SLAC Magnetic Measurements

Planar Insertion Device Analysis

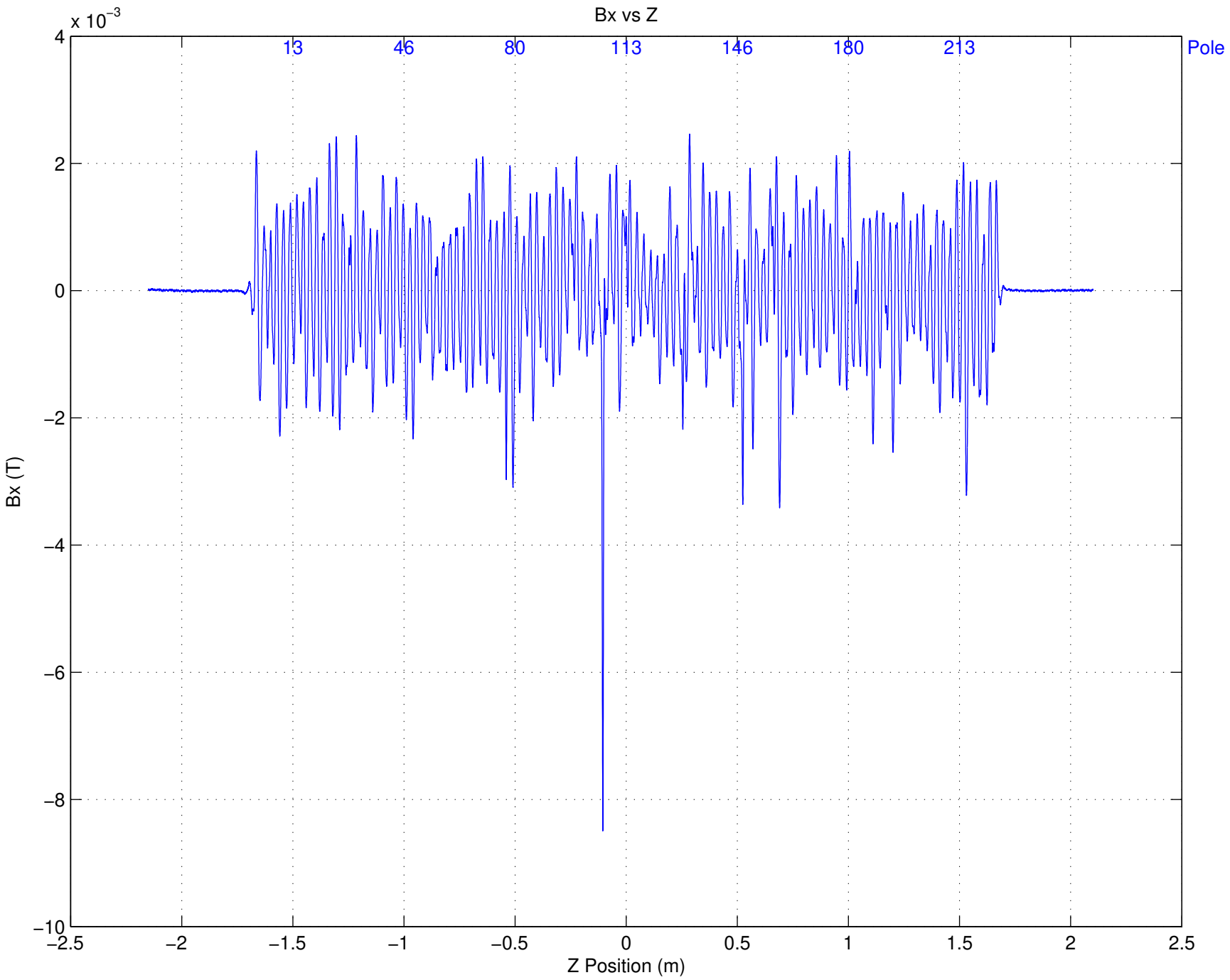
SLAC Magnetic Measurements
Date: 05−05−2011
Time: 11:26:53

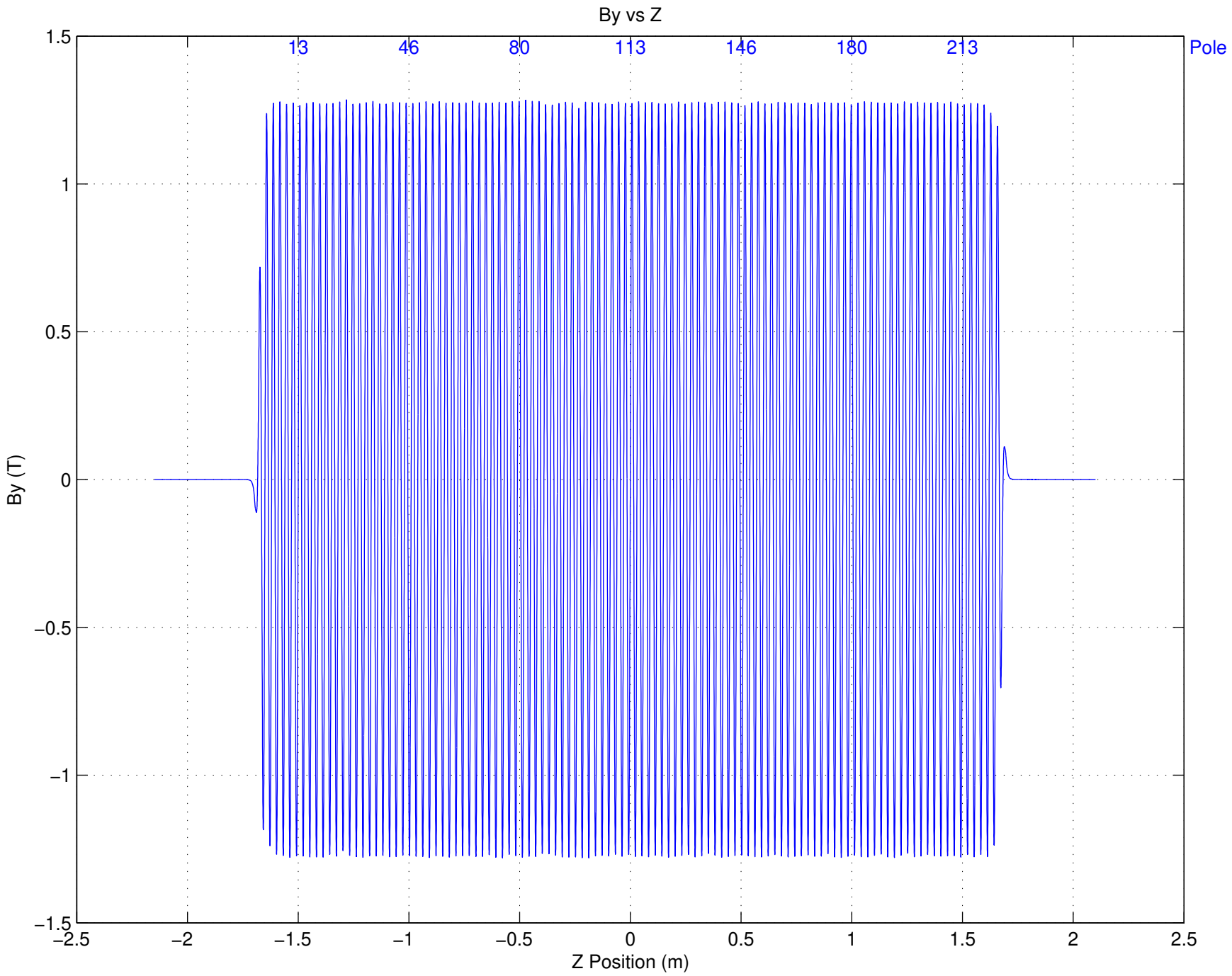
Project: LCLS
Device Type: Undulator
Data Type:
Serial Number: L143−112000−37
DATASET Number: 5
Tuning Stage: Fine Tuning
Run Number: 1
Measurement Type: Z Scans
Operator: YL
Comment: find Y first pole position
Session first run: 1
Measurement Device x:
Measurement Device y: $SENTRON_4$41

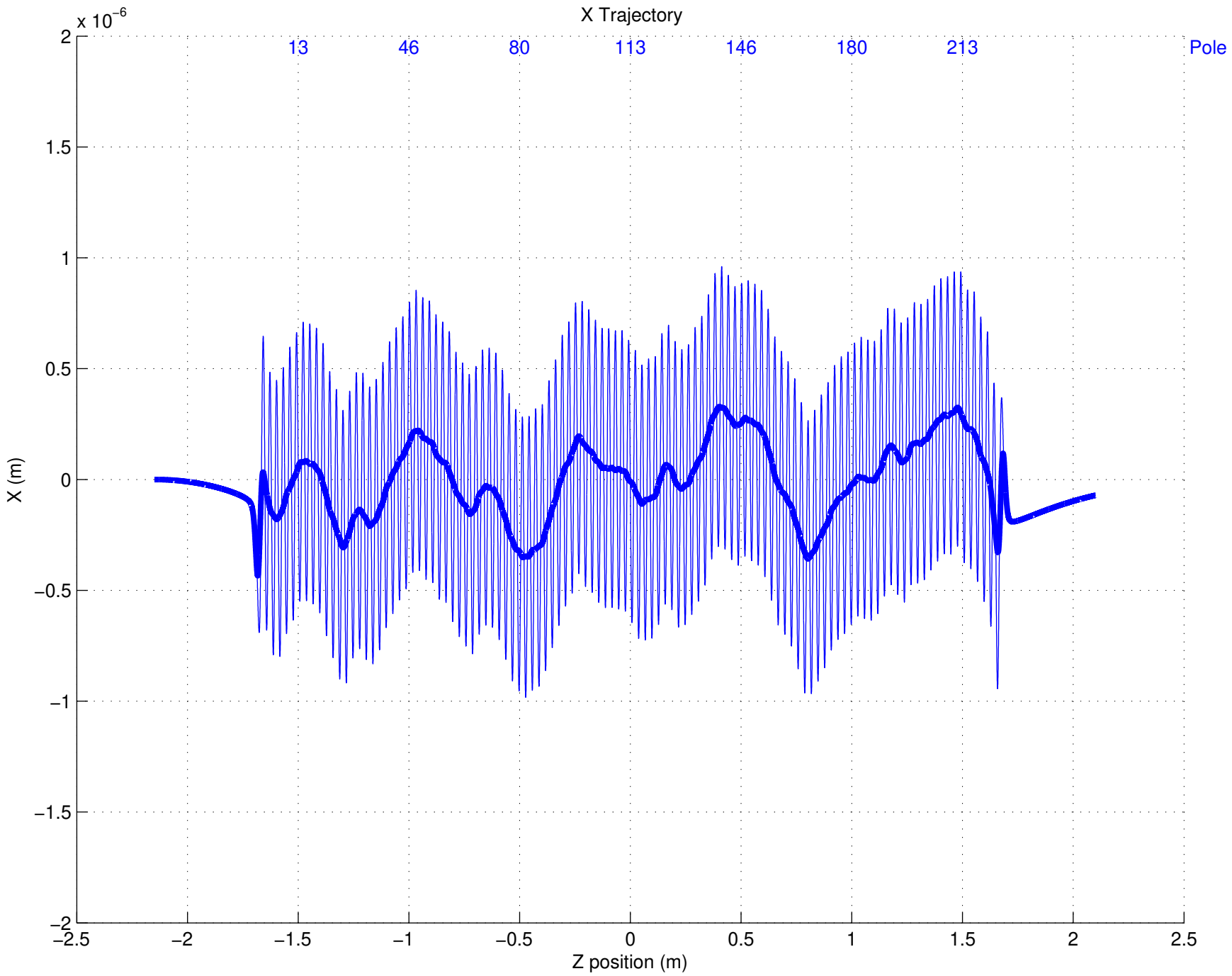
Data File: s:\magdata\LCLS\Undulator\L143−112000−37\DATASET0005\Fine Tuning\Z Scans\Run 001\bscanz.dat

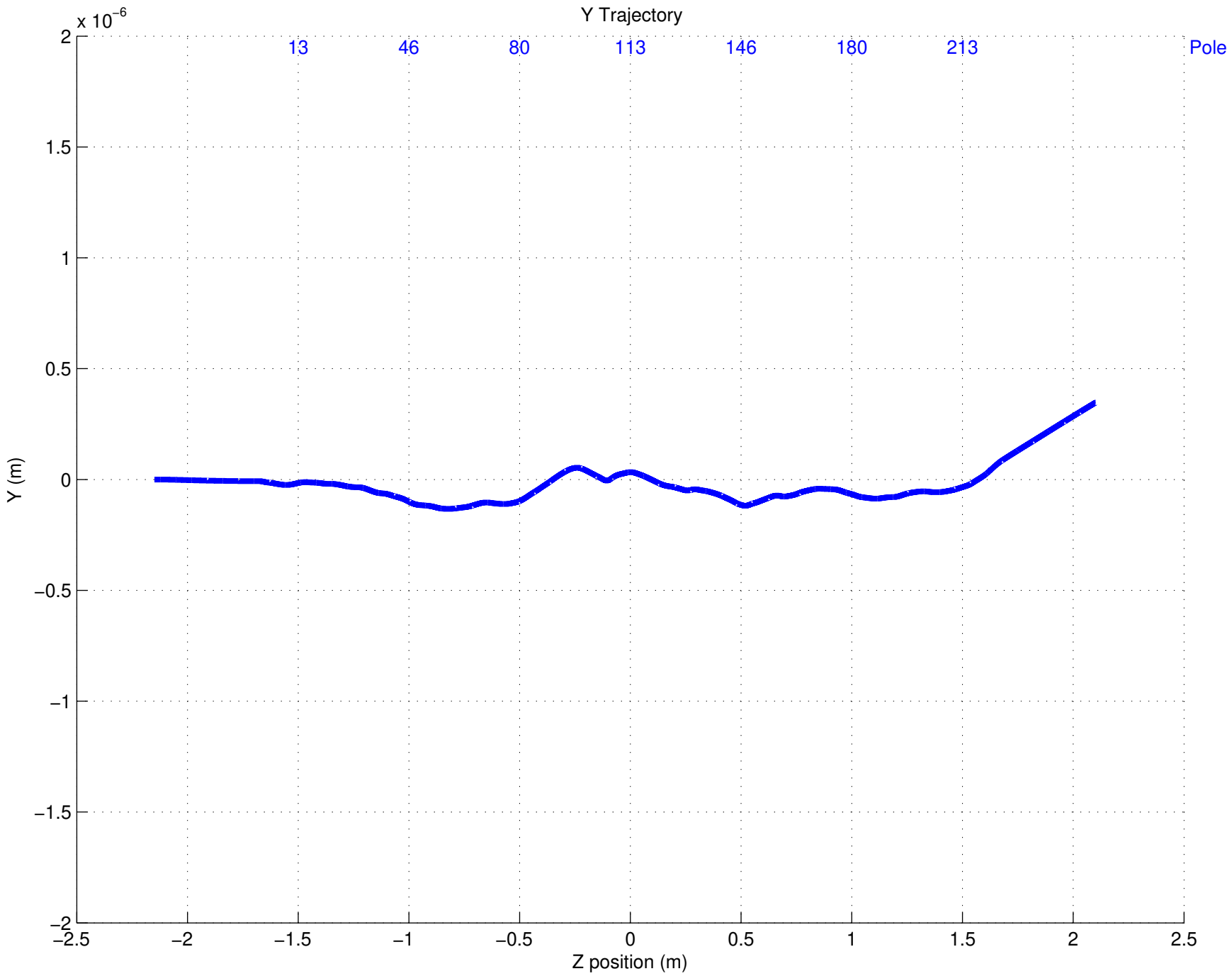
Temperature (C)
L143−112000−37:−−> T1 19.70 −−> T2 19.71 −−> T5 19.73 −−> T3 19.70 −−> Air 20.12 −−> T4 19.72

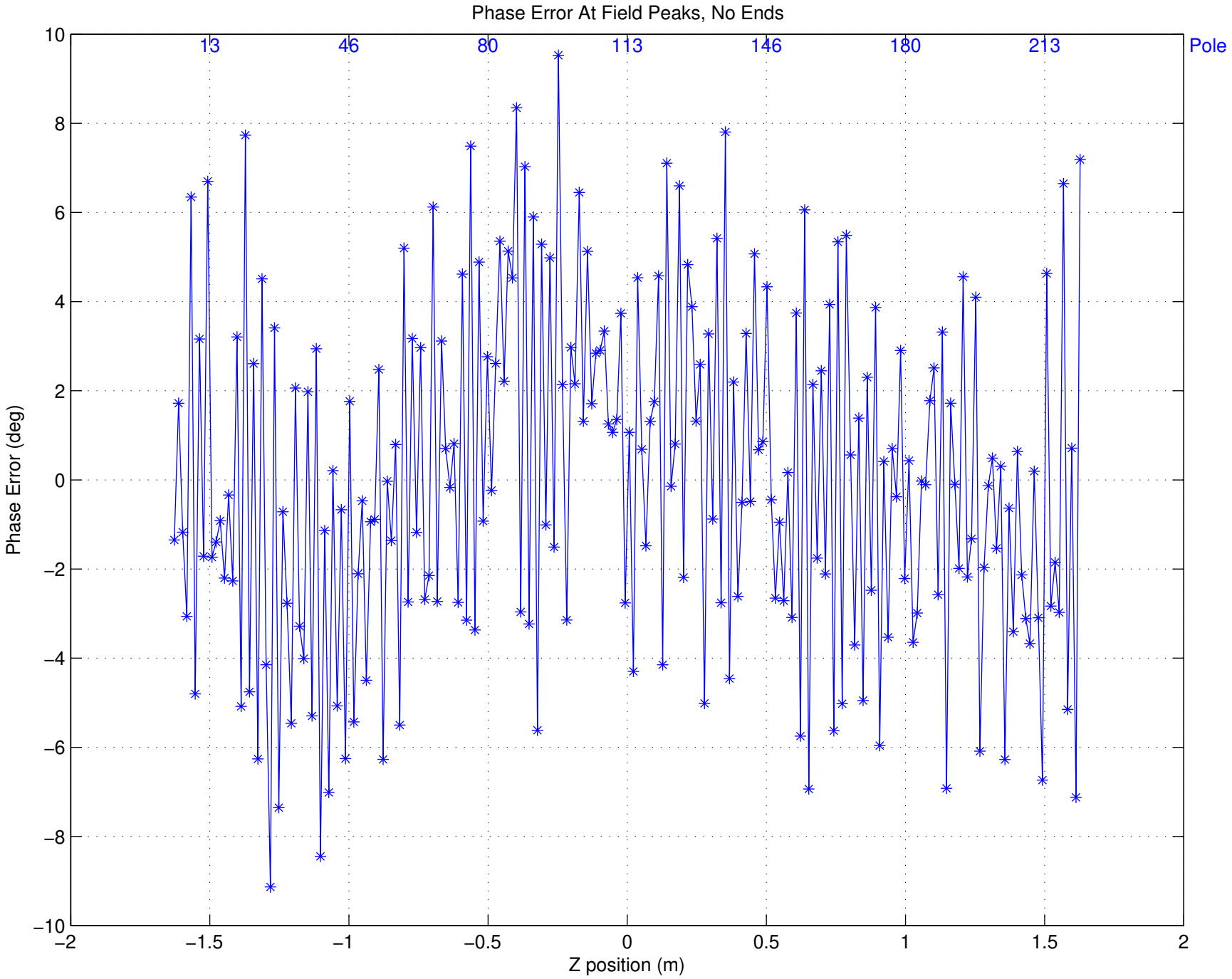
Axes position (m) X:0.030027 Y:0.000314
Initial Hall Probe Zero Measurements:
$Vx_0i$ = 0.000965 V
$Vy_0i$ = −0.003593 V


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

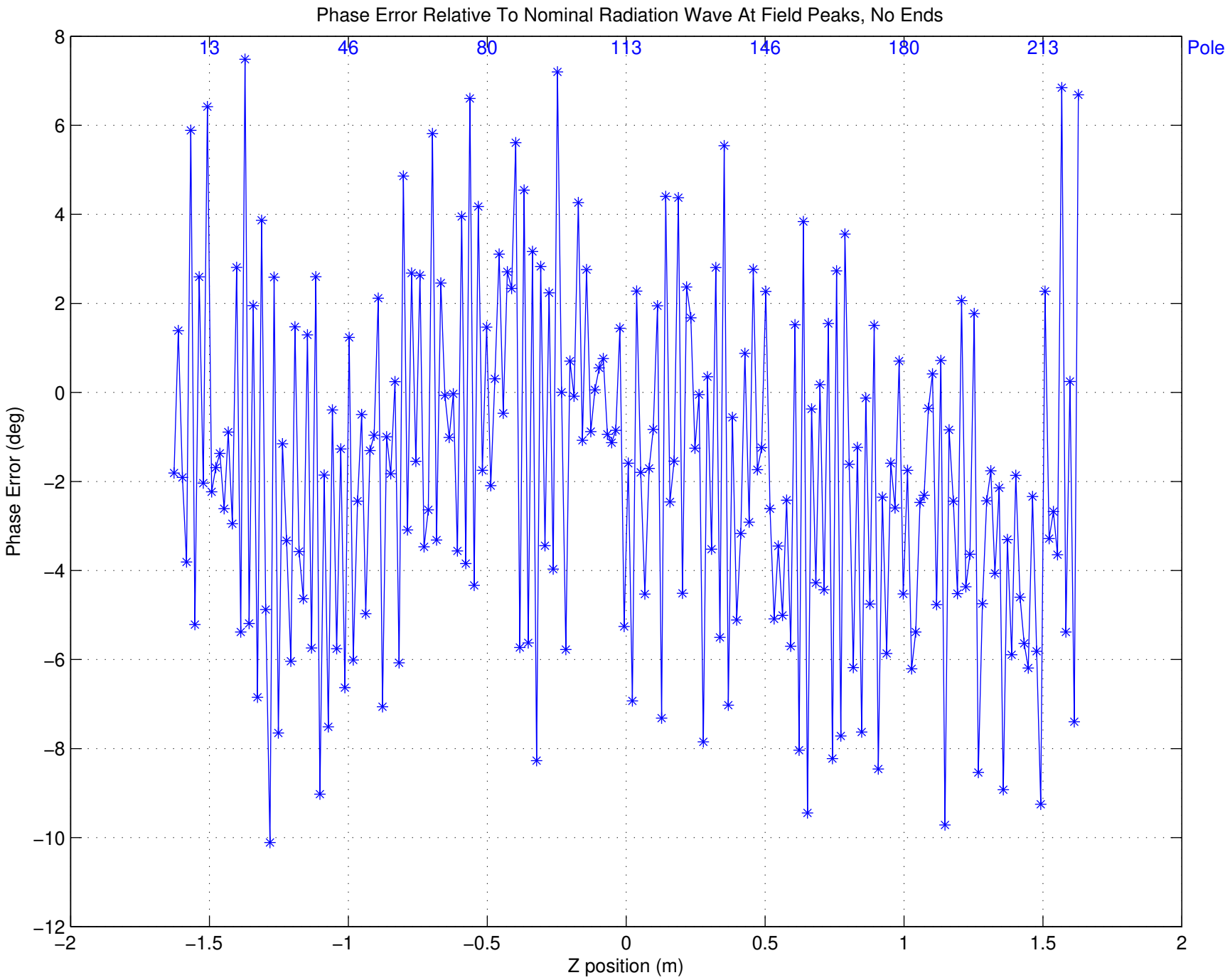

By vs Z
13
46
80
113
146
180
213
Pole
1.5
1
0.5
0
−0.5
−1
−1.5
By (T)
−2.5
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
2.5
Z Position (m)


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 = 3.854256 deg


Phase Error Relative To Nominal Radiation Wave At Field Peaks, No Ends
13
46
80
113
146
180
213
Pole
8
6
4
2
0
−2
−4
−6
−8
−10
−12
Phase Error (deg)
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
Z position (m)