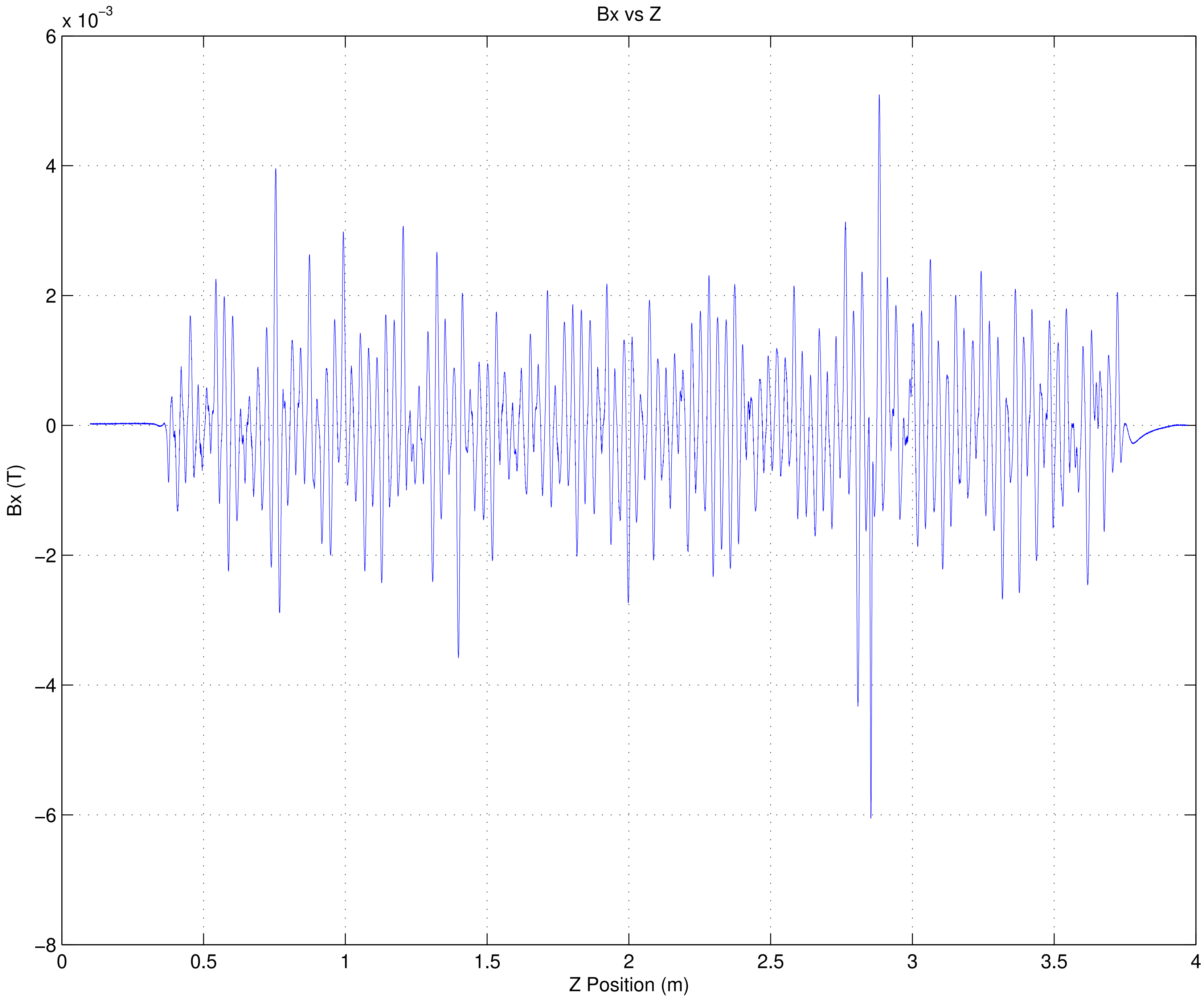
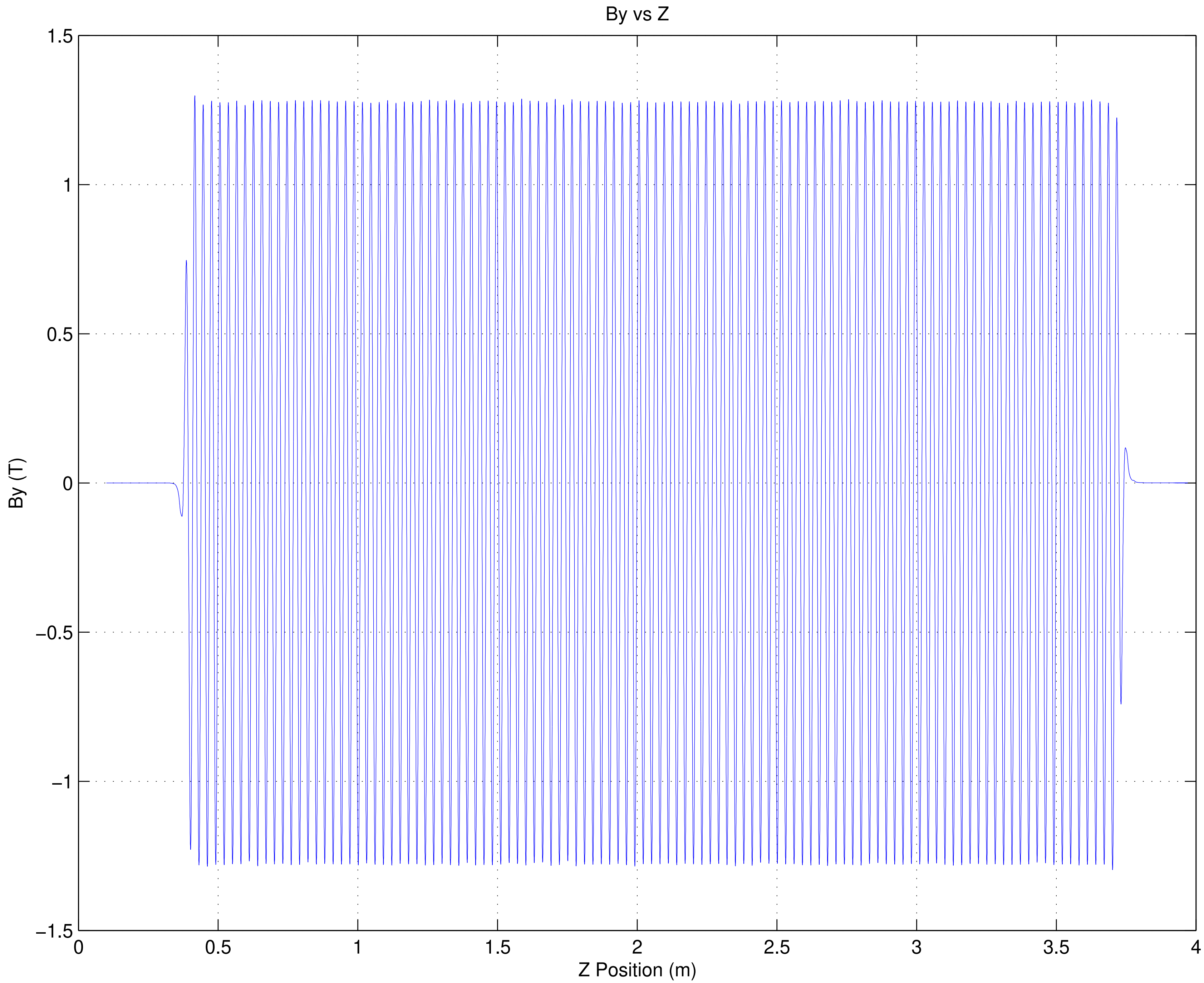
SLAC Magnetic Measurements
Date: 11−08−2006
Time: 17:00:32

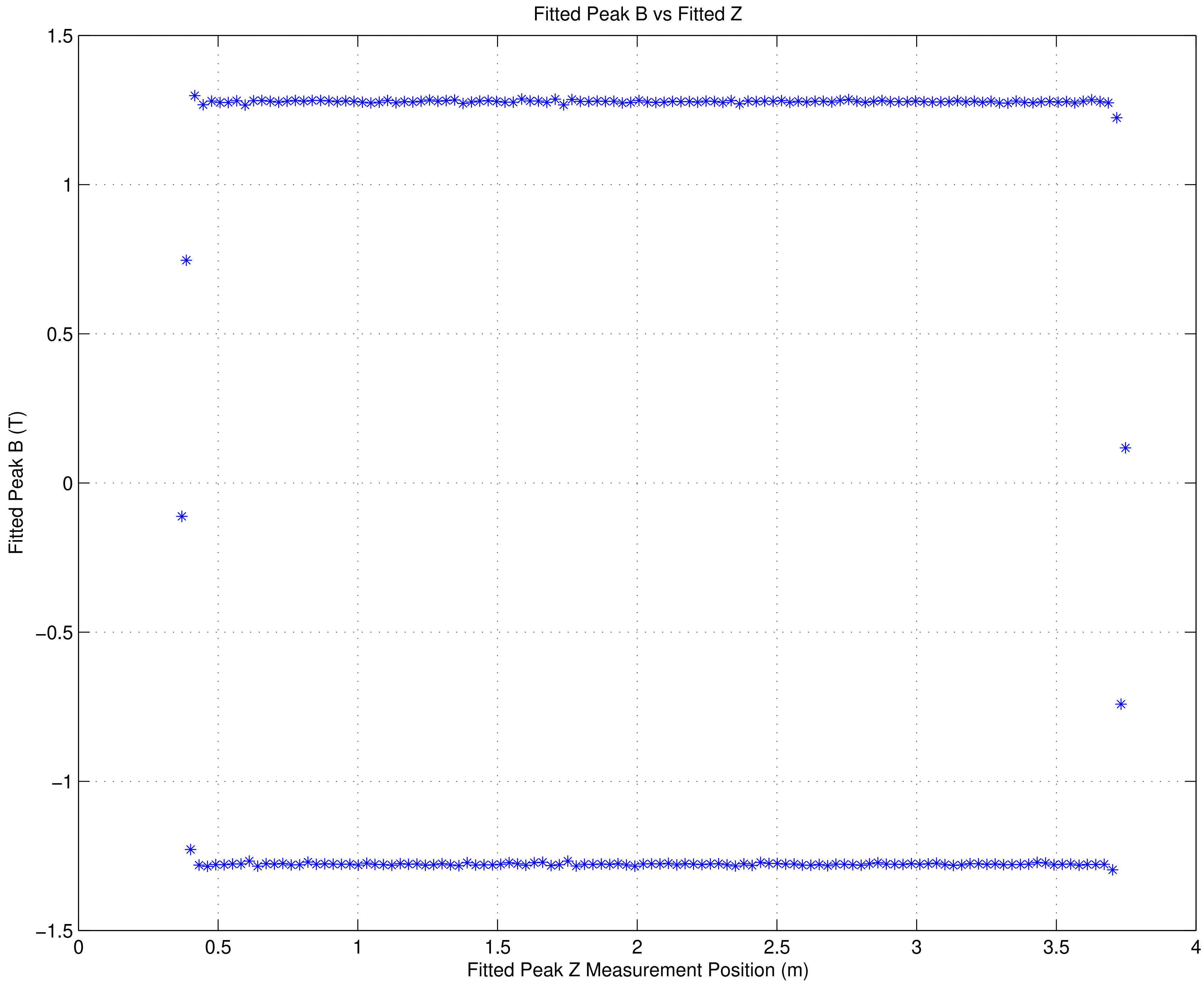
Project: LCLS
Device Type: Undulator
Data Type:
Serial Number: L143−112000−17
RMA Number: 1
Tuning Stage: Rough Tuning
Run Number: 31
Measurement Type: Z Scans
Operator: aww
Comment: 3 scans

Parameters:
INPUT−FILE−DIR =C:\magdata\Lcls\Undulator\L143−112000−17\RMA0001\Rough Tuning\Z Scans\Run 031\
INPUT−FILE−NAME =bscanz−dat.003
INPUT−FILE−TYPE =SLAC−BXBYVSZ
GAMMA =26690.65
LAMBDA−U =0.03
IDEAL−K−VALUE =3.4996
NUM−POLES =226
NUM−END−POLES =5
CELL−LENGTH =3.656

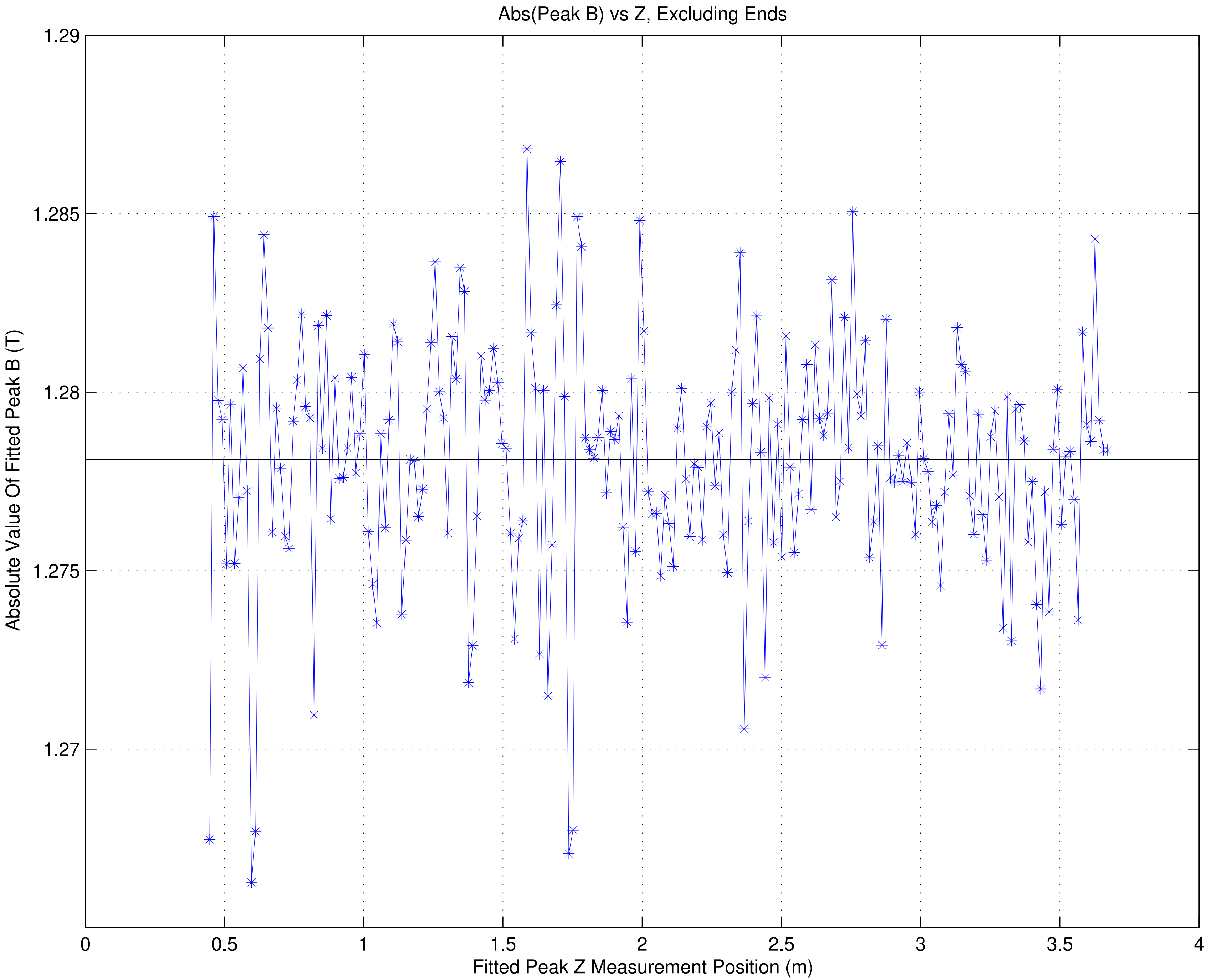


Bx vs Z
x 10^-3
6
4
2
0
−2
−4
−6
−8
Bx (T)
0
0.5
1
1.5
2
2.5
3
3.5
4
Z Position (m)

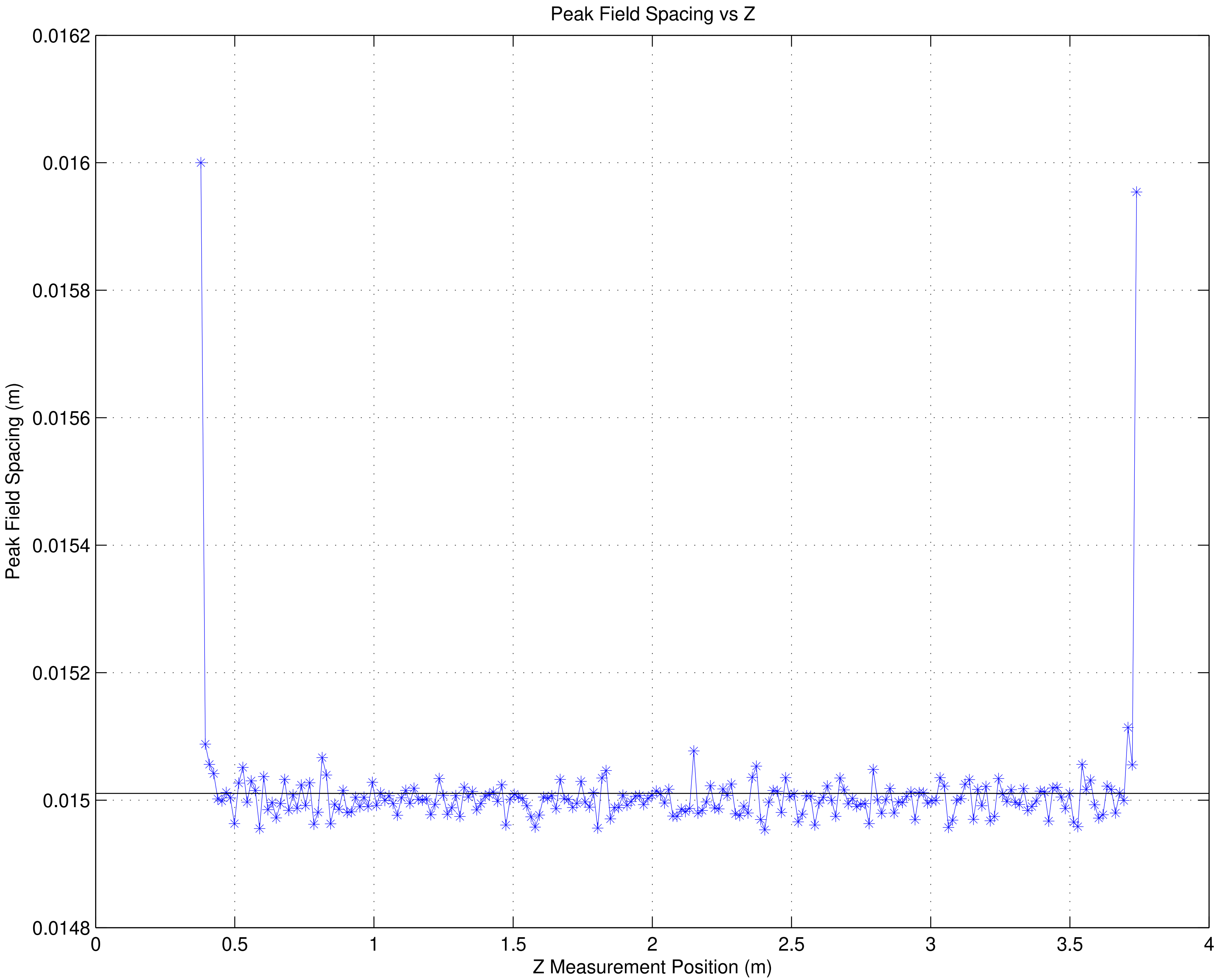

By vs Z
1.5
1
0.5
0
−0.5
−1
−1.5
By (T)
0
0.5
1
1.5
2
2.5
3
3.5
4
Z Position (m)



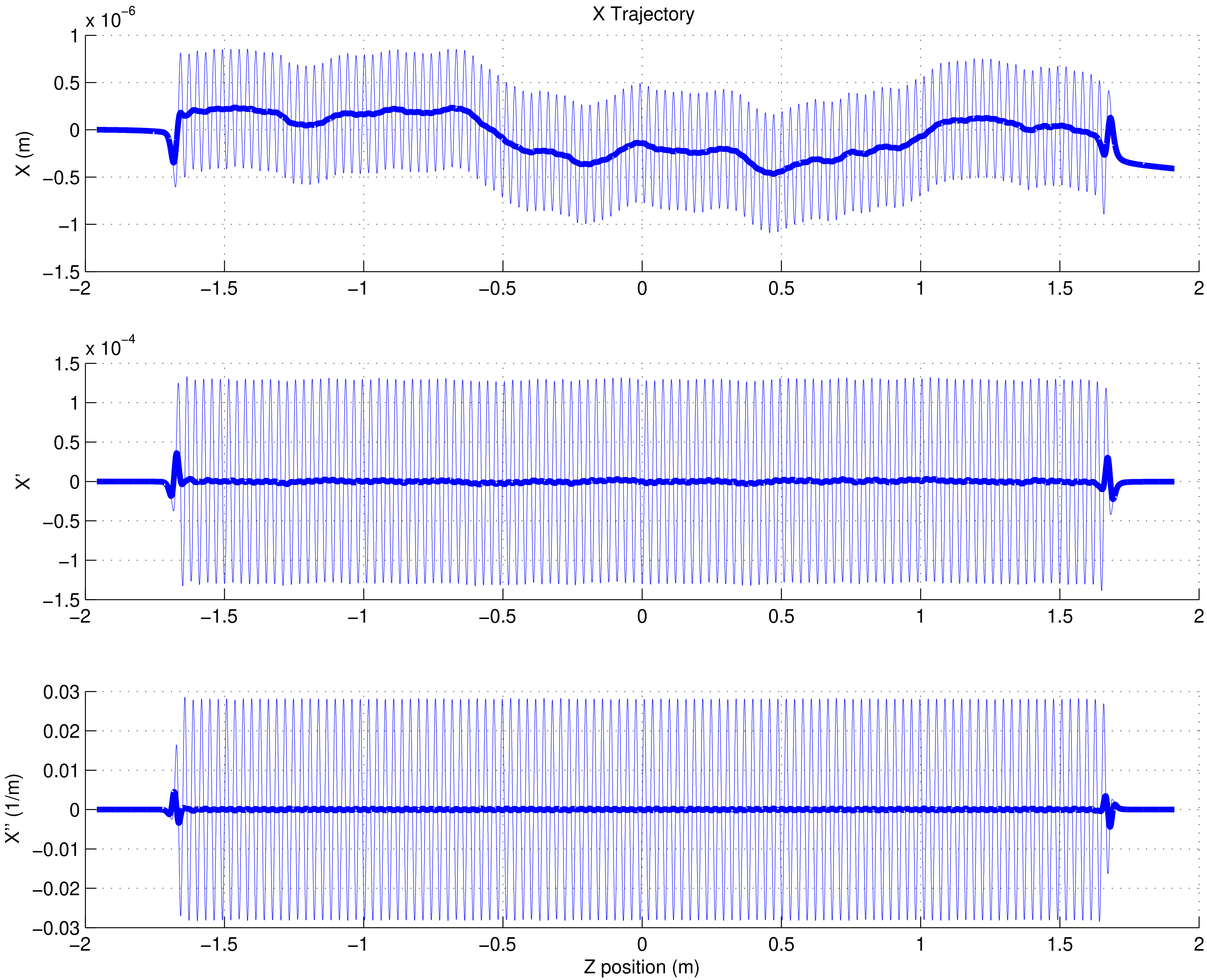
Fitted Peak B vs Fitted Z
Fitted Peak B (T)
Fitted Peak Z Measurement Position (m)
1.5
1
0.5
0
−0.5
−1
−1.5
0
0.5
1
1.5
2
2.5
3
3.5
4

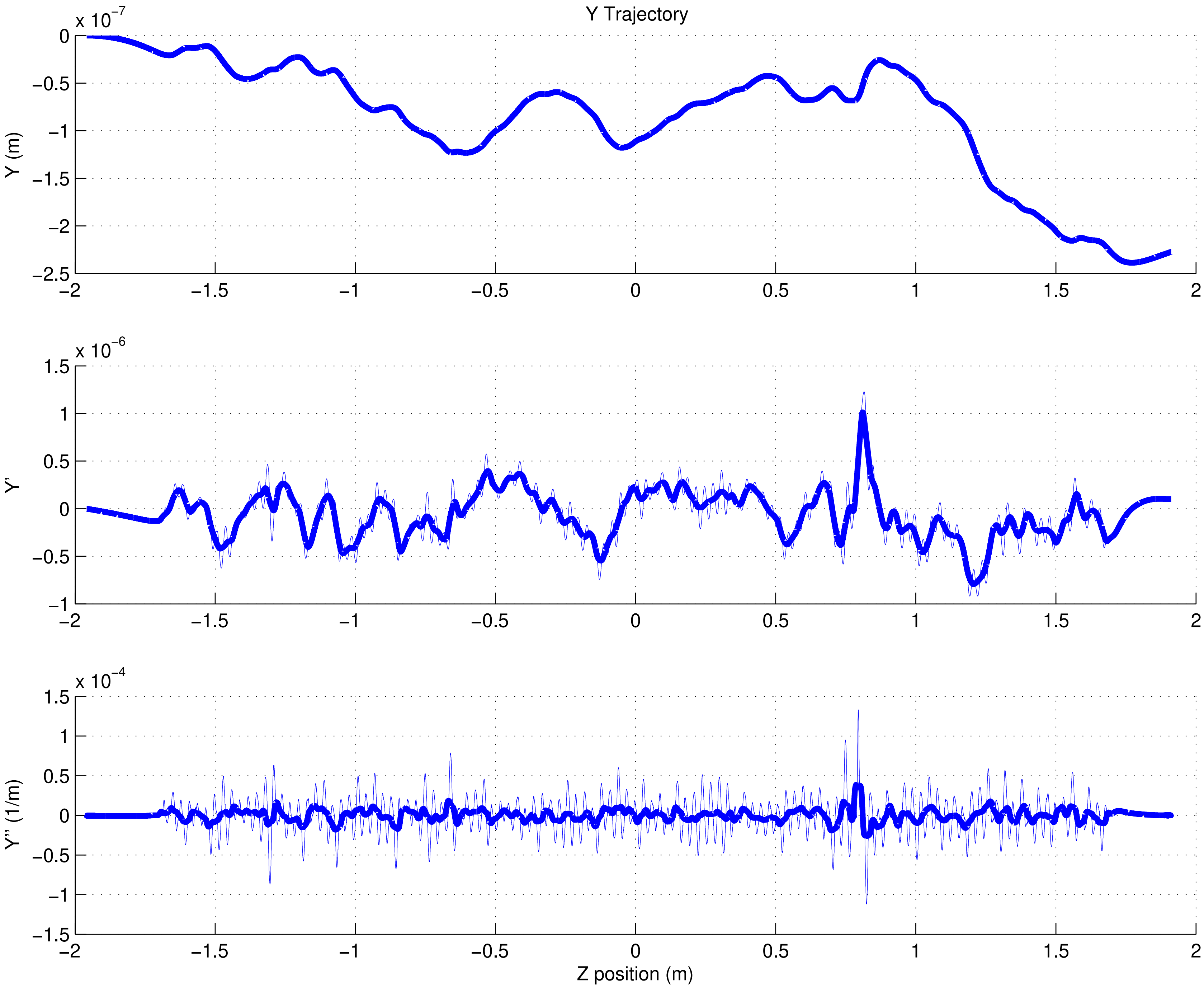


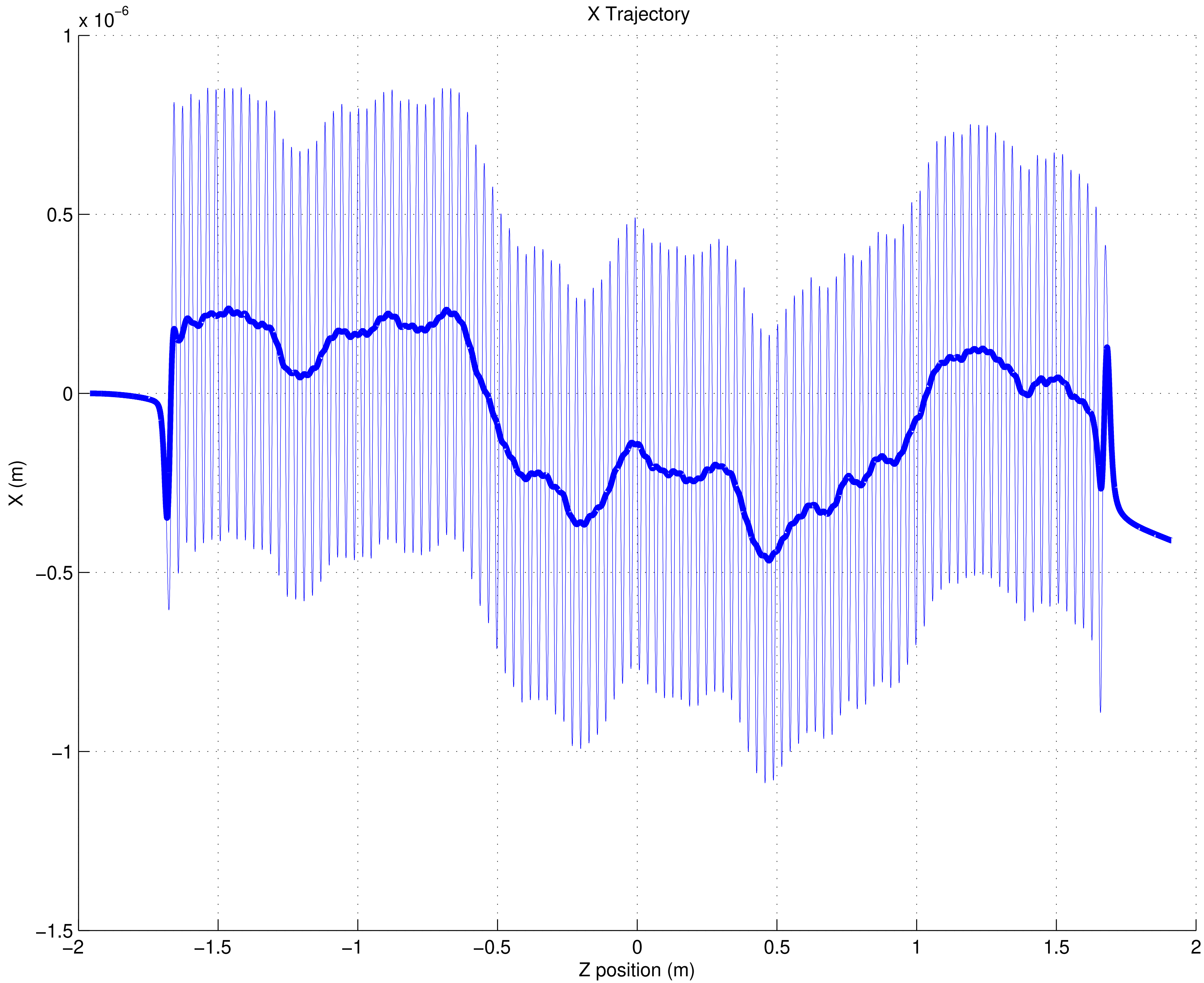
Peak Fields: Ave = 1.278114 T, RMS = 0.003360 T



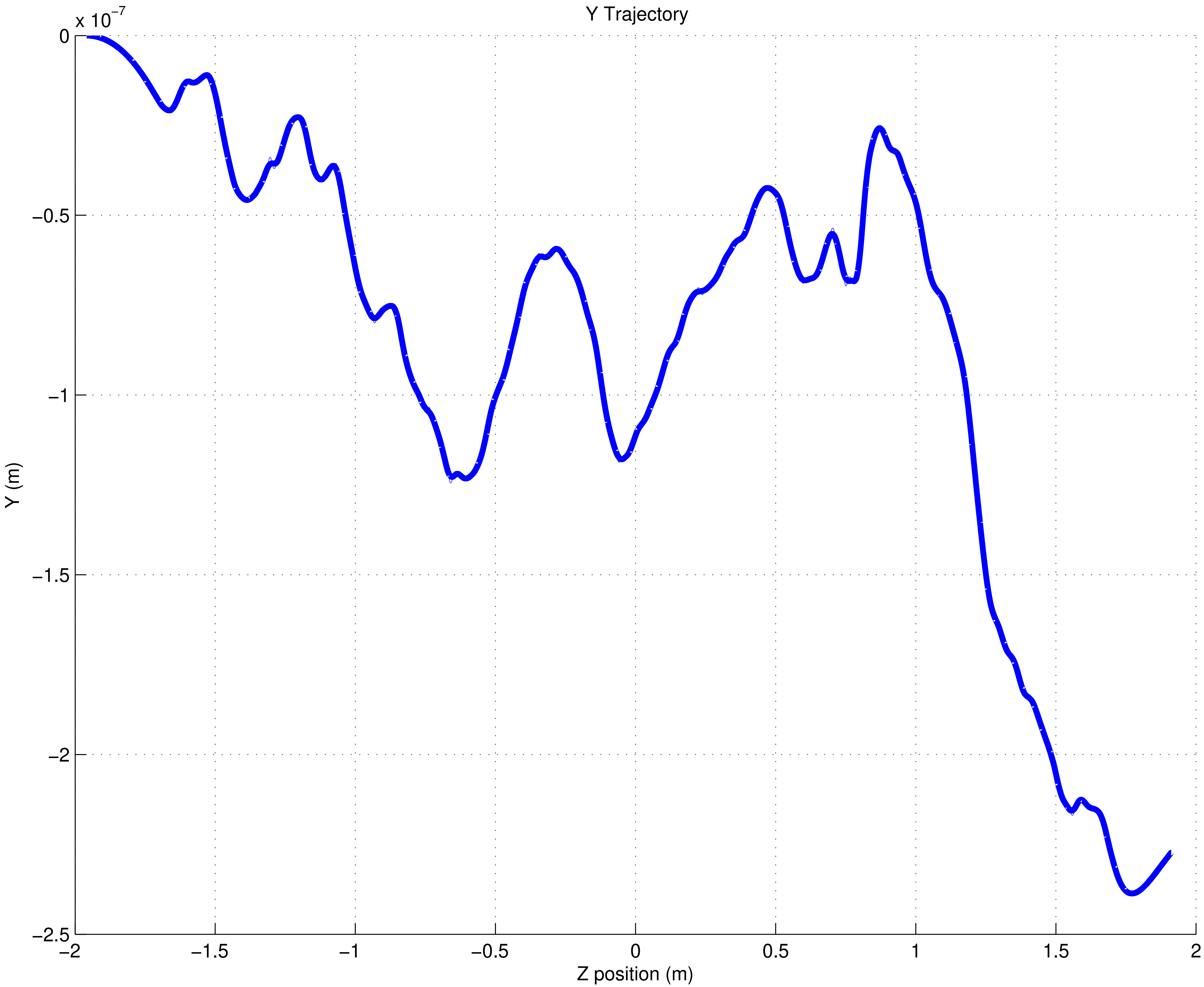
Peak Field Spacing: Ave = 0.015010 m, RMS = 0.000095 m

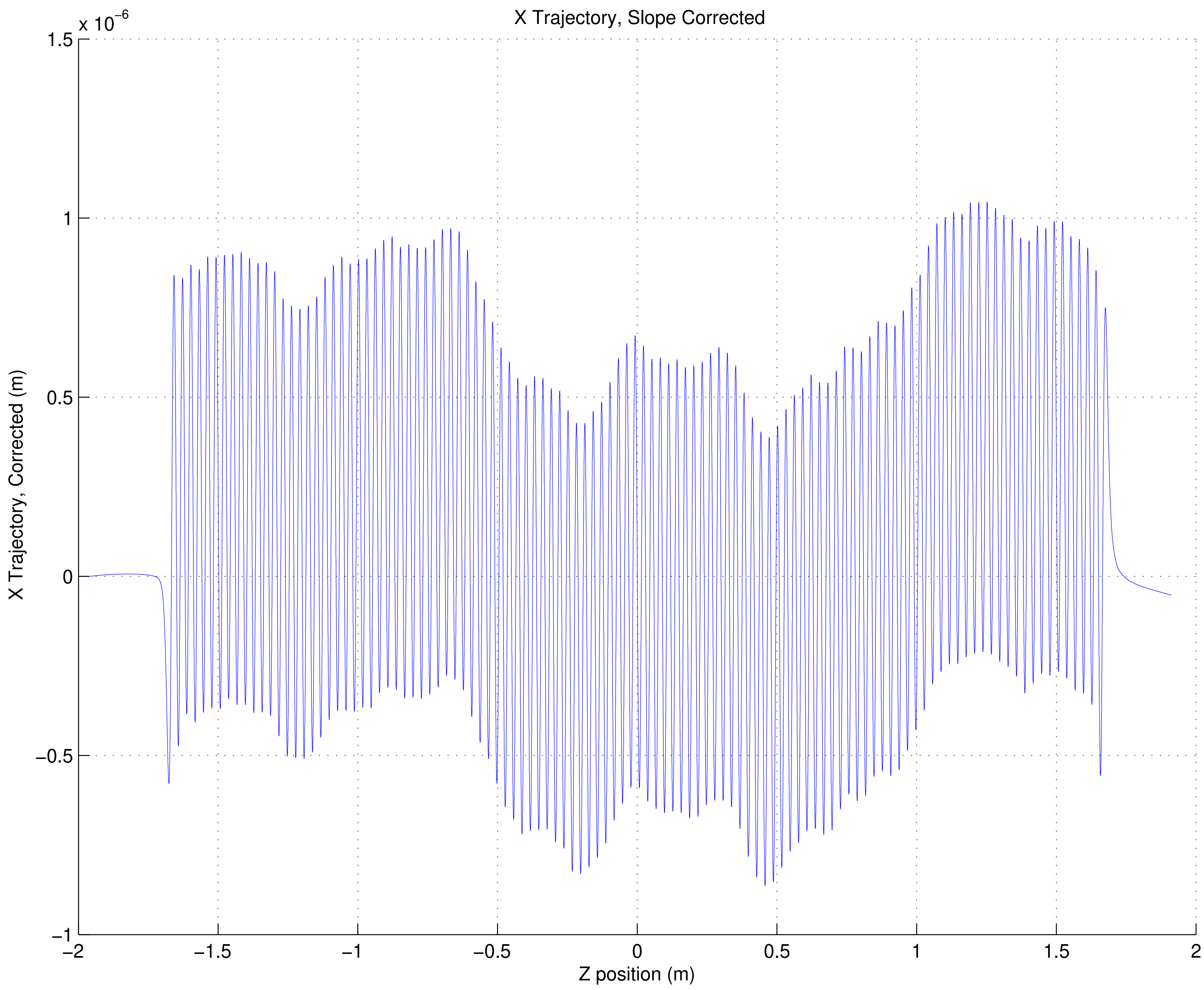

X Trajectory
x 10^−6
1
0.5
0
−0.5
−1
−1.5
X (m)
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
x 10^−4
1.5
1
0.5
0
−0.5
−1
−1.5
X'
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
0.03
0.02
0.01
0
−0.01
−0.02
−0.03
X'' (1/m)
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
Z position (m)

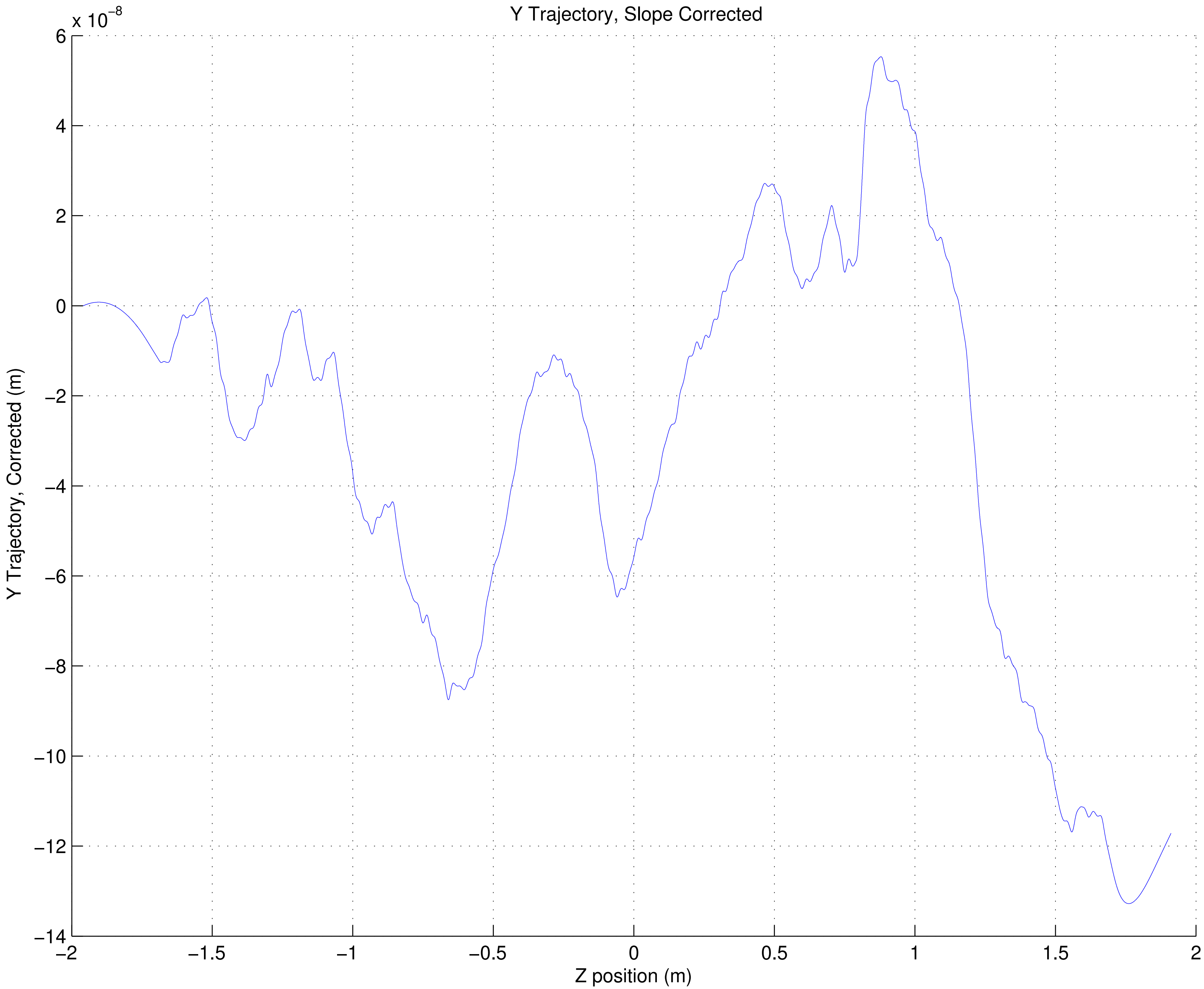

Y Trajectory
x 10^−7
0
−0.5
−1
−1.5
−2
−2.5
Y (m)
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
x 10^−6
1.5
1
0.5
0
−0.5
−1
Y'
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
x 10^−4
1.5
1
0.5
0
−0.5
−1
−1.5
Y'' (1/m)
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
Z position (m)

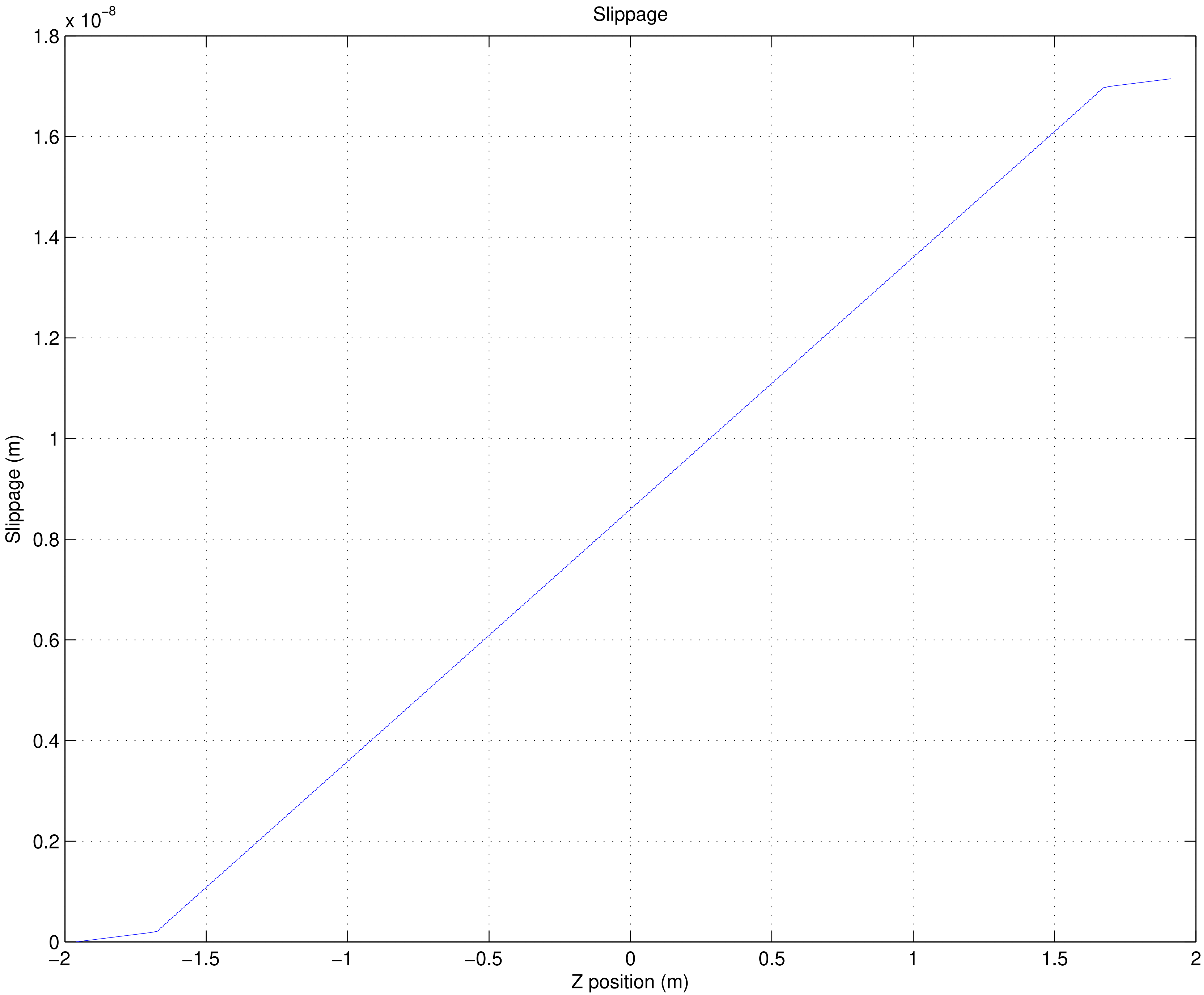


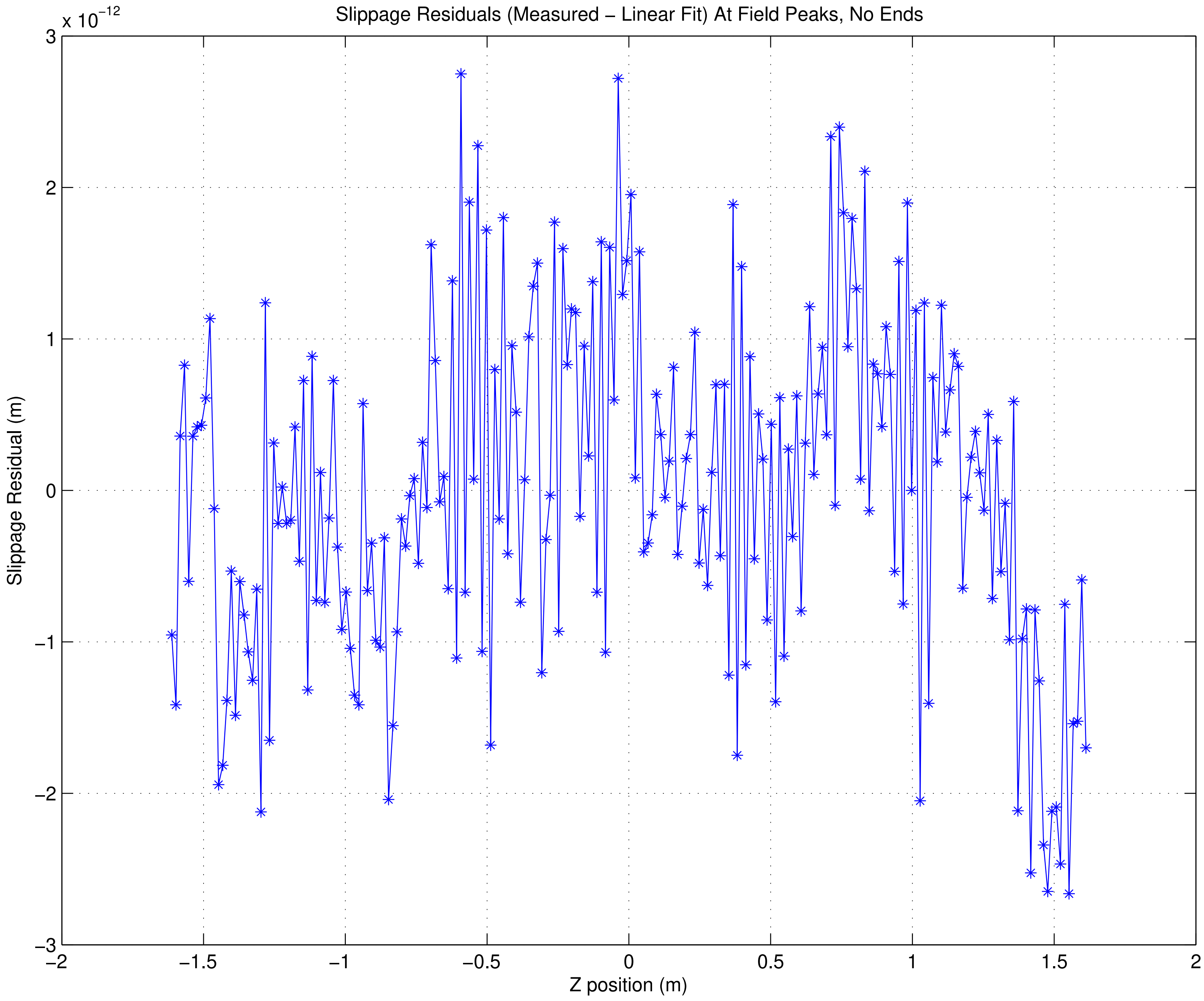
X Trajectory
x 10^−6
1
0.5
0
−0.5
−1
−1.5
X (m)
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
Z position (m)

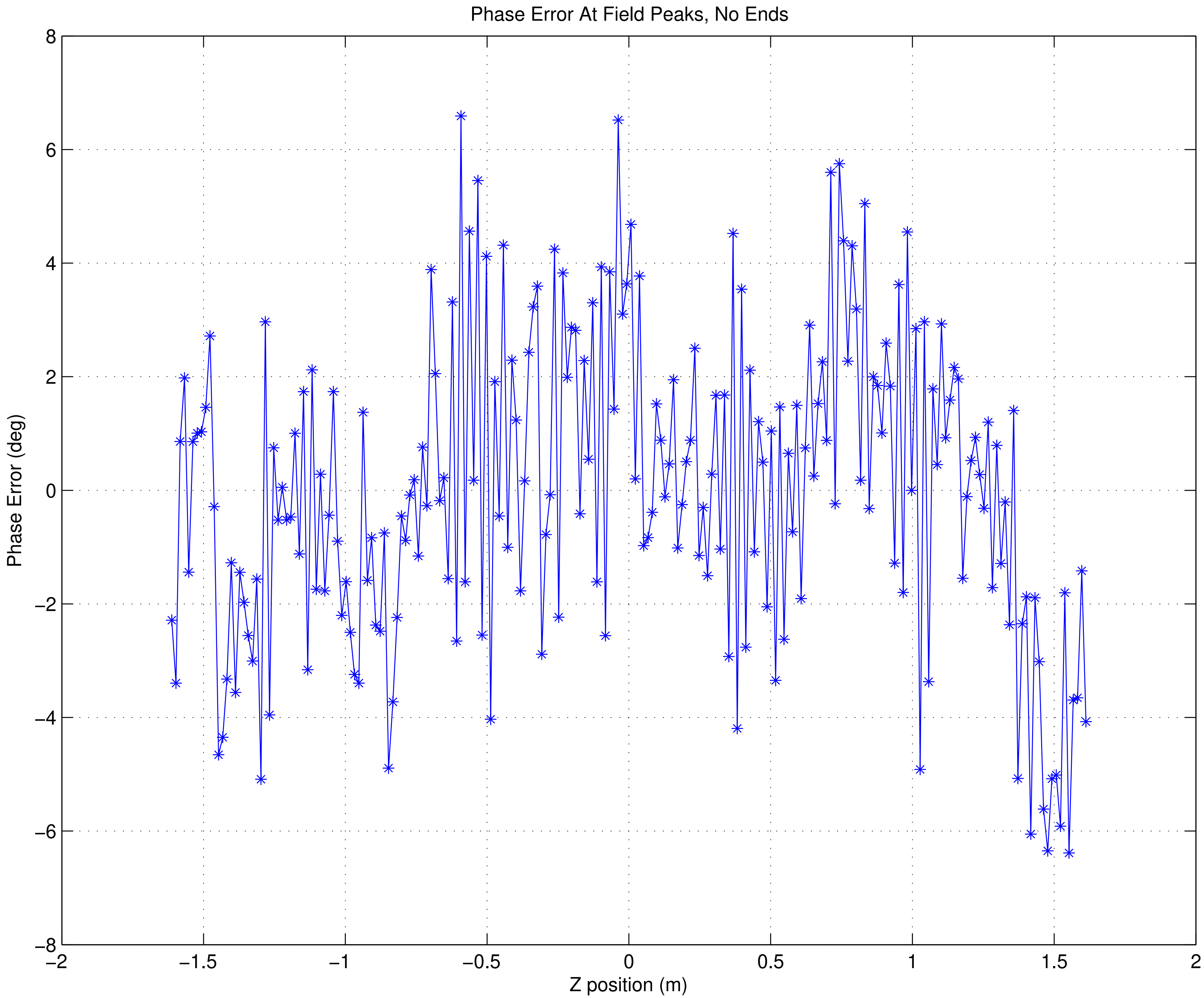

Y Trajectory
x 10^−7
0
−0.5
−1
−1.5
−2
−2.5
Y (m)
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
Z position (m)


X Trajectory, Slope Corrected
x 10^-6
1.5
1
0.5
0
−0.5
−1
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
Z position (m)
X Trajectory, Corrected (m)

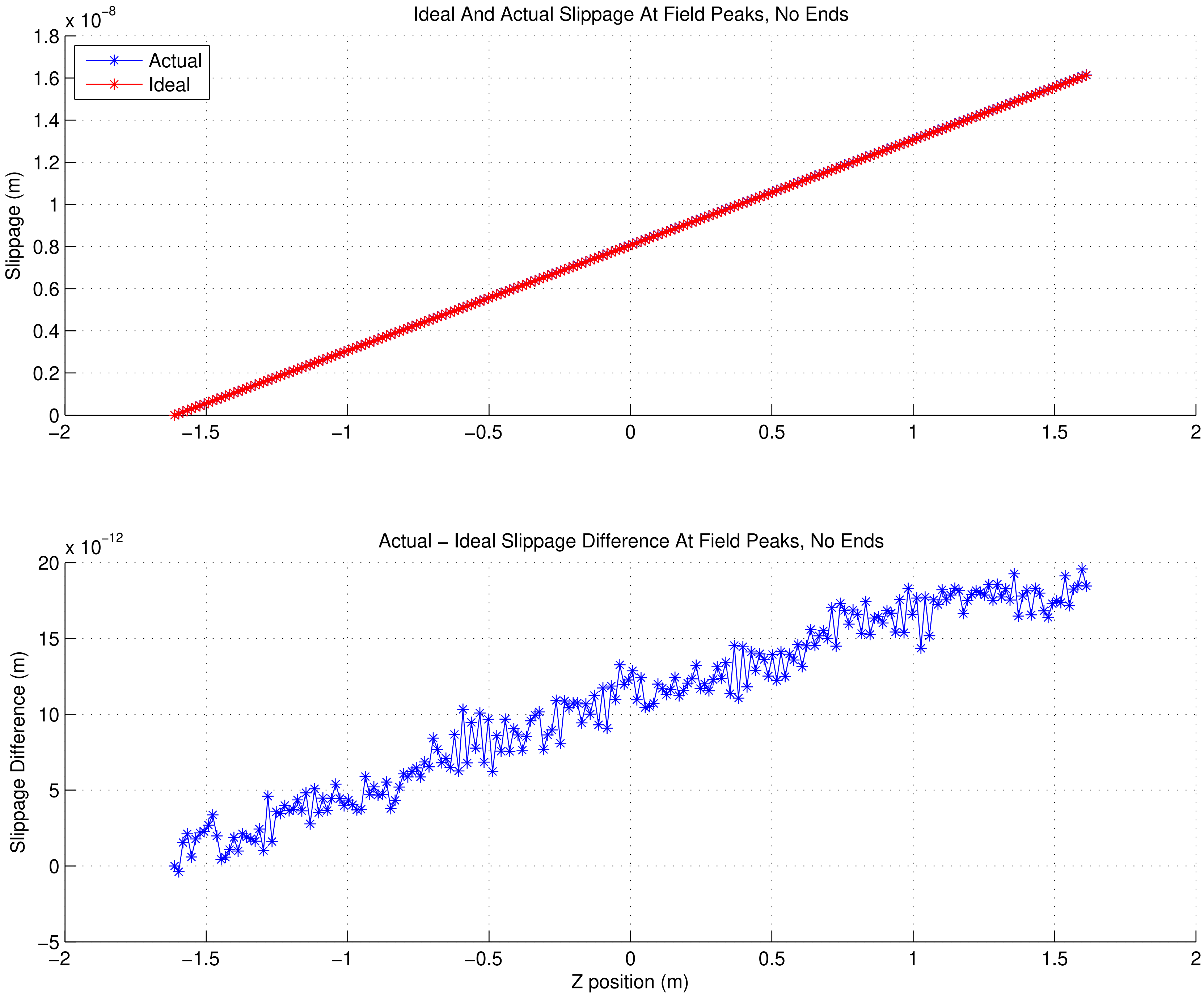

Y Trajectory, Slope Corrected
x 10^−8
6
4
2
0
−2
−4
−6
−8
−10
−12
−14
Y Trajectory, Corrected (m)
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
Z position (m)


Slippage
x 10^-8
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
Slippage (m)
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
Z position (m)


x 10^-12
Slippage Residuals (Measured – Linear Fit) At Field Peaks, No Ends
3
2
1
0
–1
–2
–3
–2
–1.5
–1
–0.5
0
0.5
1
1.5
2
Slippage Residual (m)
Z position (m)



Phase Error: Ave = −0.000000 deg, RMS = 2.684438 deg


Ideal And Actual Slippage At Field Peaks, No Ends
x 10^-8
Actual
Ideal
Slippage (m)
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
Actual – Ideal Slippage Difference At Field Peaks, No Ends
x 10^-12
Slippage Difference (m)
20
15
10
5
0
−5
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
Z position (m)