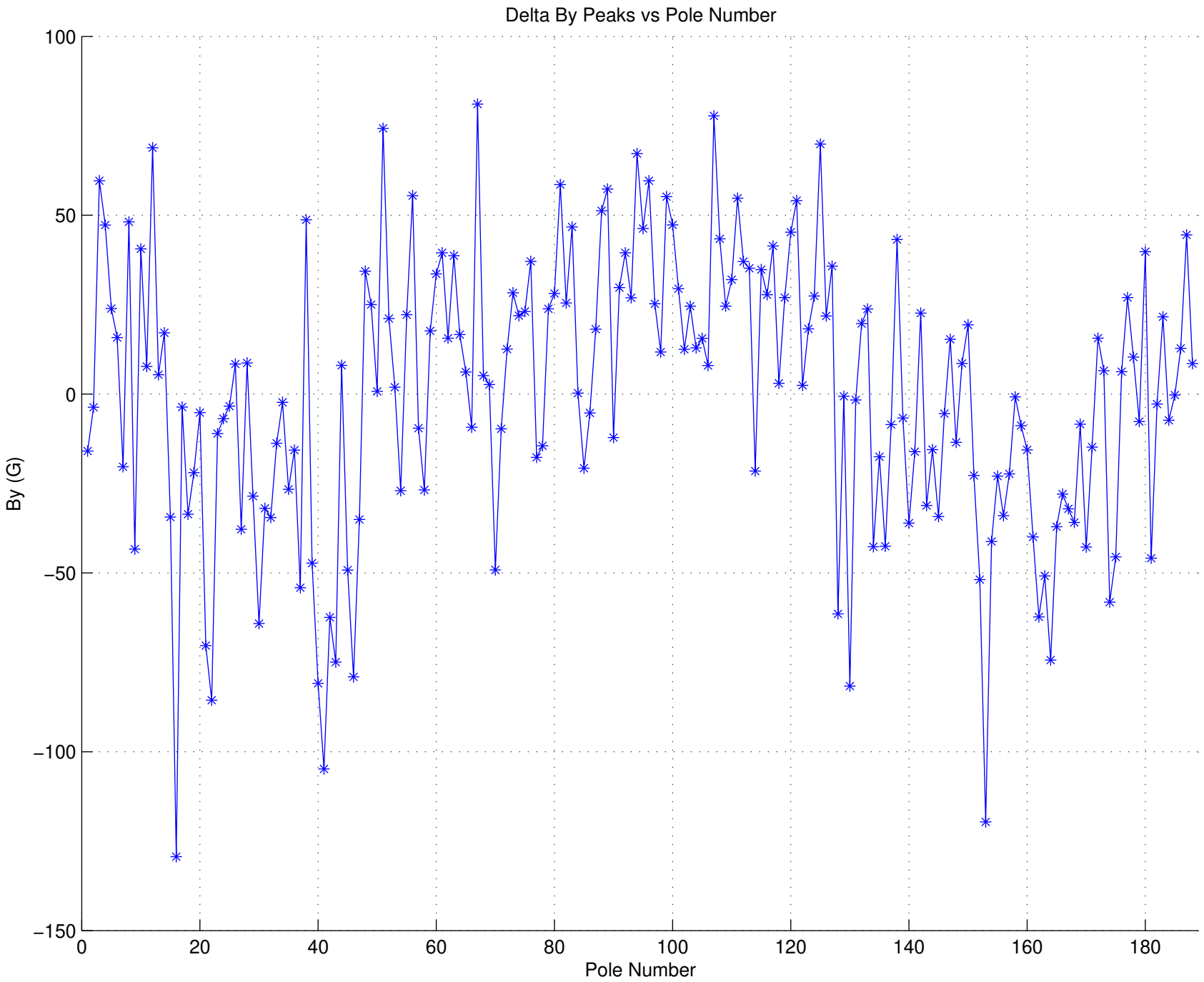
Data File: s:\magdata\LCLS\Undulator\DELTA\DATASET0003\Fine Tuning\Z Scans\Run 025\bscanz.dat

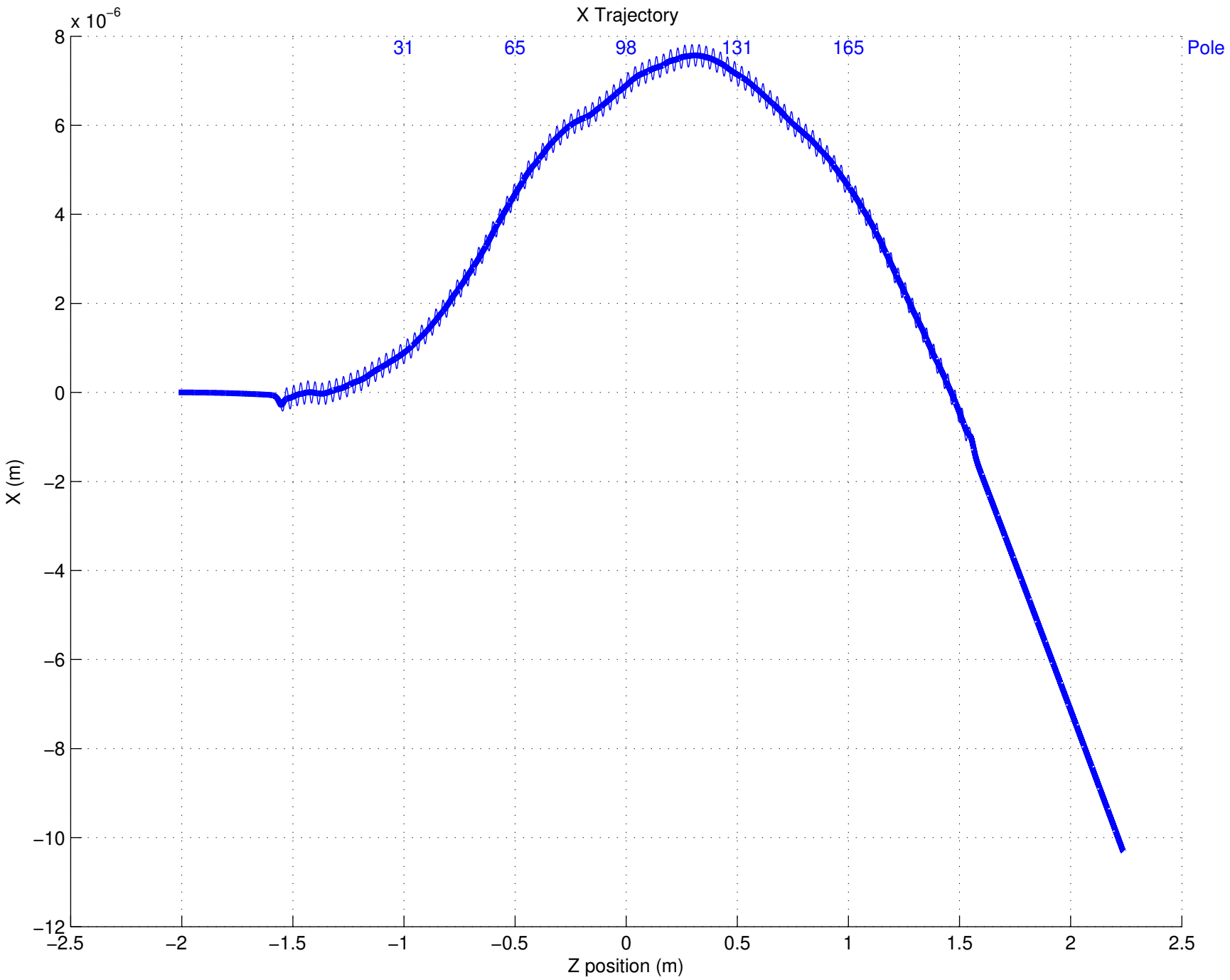
Temperature (C)
DELTA:––> T1 20.06 ––> T2 20.07 ––> T5 19.93 ––> T3 20.03 ––> Air 19.98 ––> T4 20.05

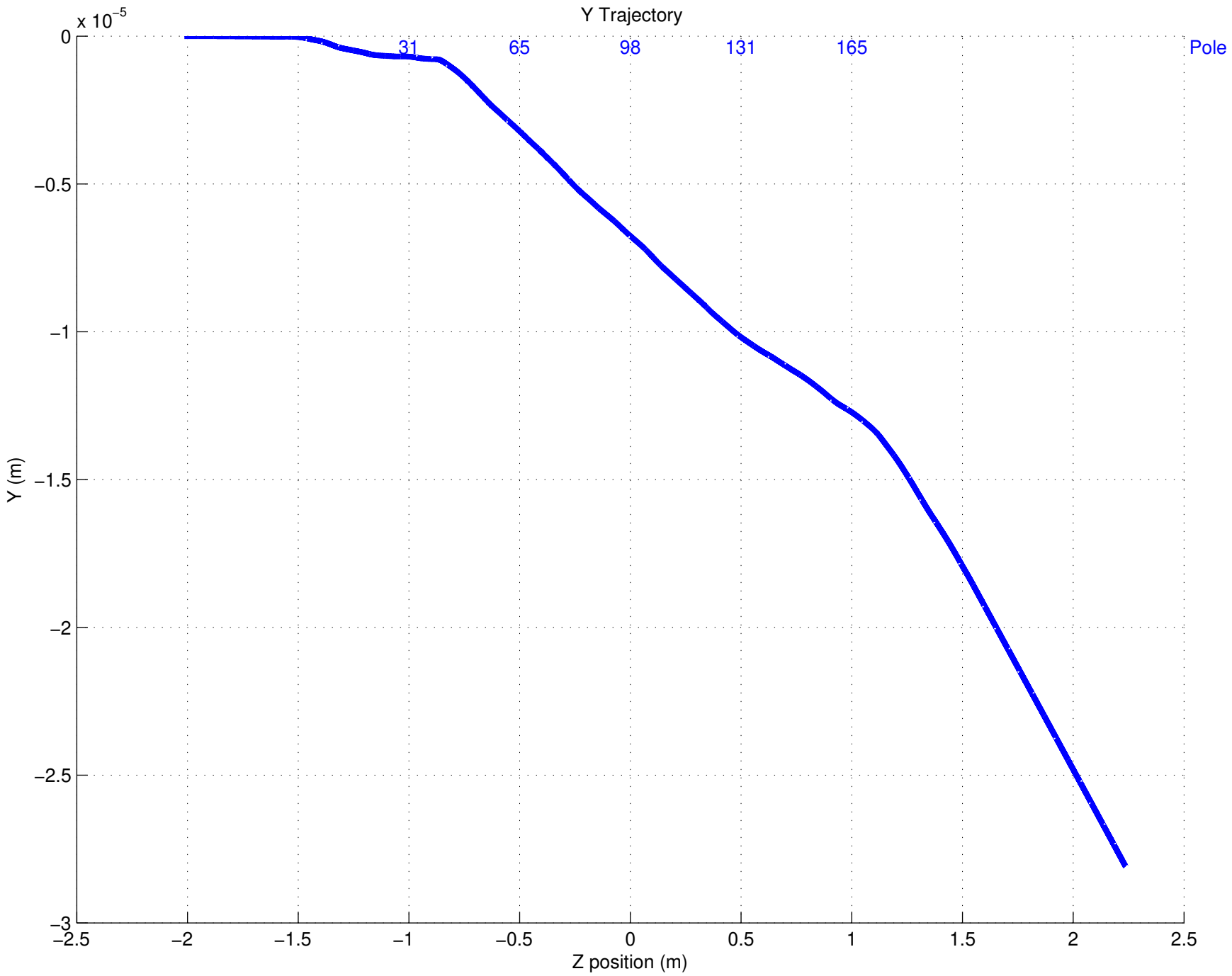
Axes position (m) X:0.041386 Y:0.000222
Initial Hall Probe Zero Measurements:
Vx_0i = 0.001196 V
Vy_0i = –0.002967 V

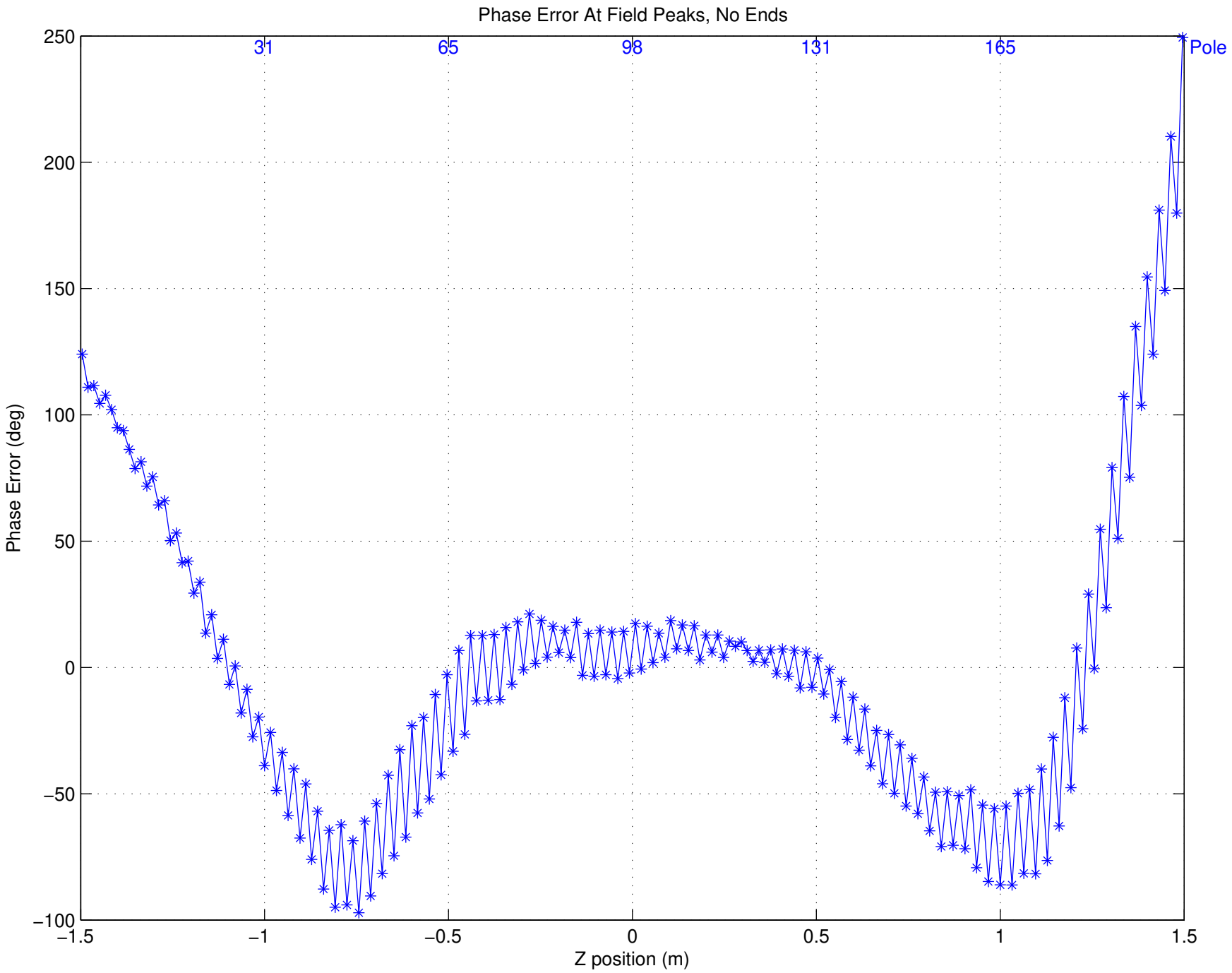

Bx vs Z
31
65
98
131
165
Pole
0.02
0.015
0.01
0.005
0
−0.005
−0.01
−0.015
−0.02
Bx (T)
−2.5
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
2.5
Z Position (m)


By vs Z
31
65
98
131
165
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
2.5
Z Position (m)

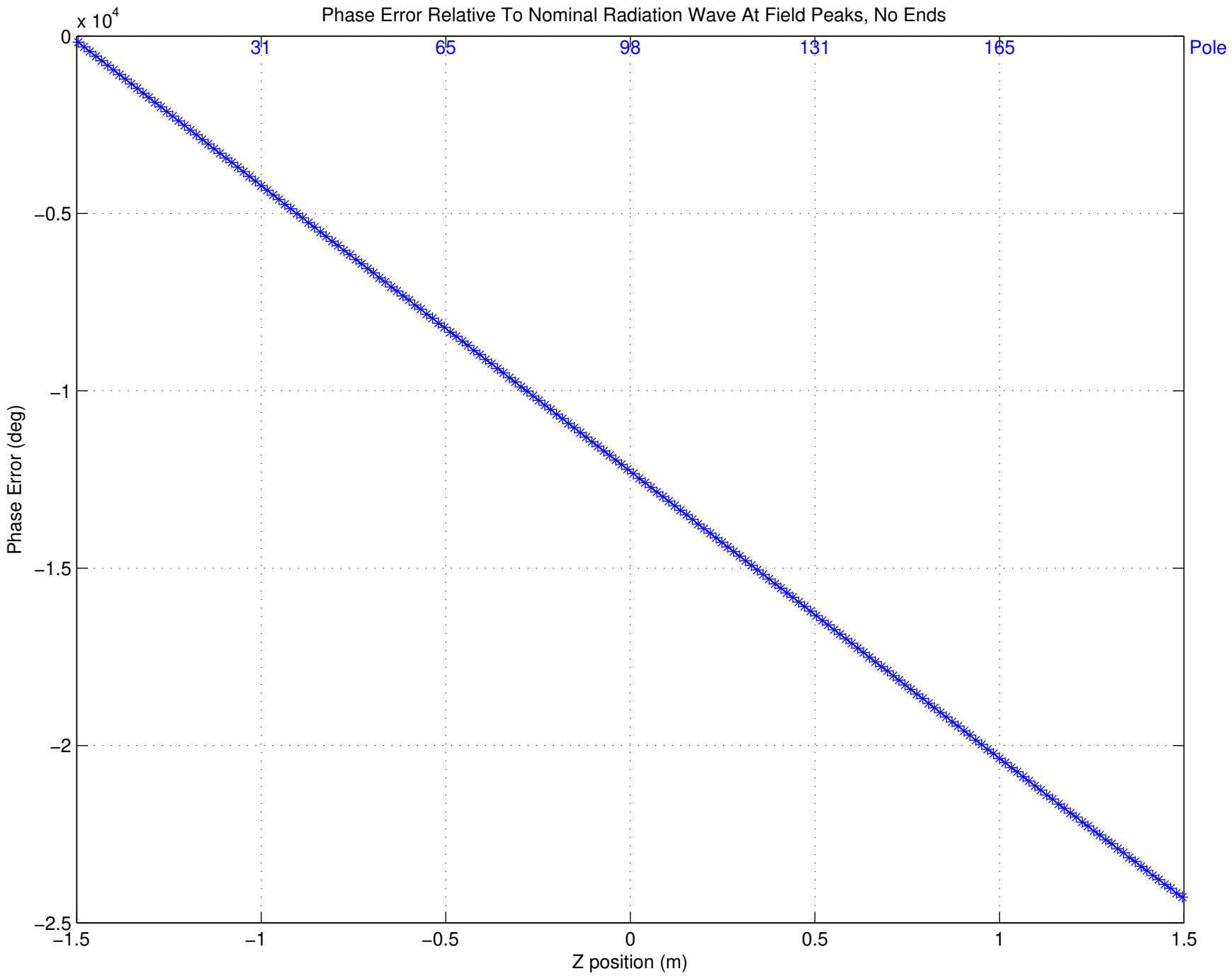

Delta By Peaks vs Pole Number
By (G)
Pole Number
100
50
0
−50
−100
−150
0
20
40
60
80
100
120
140
160
180


X Trajectory
x 10^-6
8
6
4
2
0
−2
−4
−6
−8
−10
−12
X (m)
31
65
98
131
165
Pole
−2.5
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
2.5
Z position (m)


Y Trajectory
x 10^-5
0
−0.5
−1
−1.5
−2
−2.5
−3
Y (m)
31
65
98
131
165
Pole
−2.5
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
2.5
Z position (m)



Phase Error: Ave = 0.000000 deg, RMS = 60.444393 deg


Phase Error Relative To Nominal Radiation Wave At Field Peaks, No Ends
x 10^4
0
−0.5
−1
−1.5
−2
−2.5
Phase Error (deg)
31
65
98
131
165
Pole
−1.5
−1
−0.5
0
0.5
1
1.5
Z position (m)