SLAC Magnetic Measurements

Planar Insertion Device Analysis

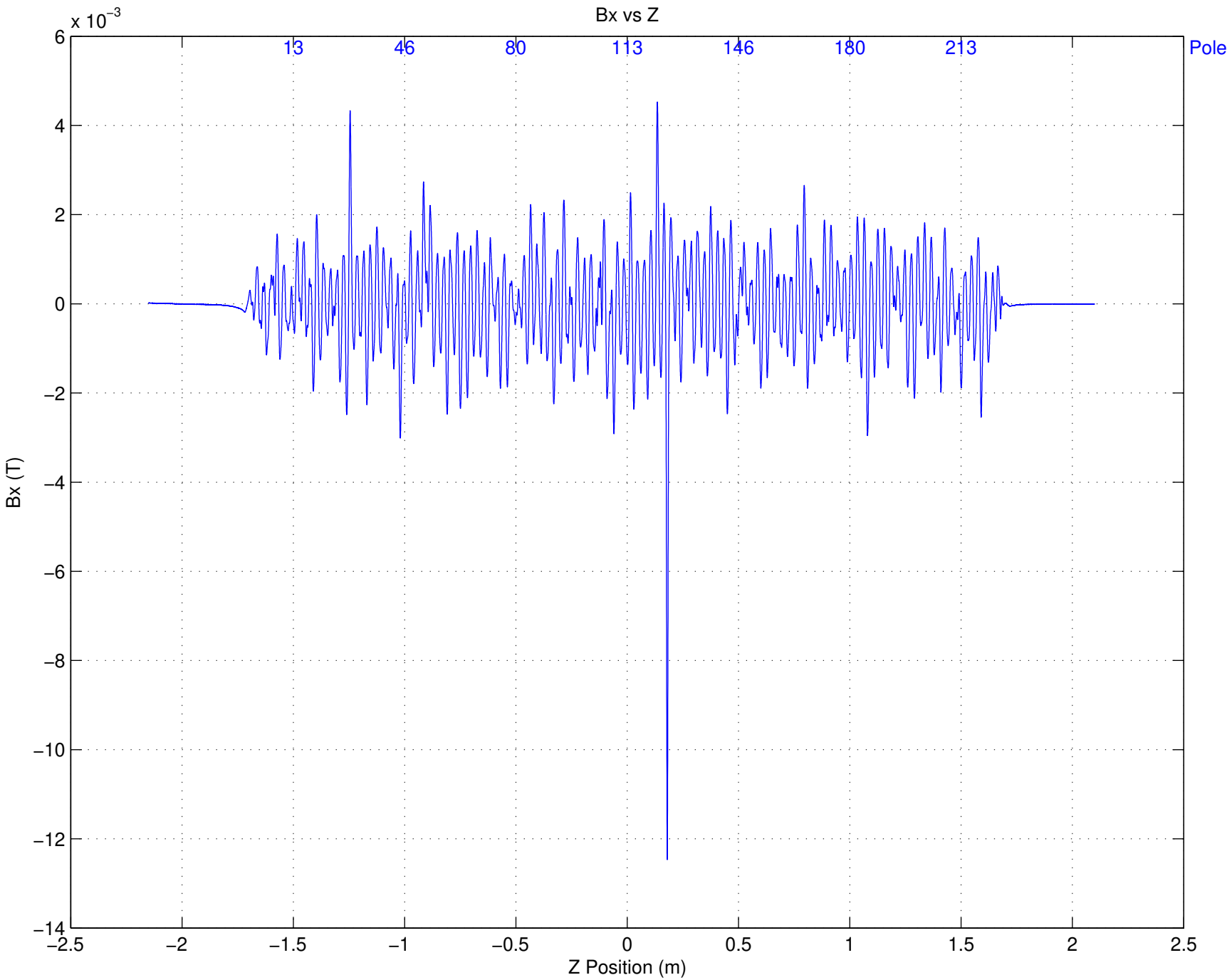
SLAC Magnetic Measurements
Date: 03−18−2014
Time: 11:10:54

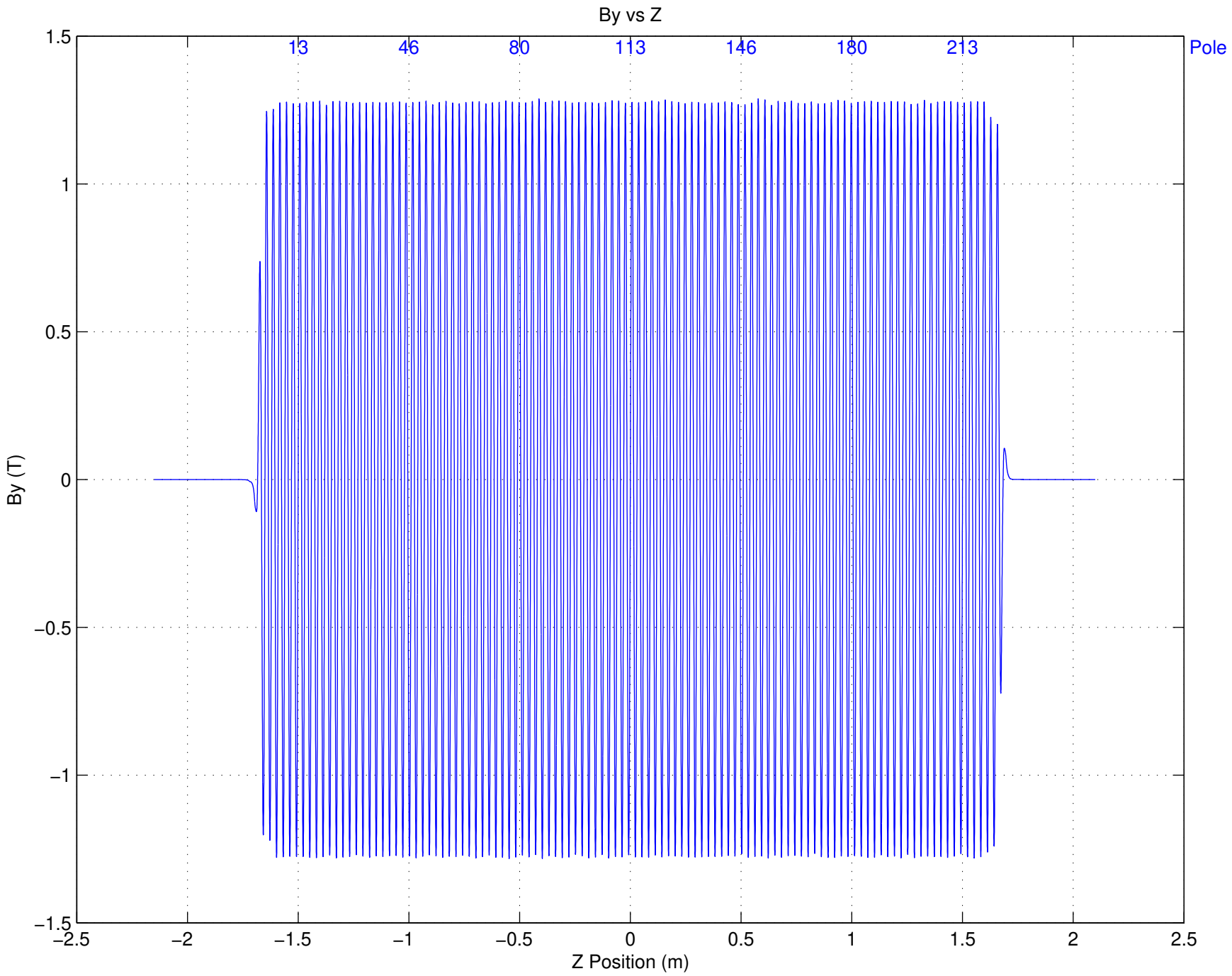
Project: LCLS
Device Type: Undulator
Data Type:
Serial Number: L143−112000−19
DATASET Number: 4
Tuning Stage: Fine Tuning
Run Number: 1
Measurement Type: Z Scans
Operator: YL
Comment: find first pole position
Session first run: 1
Measurement Device x:
Measurement Device y: $SENTRON_4$41

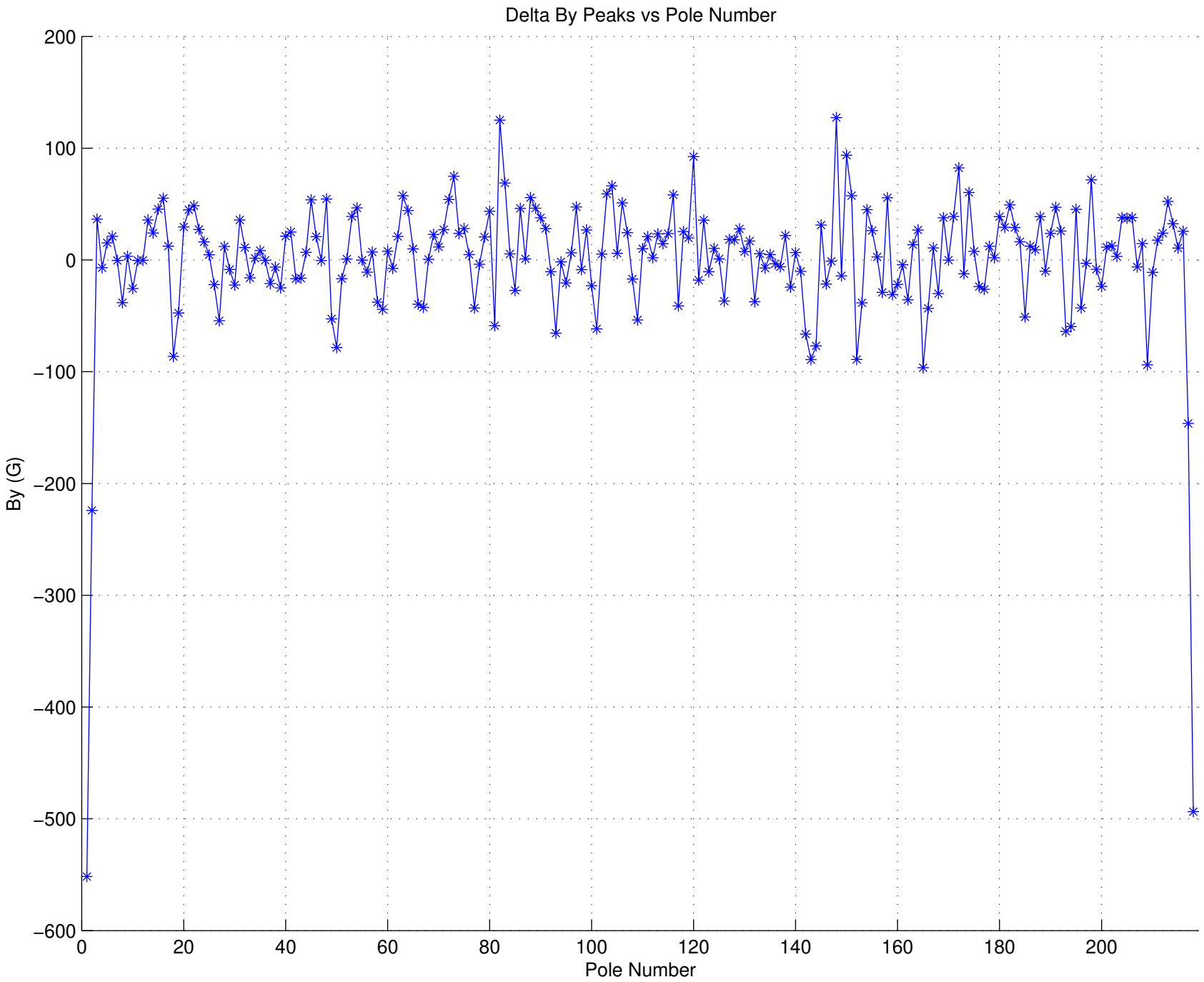
Data File: s:\magdata\LCLS\Undulator\L143−112000−19\DATASET0004\Fine Tuning\Z Scans\Run 001\bscanz.dat

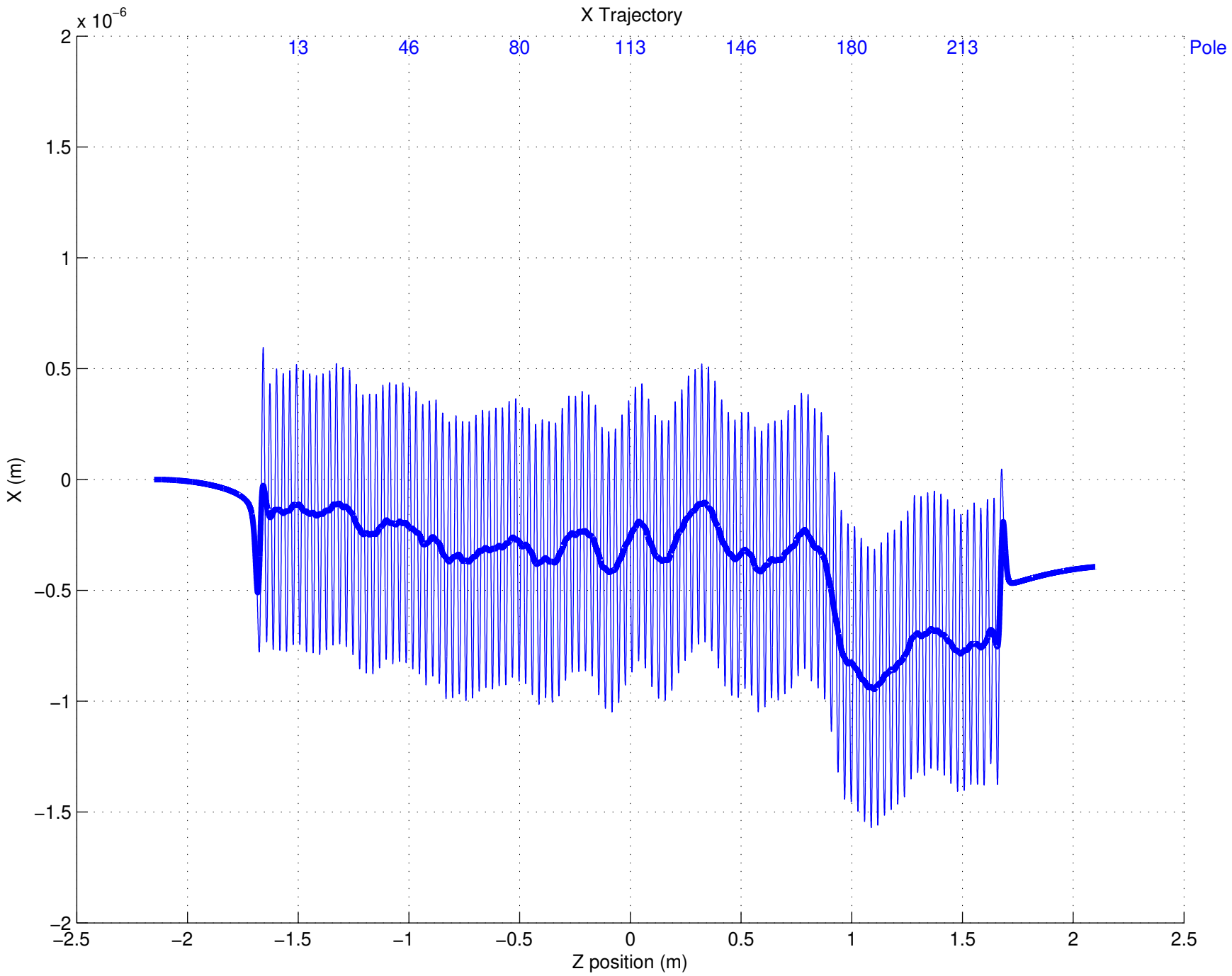
Temperature (C)
L143−112000−19:−−> T1 20.37 −−> T2 20.37 −−> T5 20.34 −−> T3 20.37 −−> Air 19.92 −−> T4 20.35

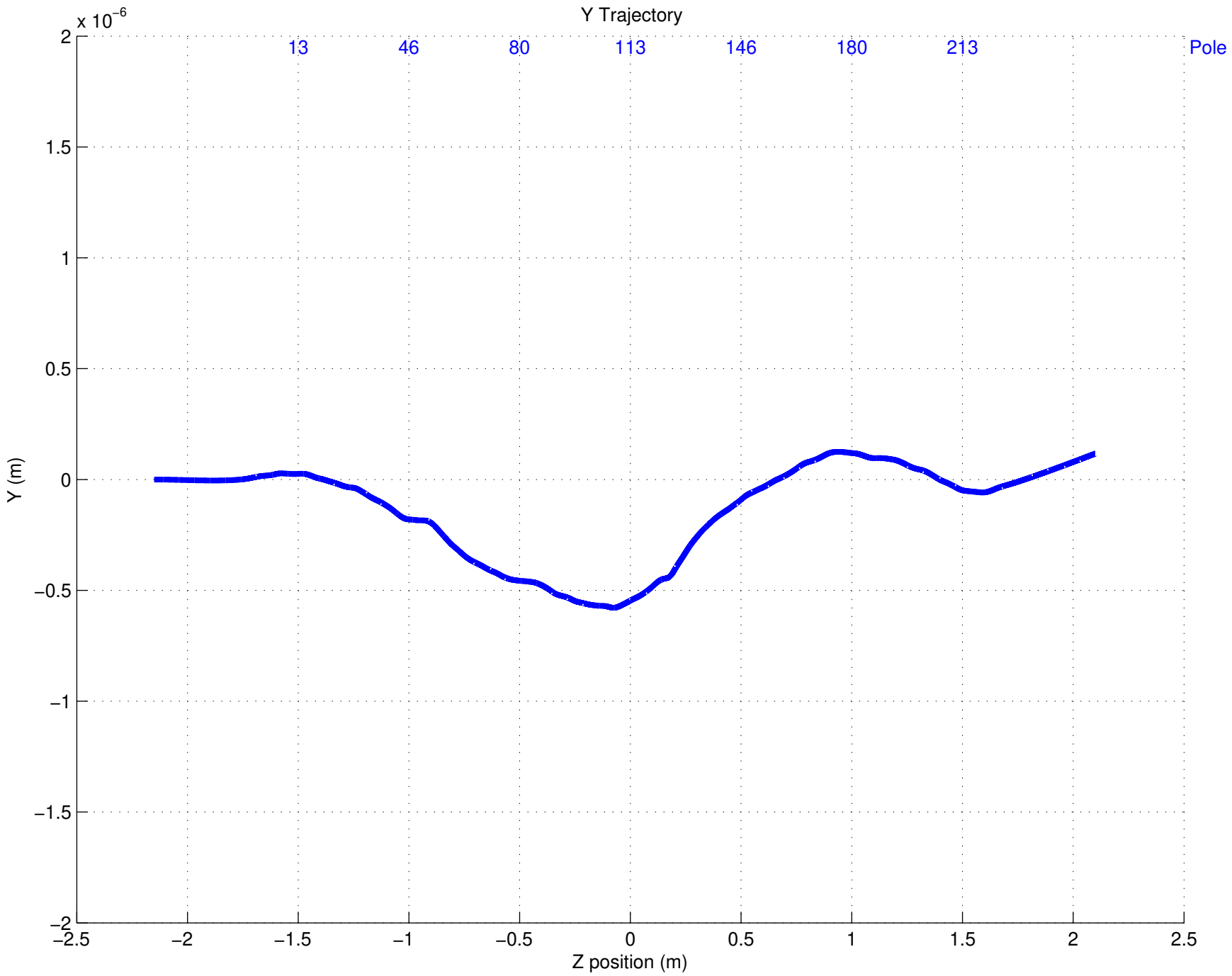
Axes position (m) X:0.029938 Y:0.000154
Initial Hall Probe Zero Measurements:
Vx_0i = 0.001175 V
Vy_0i = −0.003217 V

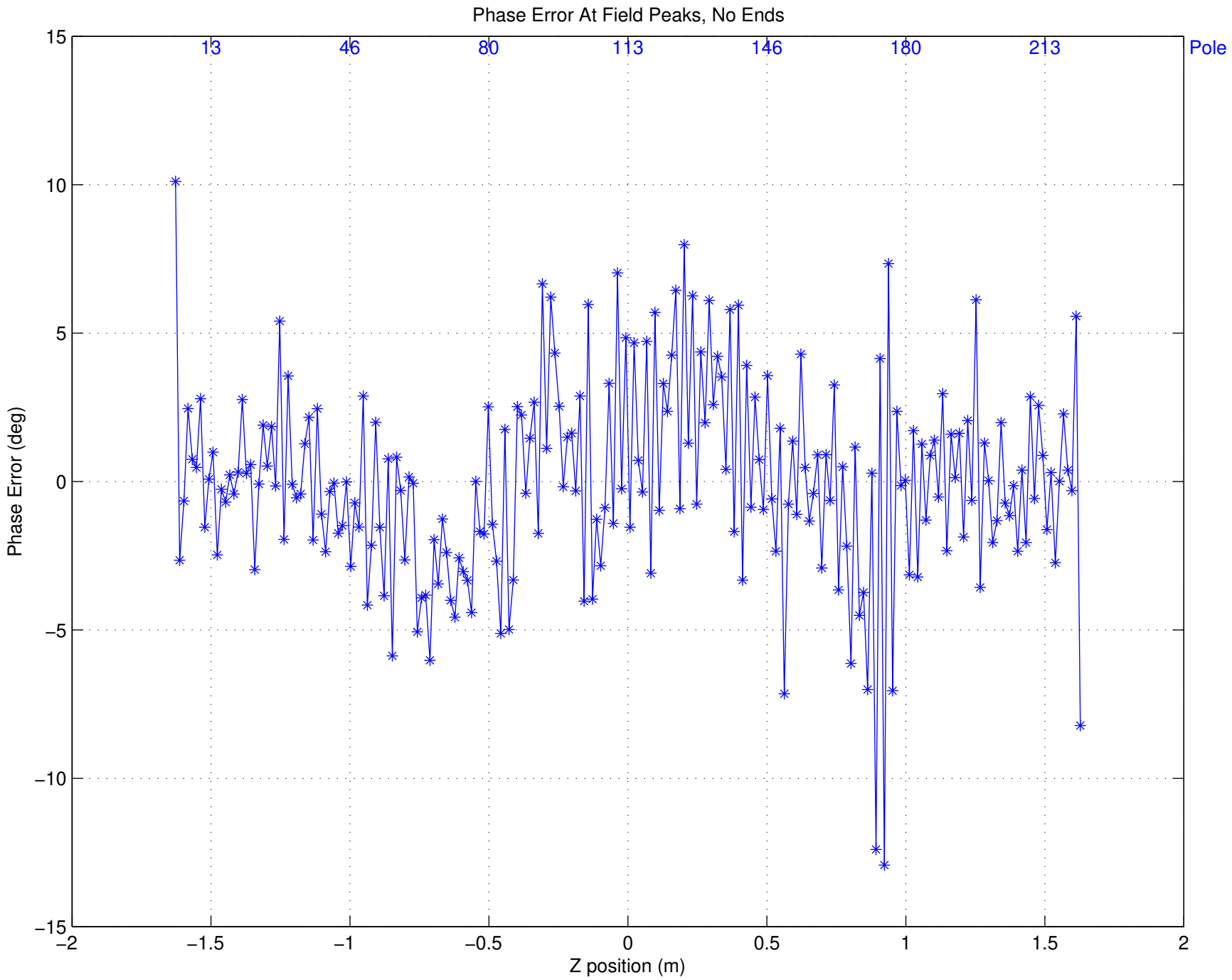

Bx vs Z
x 10^-3
6
4
2
0
−2
−4
−6
−8
−10
−12
−14
13
46
80
113
146
180
213
Pole
Bx (T)
−2.5
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
2.5
Z Position (m)


By vs Z
13
46
80
113
146
180
213
Pole
1.5
1
0.5
0
−0.5
−1
−1.5
By (T)
−2.5
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
2.5
Z Position (m)

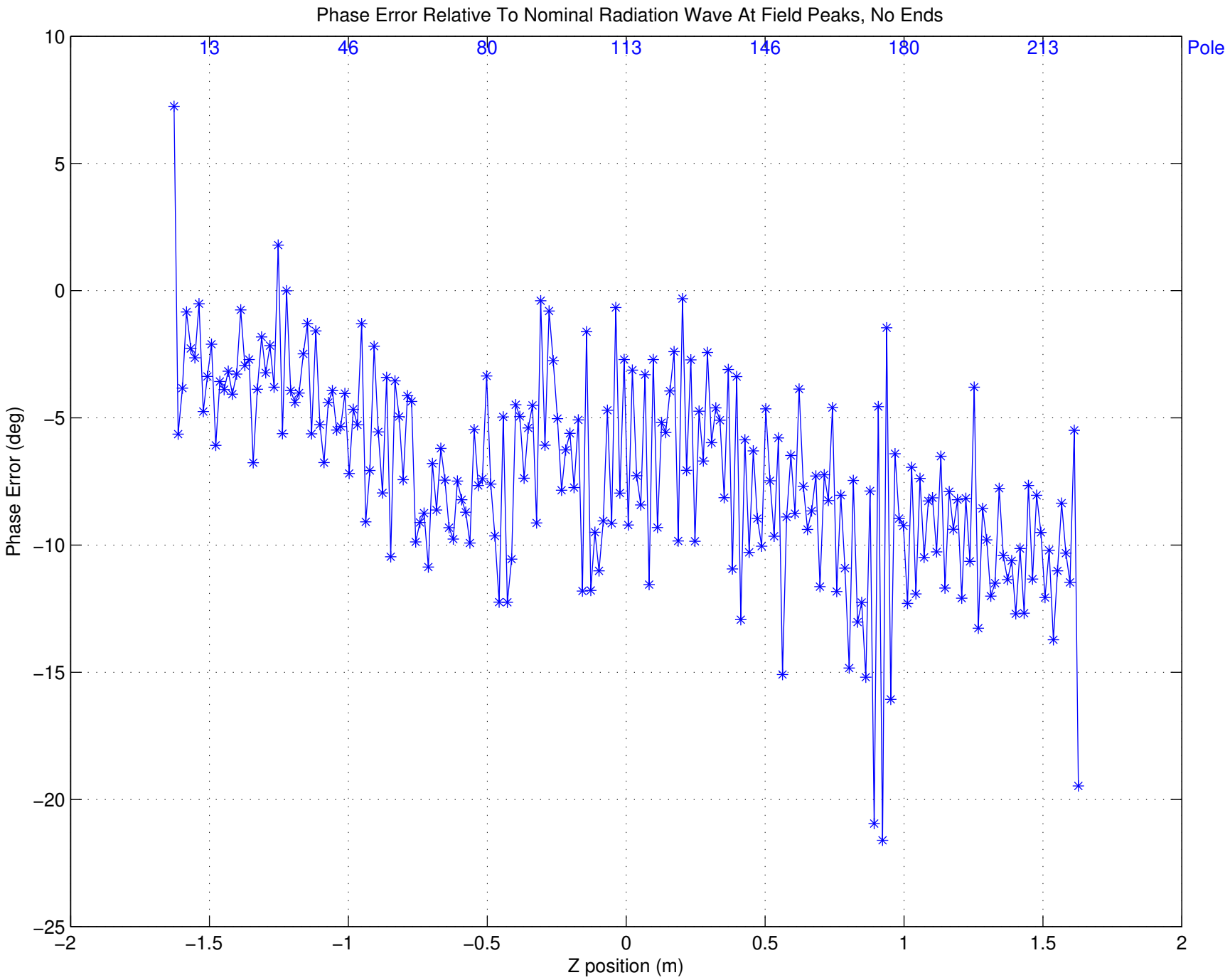

Delta By Peaks vs Pole Number
By (G)
Pole Number
200
100
0
−100
−200
−300
−400
−500
−600
0
20
40
60
80
100
120
140
160
180
200


X Trajectory
x 10^-6
13
46
80
113
146
180
213
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
2.5
Z position (m)


Y Trajectory
x 10^-6
13
46
80
113
146
180
213
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
2.5
Z position (m)



Phase Error: Ave = −0.000000 deg, RMS = 3.310951 deg


Phase Error Relative To Nominal Radiation Wave At Field Peaks, No Ends
13
46
80
113
146
180
213
Pole
10
5
0
−5
−10
−15
−20
−25
Phase Error (deg)
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
Z position (m)