SLAC Magnetic Measurements

Planar Insertion Device Analysis

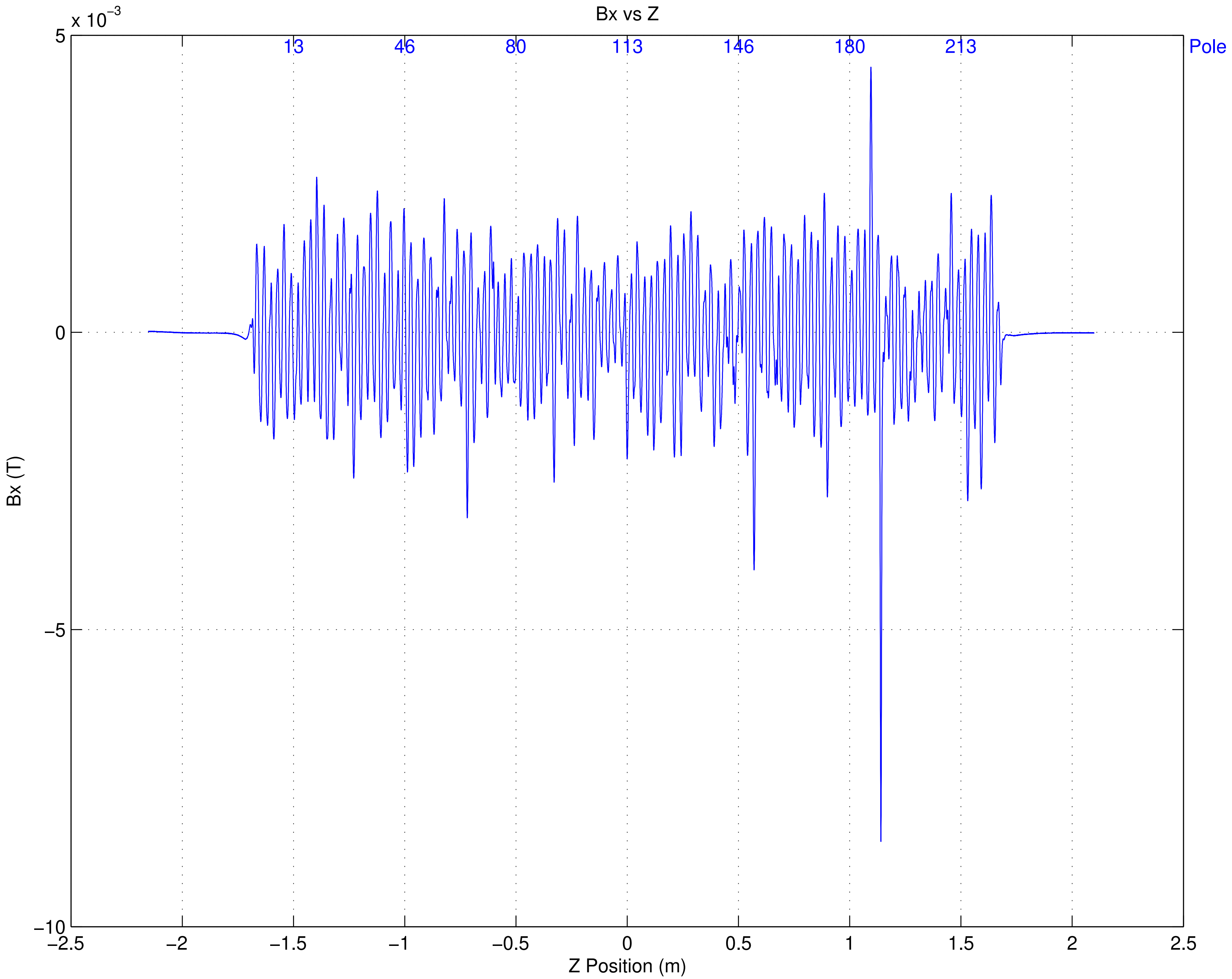
SLAC Magnetic Measurements
Date: 02–10–2014
Time: 14:30:53

Project: LCLS
Device Type: Undulator
Data Type:
Serial Number: L143–112000–25
DATASET Number: 3
Tuning Stage: Fine Tuning
Run Number: 17
Measurement Type: Z Scans
Operator: YL
Comment: find Y at min K; fiducialization check
Session first run: 16
Measurement Device x:
Measurement Device y: $SENTRON_4 41$

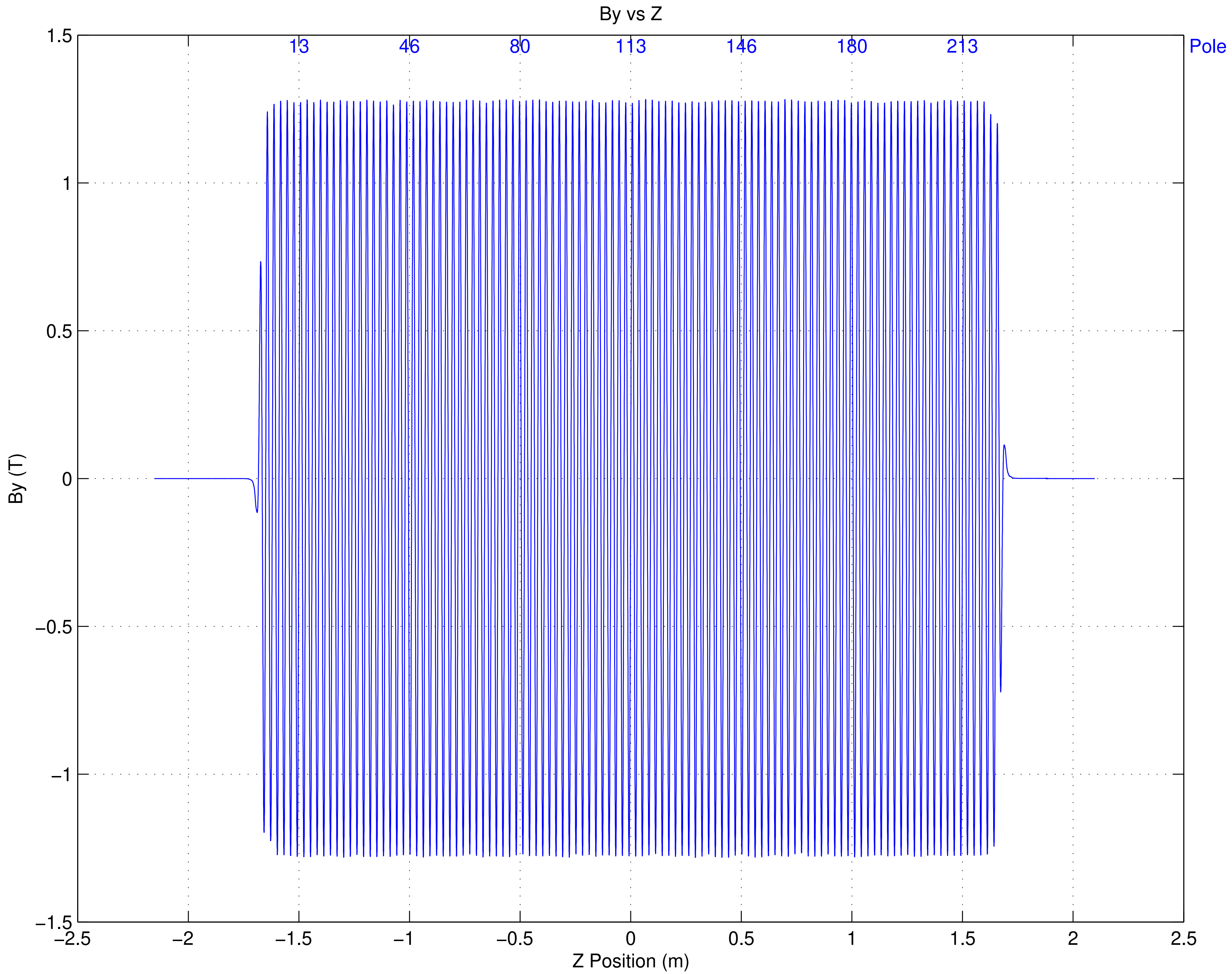
Data File: s:\magdata\LCLS\Undulator\L143–112000–25\DATASET0003\Fine Tuning\Z Scans\Run 017\bscanz.dat

Temperature (C)
L143–112000–25:––> T1 20.11 ––> T2 20.10 ––> T5 20.07 ––> T3 20.10 ––> Air 20.02 ––> T4 20.10

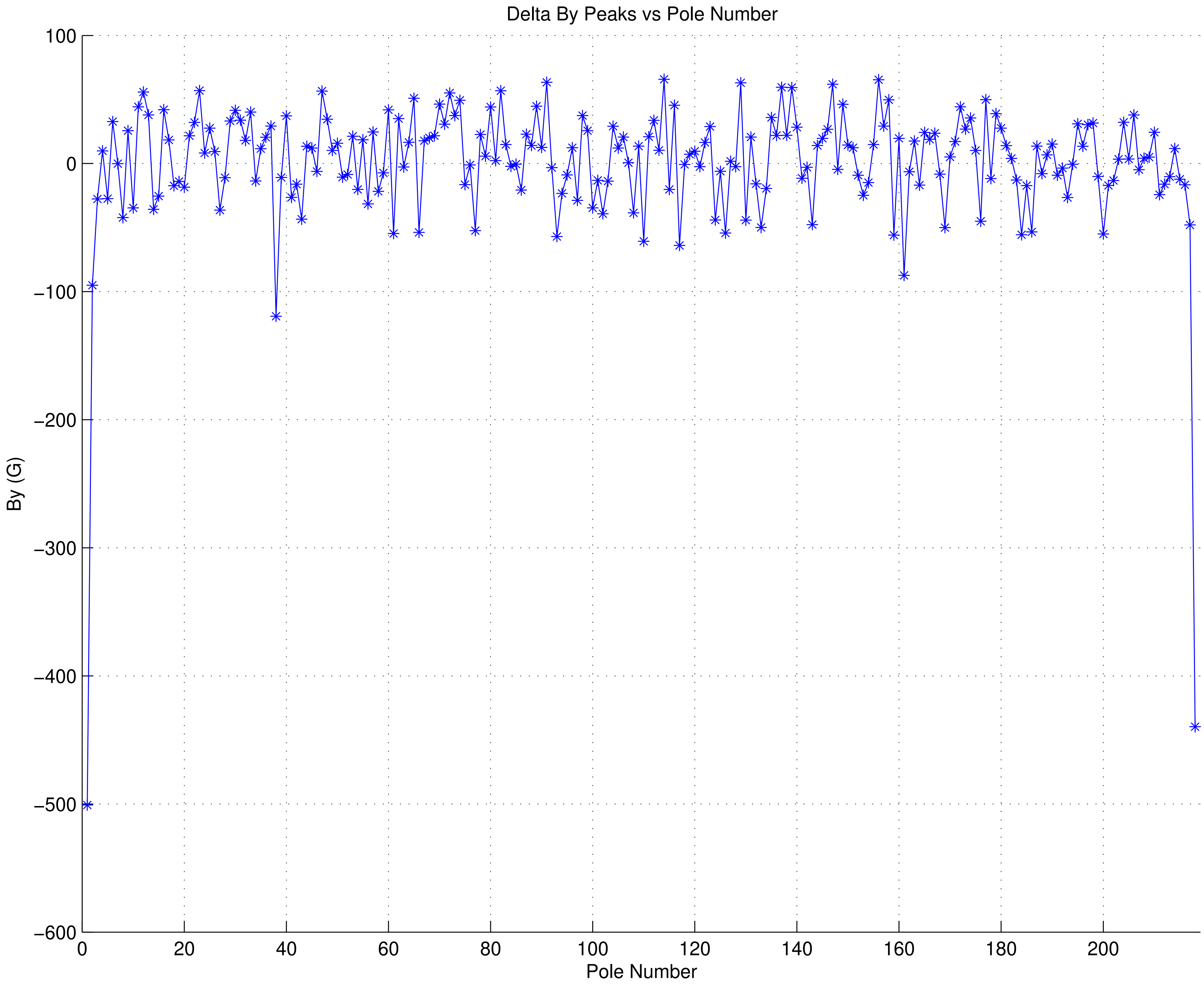
Axes position (m) X:0.030051 Y:0.000175
Initial Hall Probe Zero Measurements:
Vx_0i = 0.001248 V
Vy_0i = –0.003035 V



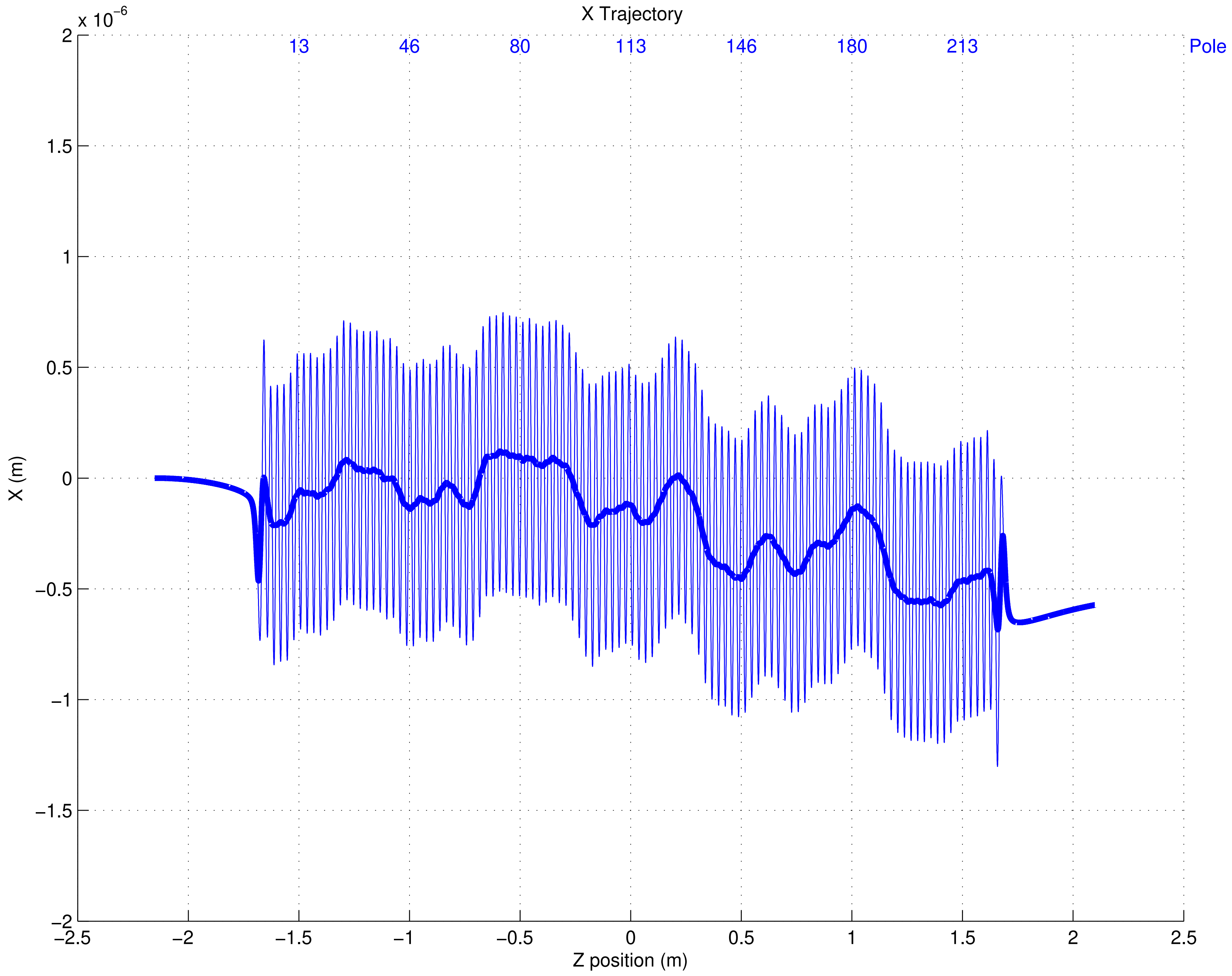
Bx vs Z
x 10^-3
5
0
−5
−10
13
46
80
113
146
180
213
Pole
Bx (T)
−2.5
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
2.5
Z Position (m)

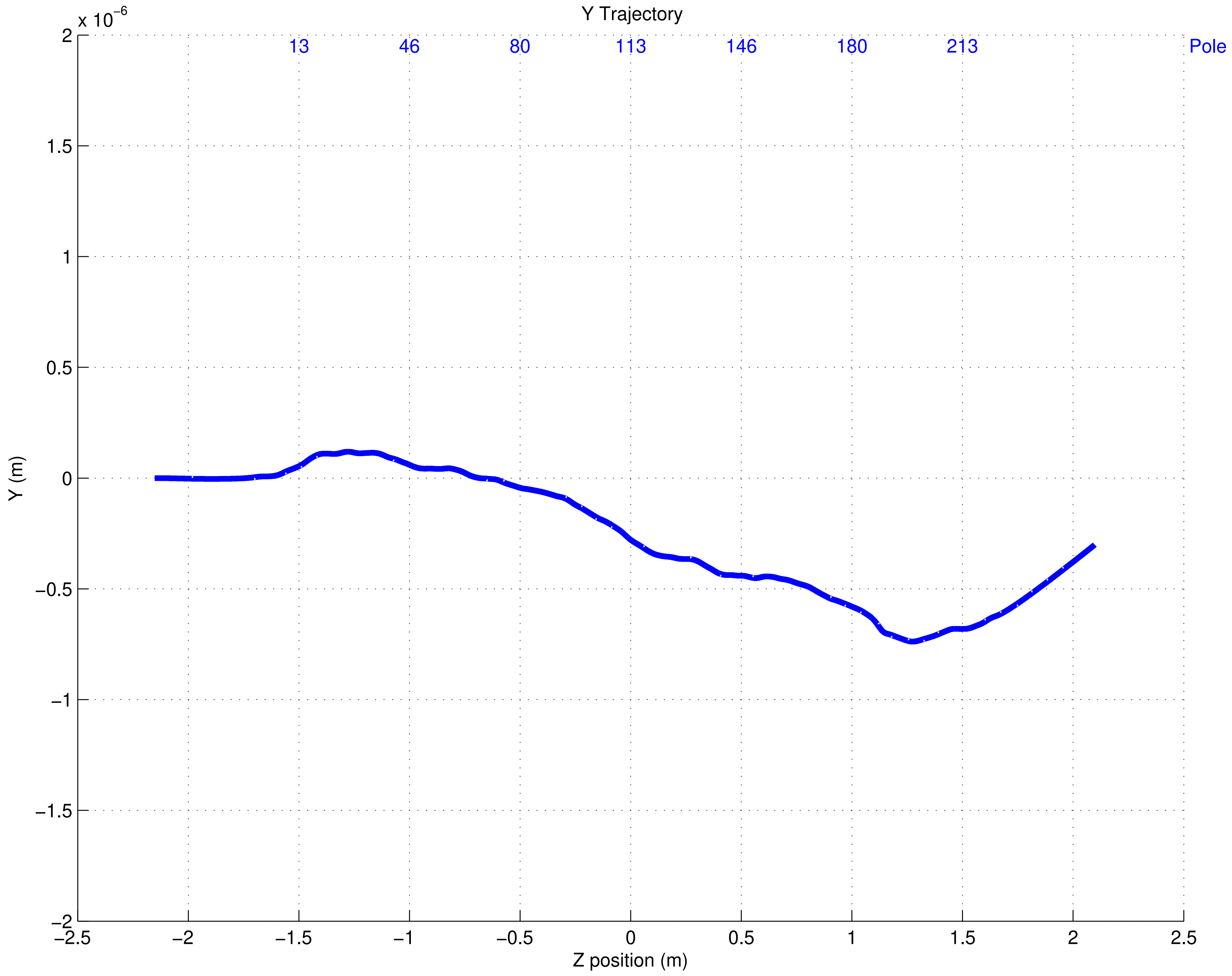


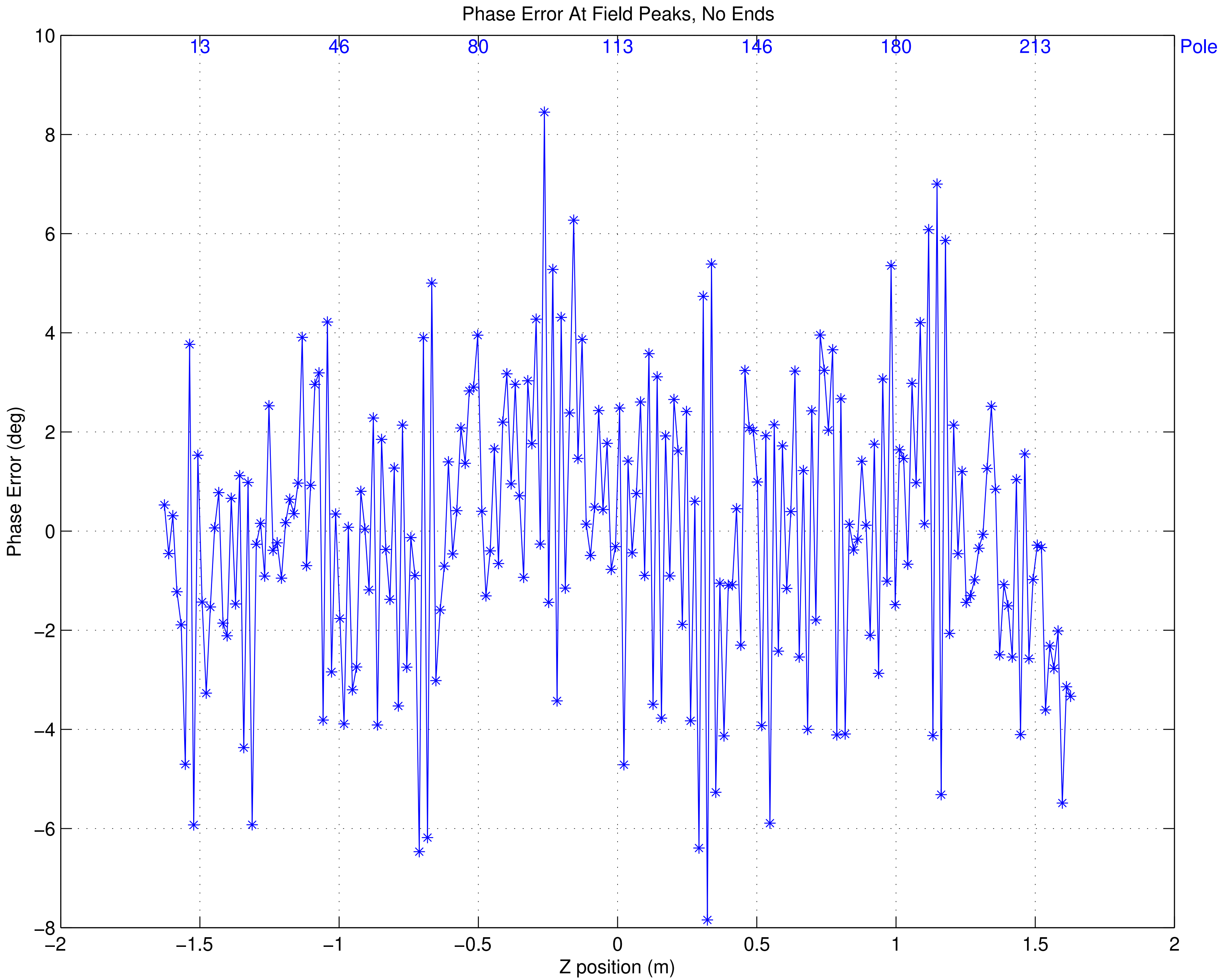
By vs Z
By (T)
Z Position (m)
Pole
13
46
80
113
146
180
213
1.5
1
0.5
0
−0.5
−1
−1.5
−2.5
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
2.5



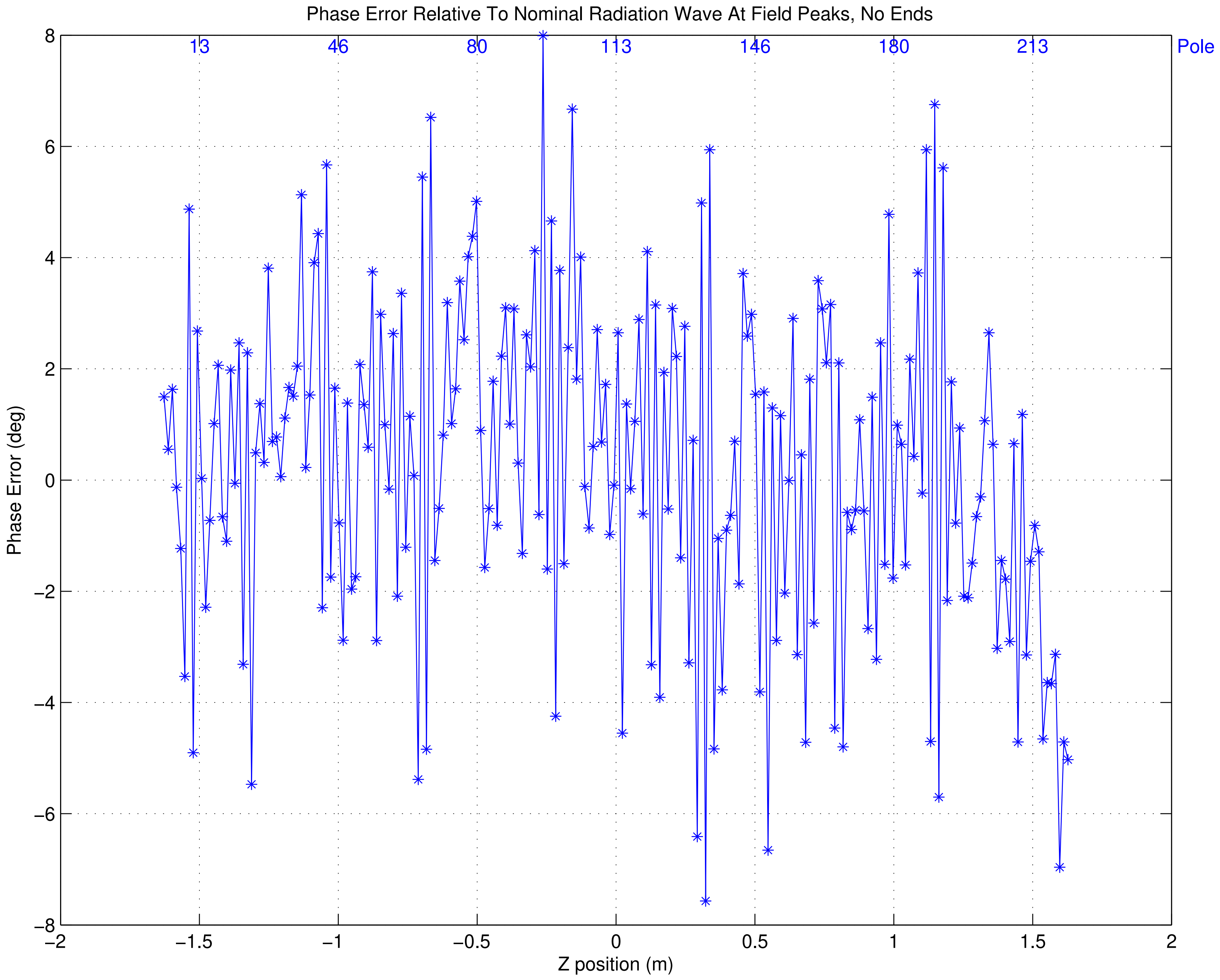
Delta By Peaks vs Pole Number
100
0
−100
−200
−300
−400
−500
−600
By (G)
0
20
40
60
80
100
120
140
160
180
200
Pole Number


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 = 2.828897 deg


Phase Error Relative To Nominal Radiation Wave At Field Peaks, No Ends
13
46
80
113
146
180
213
Pole
Phase Error (deg)
8
6
4
2
0
−2
−4
−6
−8
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
Z position (m)