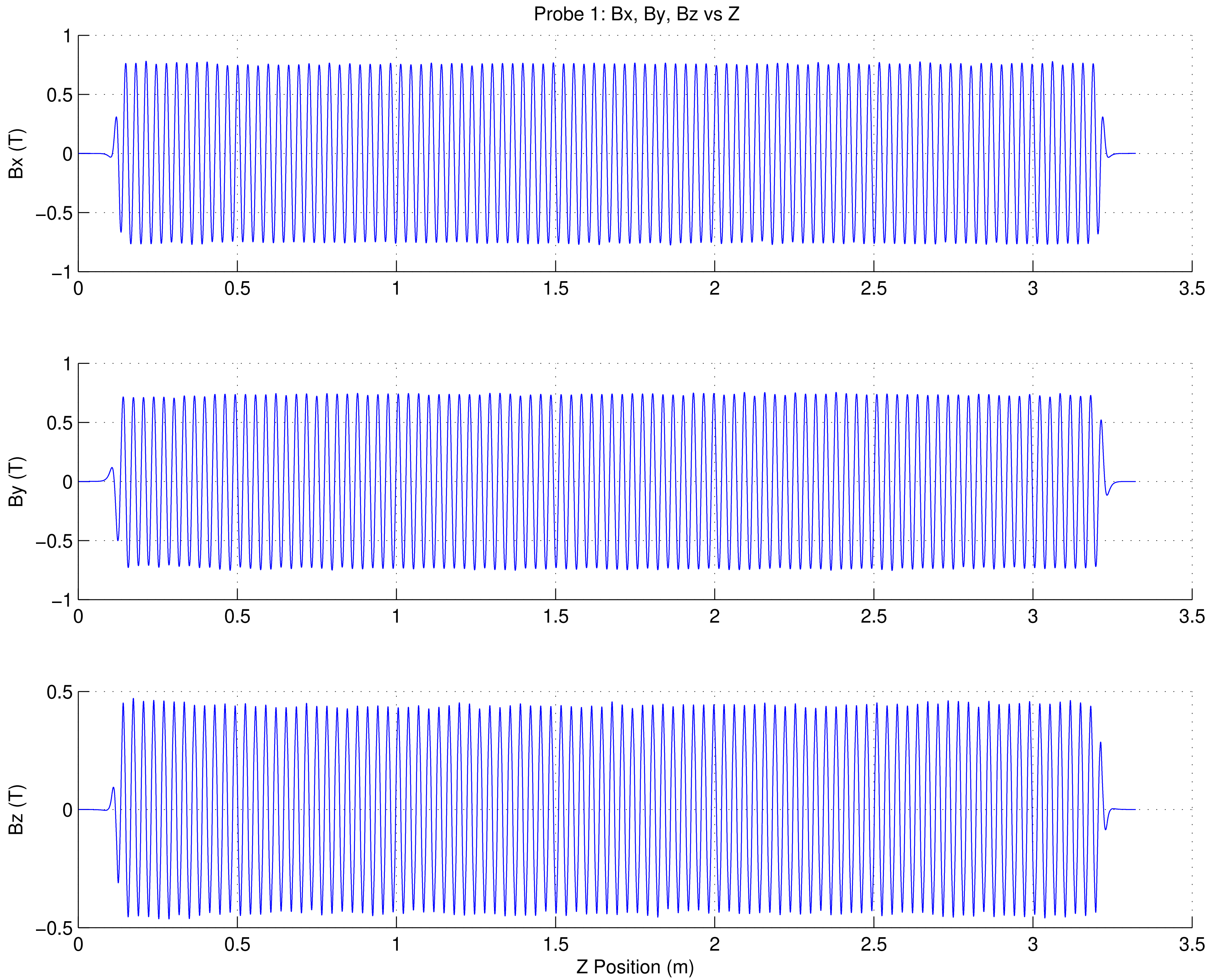
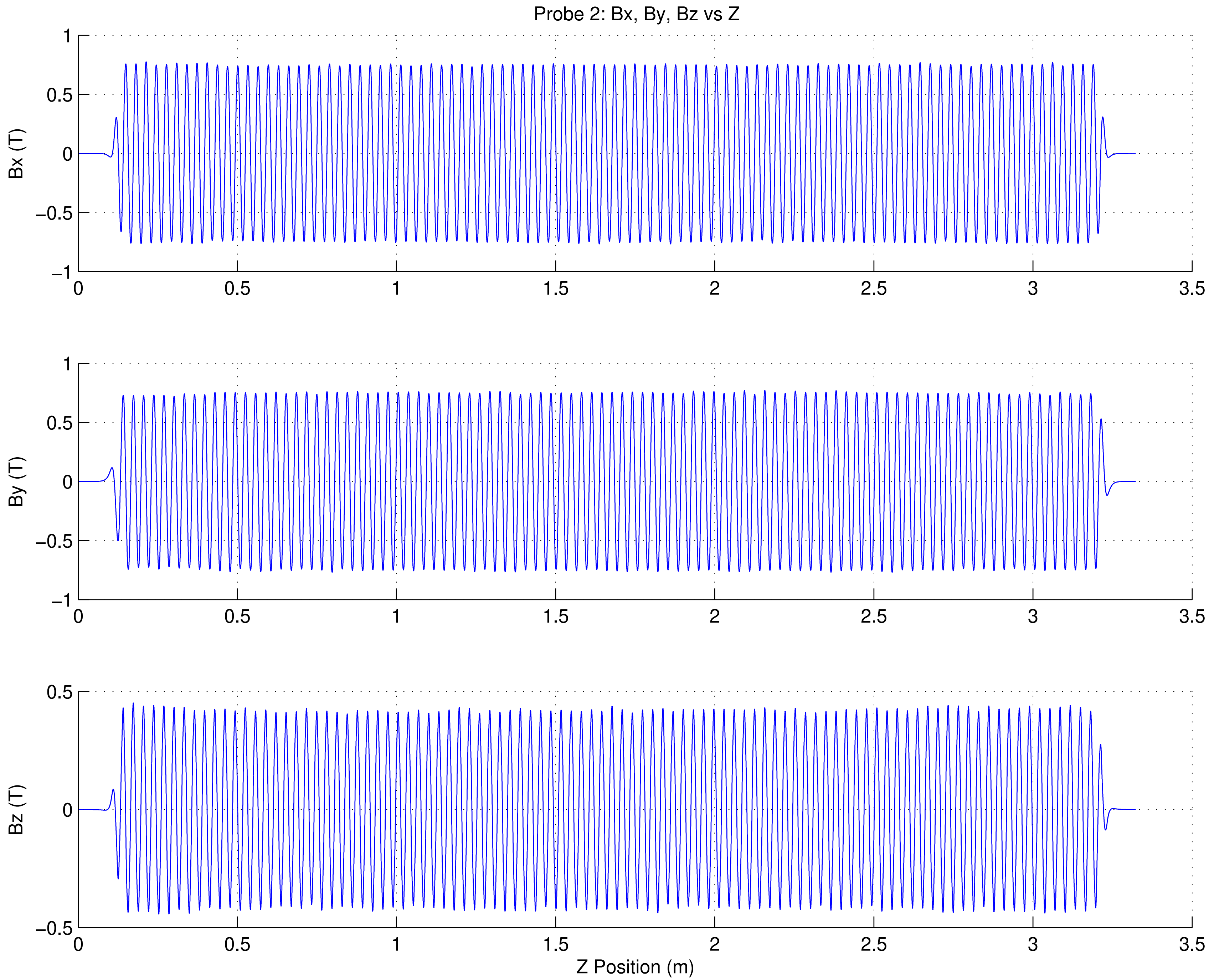
SLAC Magnetic Measurements

Hall Probe Array Analysis
****

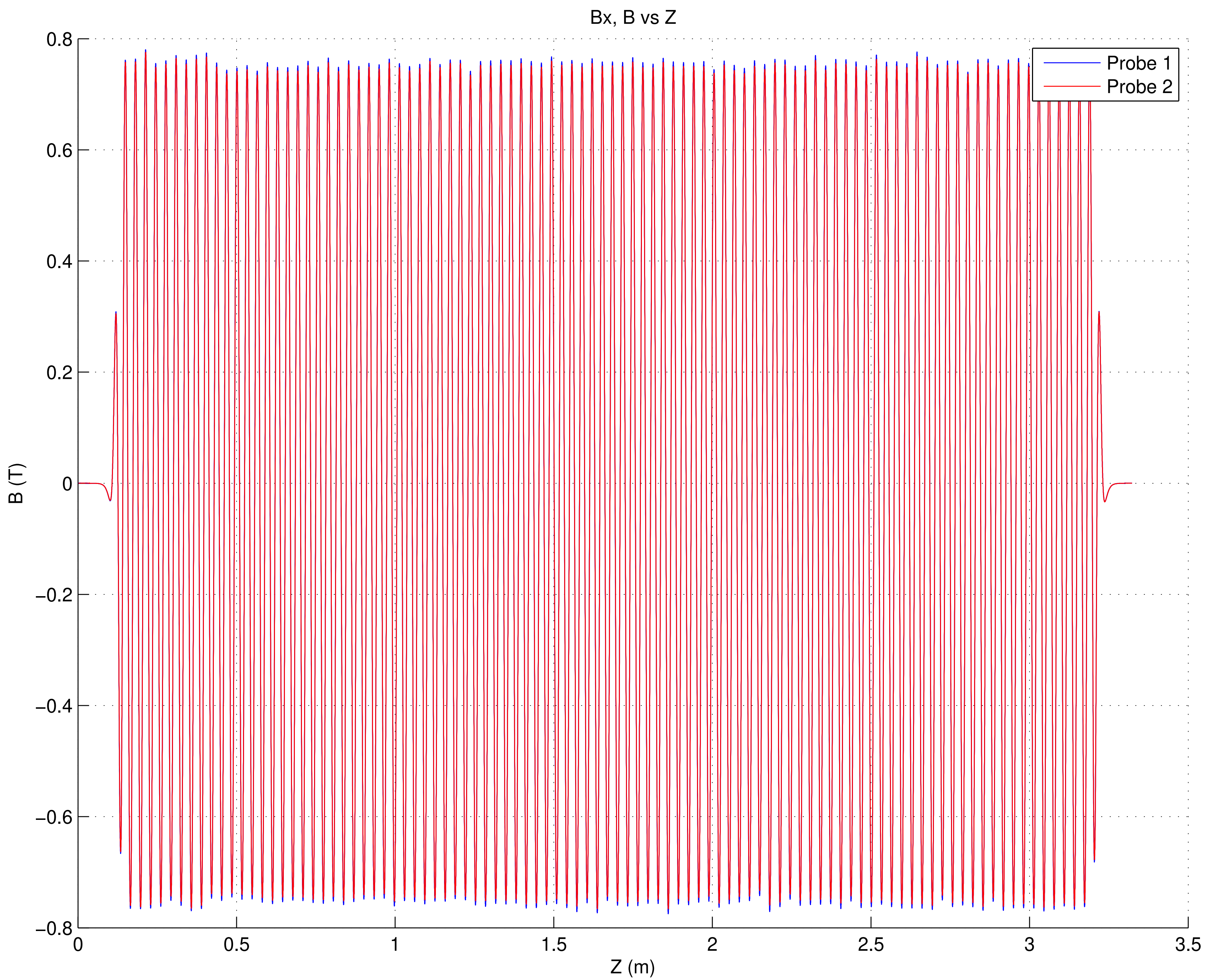
Parameters:
INPUT−FILE−DIR =V:\MET\MagServe\MagData\DELTA\Delta data\Assembled Measurements\Final Measurements\CPLMF\KR0
INPUT−FILE−NAME =DUTestOutput.dat
INPUT−FILE−TYPE =ZVXYZVXYZH
UND−POL−MODE =CIRC−POL−LEFT−HAND
PROBE1−BX−CALIB−FILE =v:\MET\MagServe\MagData\LCLS\Hall probe\SENIS−119−12\SENIS−119−12−X.ini
PROBE1−BY−CALIB−FILE =v:\MET\MagServe\MagData\LCLS\Hall probe\SENIS−119−12\SENIS−119−12−Y.ini
PROBE2−BX−CALIB−FILE =v:\MET\MagServe\MagData\LCLS\Hall probe\SENIS−120−12\SENIS−120−12−X.ini
PROBE2−BY−CALIB−FILE =v:\MET\MagServe\MagData\LCLS\Hall probe\SENIS−120−12\SENIS−120−12−Y.ini
NUM−ZERO−GAUSS−MEAS =200
PROBE2−OFFSET−DIR =Y



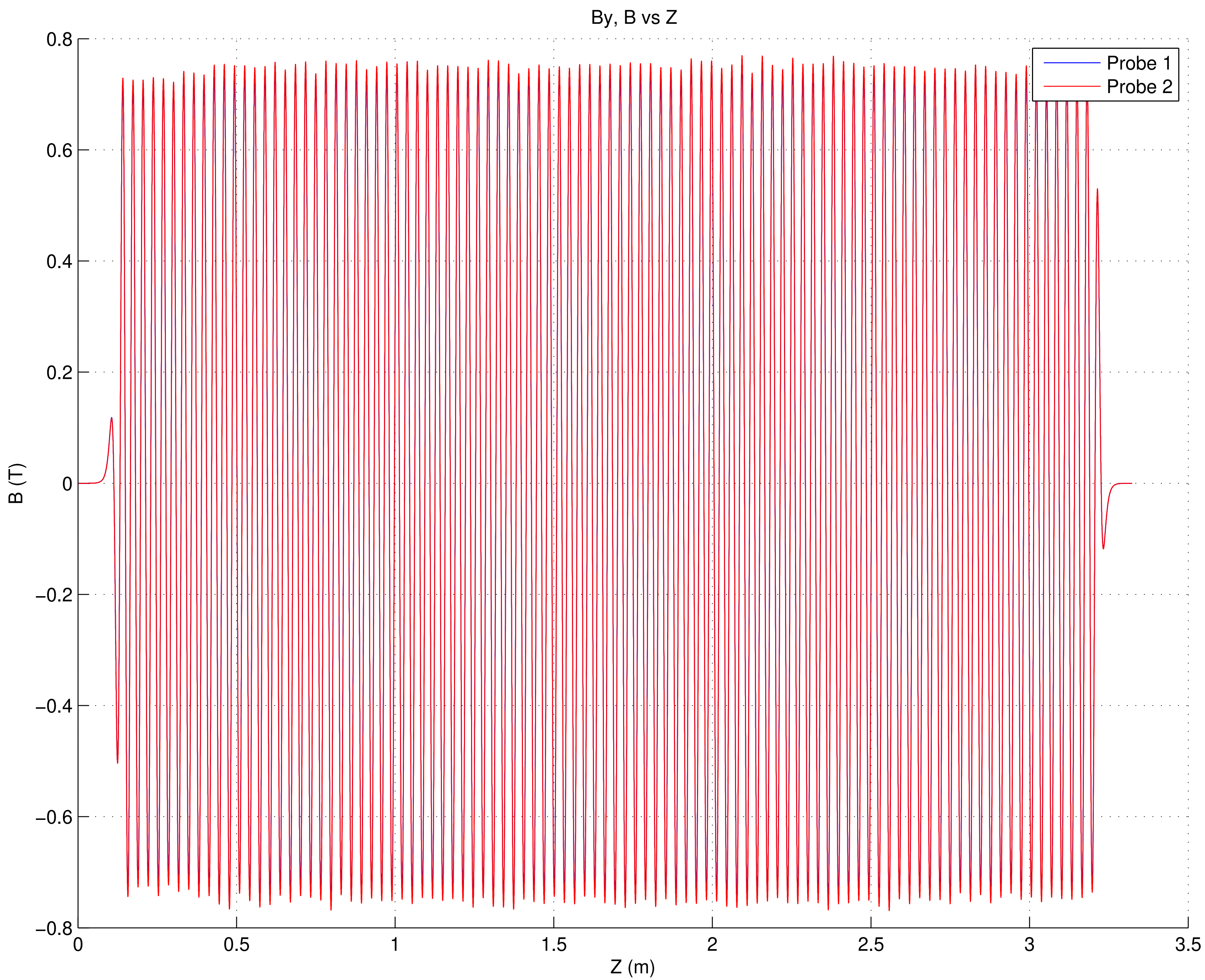
Probe 1: Bx, By, Bz vs Z
Bx (T)
By (T)
Bz (T)
Z Position (m)
1
0.5
0
−0.5
−1
0
0.5
1
1.5
2
2.5
3
3.5



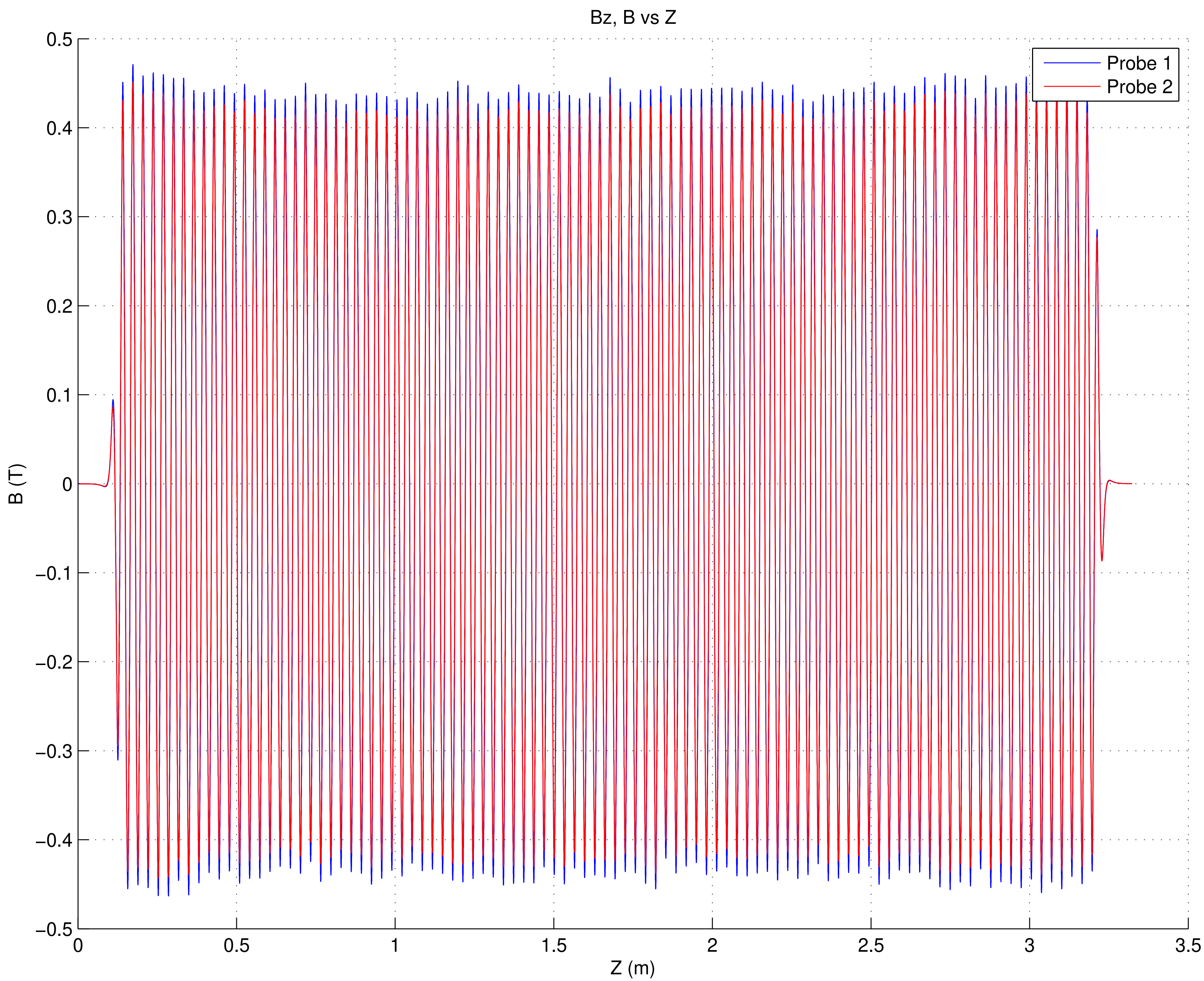
Probe 2: Bx, By, Bz vs Z
Bx (T)
By (T)
Bz (T)
Z Position (m)
1
0.5
0
−0.5
−1
0
0.5
1
1.5
2
2.5
3
3.5



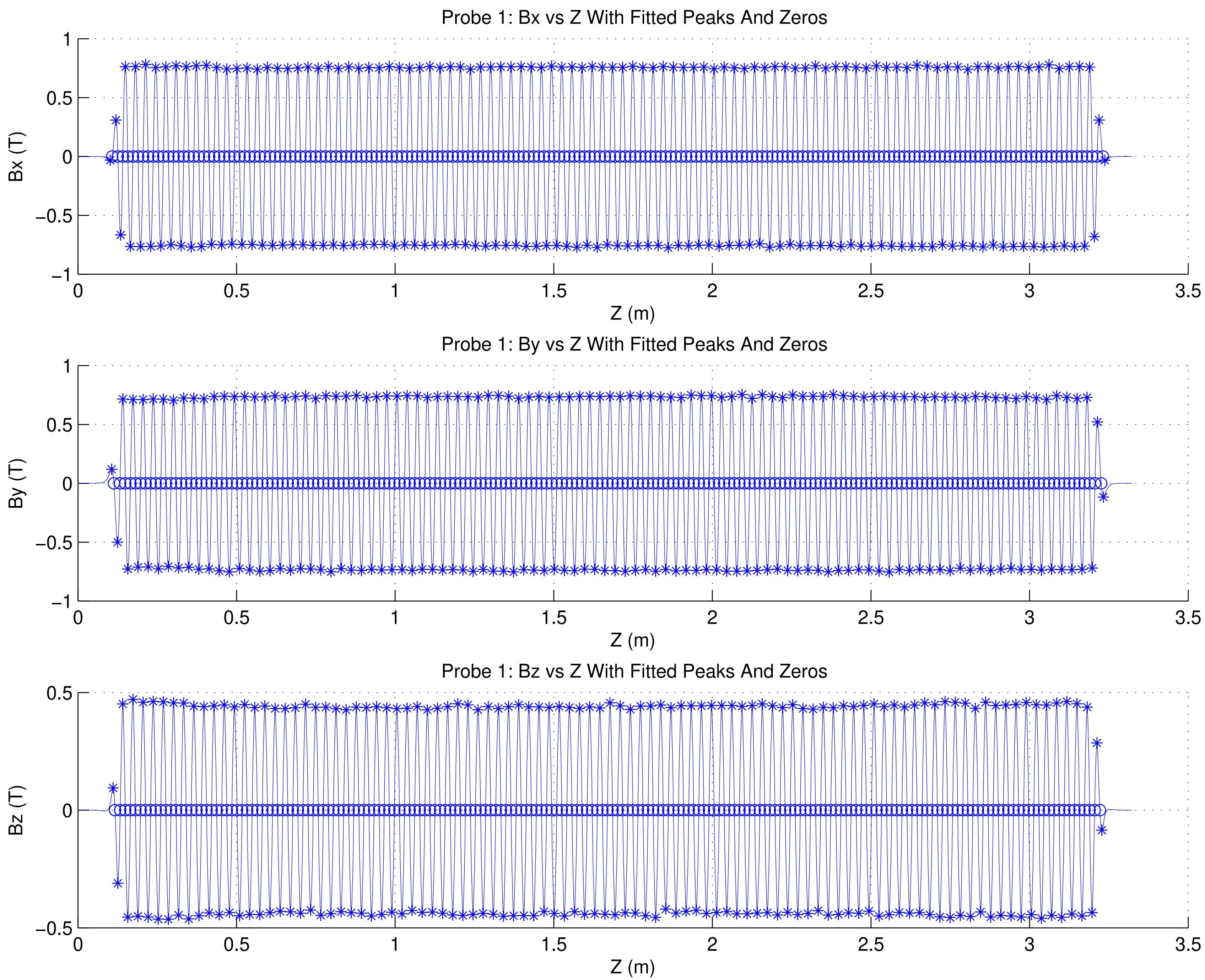
Bx, B vs Z
Probe 1
Probe 2
B (T)
Z (m)
0.8
0.6
0.4
0.2
0
−0.2
−0.4
−0.6
−0.8
0
0.5
1
1.5
2
2.5
3
3.5



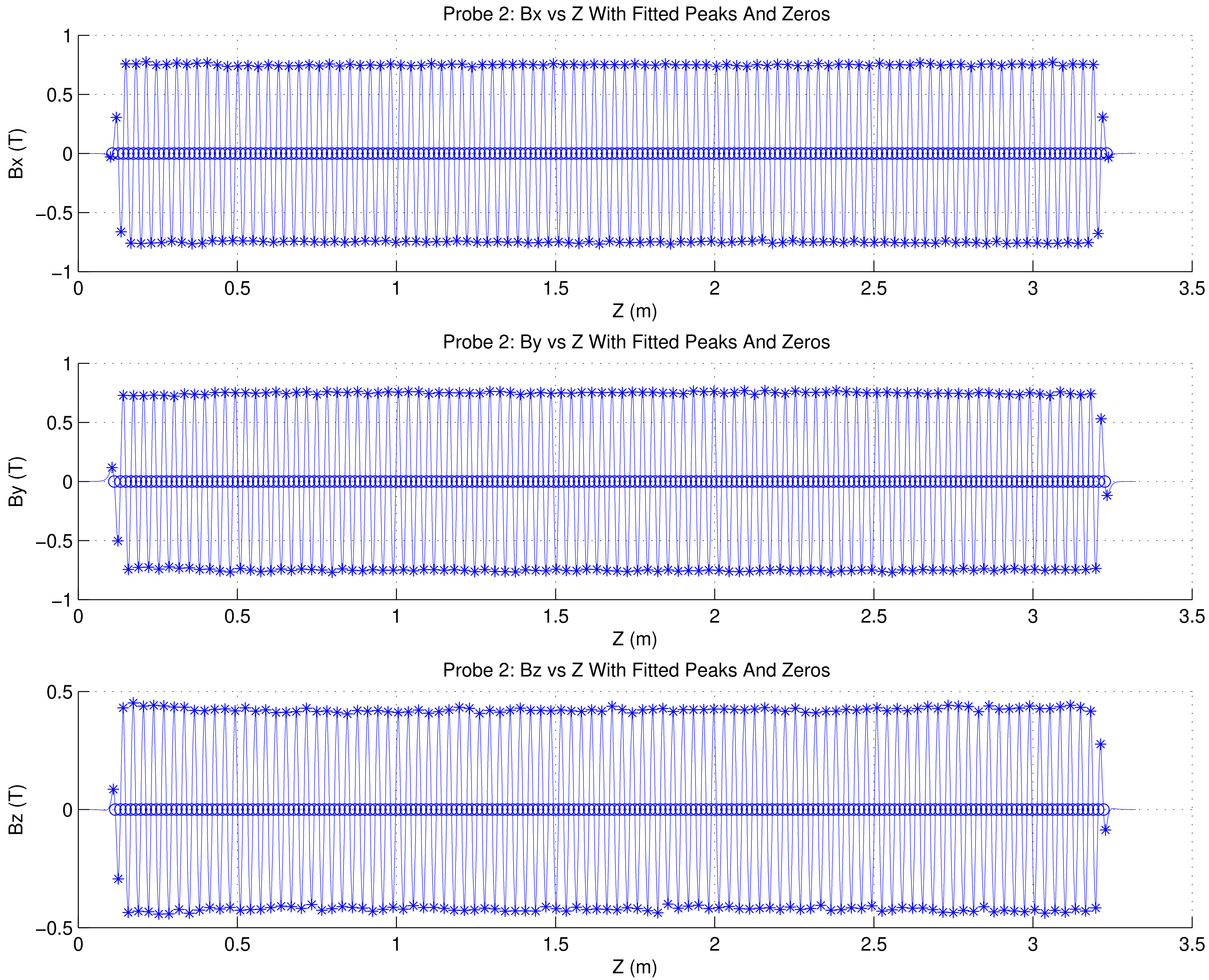
By, B vs Z
Probe 1
Probe 2
B (T)
Z (m)
0.8
0.6
0.4
0.2
0
−0.2
−0.4
−0.6
−0.8
0
0.5
1
1.5
2
2.5
3
3.5

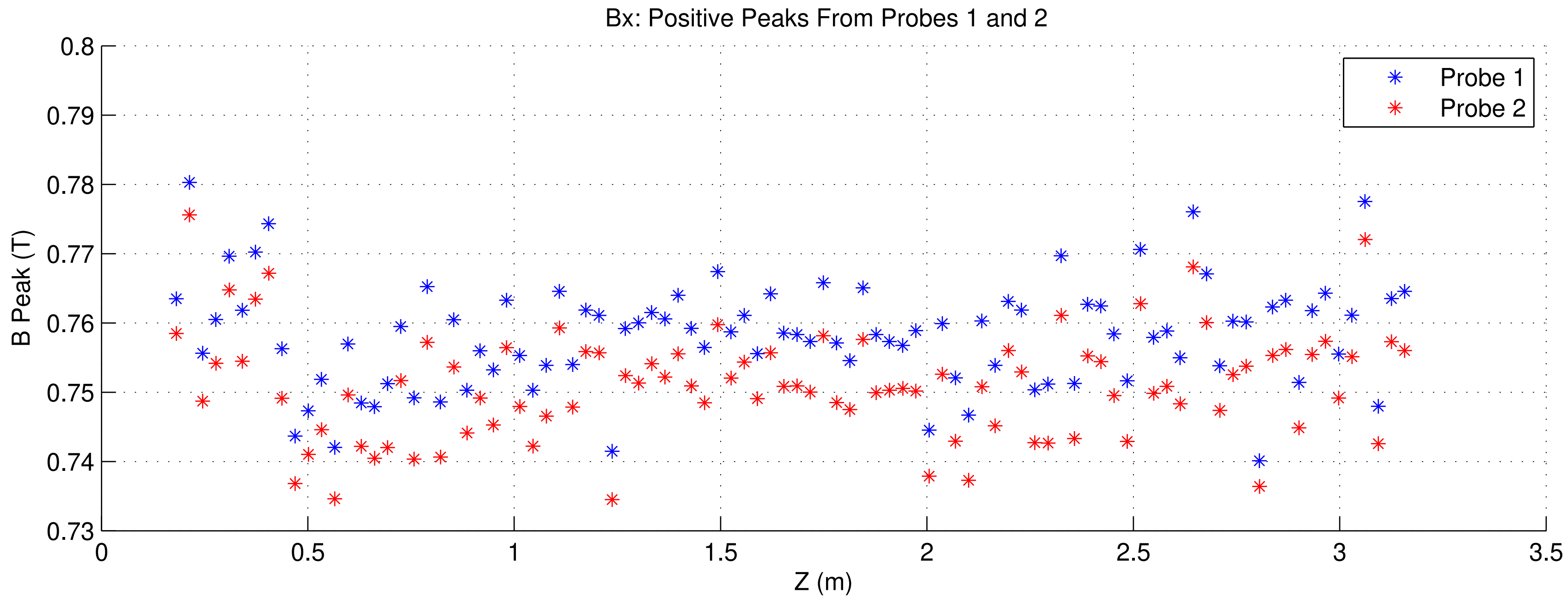


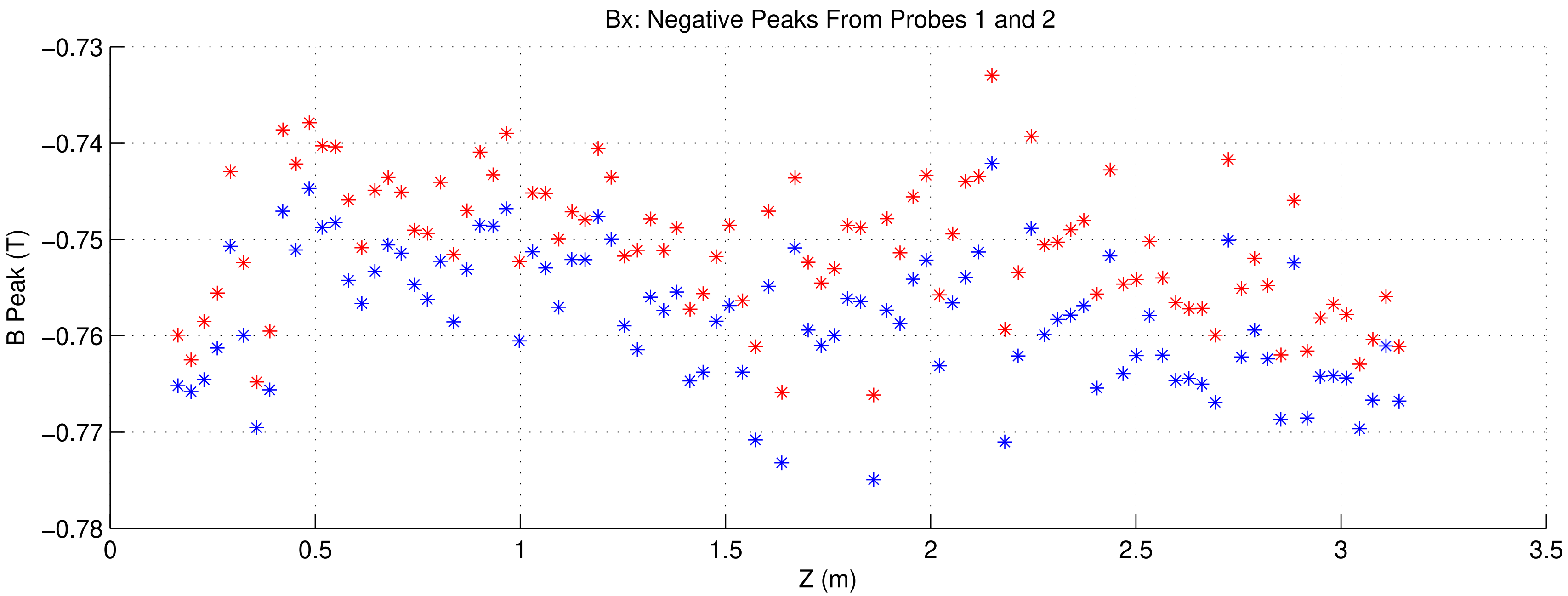
Bz, B vs Z
Probe 1
Probe 2
B (T)
Z (m)
0.5
0.4
0.3
0.2
0.1
0
−0.1
−0.2
−0.3
−0.4
−0.5
0
0.5
1
1.5
2
2.5
3
3.5

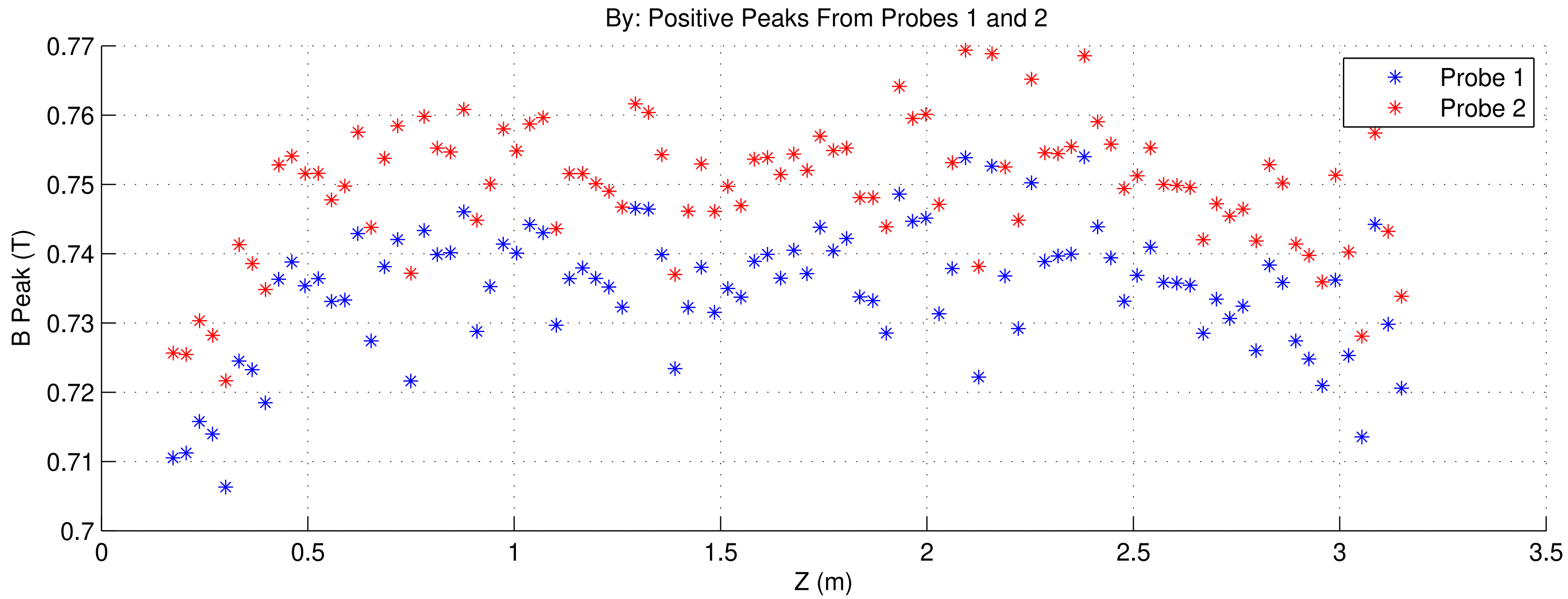


Probe 1: Bx vs Z With Fitted Peaks And Zeros
Bx (T)
Z (m)
Probe 1: By vs Z With Fitted Peaks And Zeros
By (T)
Z (m)
Probe 1: Bz vs Z With Fitted Peaks And Zeros
Bz (T)
Z (m)

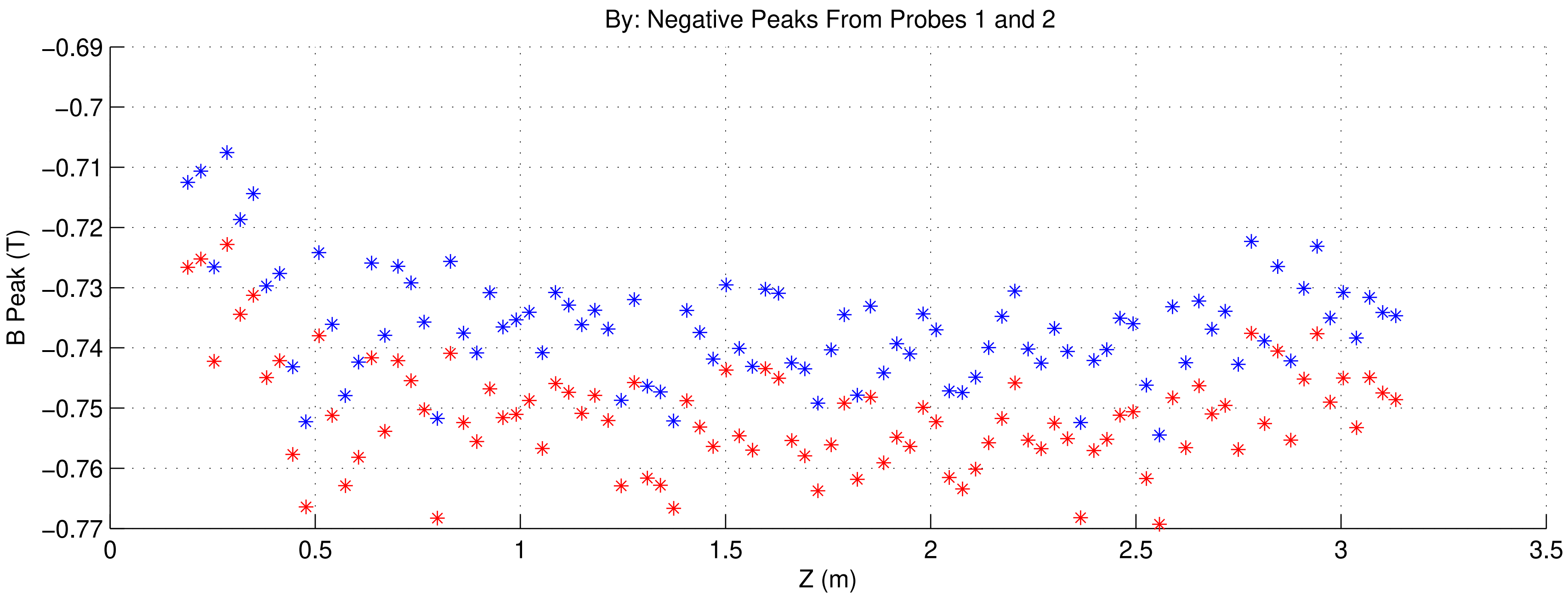

Probe 2: Bx vs Z With Fitted Peaks And Zeros
Bx (T)
Z (m)
Probe 2: By vs Z With Fitted Peaks And Zeros
By (T)
Z (m)
Probe 2: Bz vs Z With Fitted Peaks And Zeros
Bz (T)
Z (m)


Bx: Positive Peaks From Probes 1 and 2
B Peak (T)
Z (m)
Probe 1
Probe 2
0.8
0.79
0.78
0.77
0.76
0.75
0.74
0.73
0
0.5
1
1.5
2
2.5
3
3.5

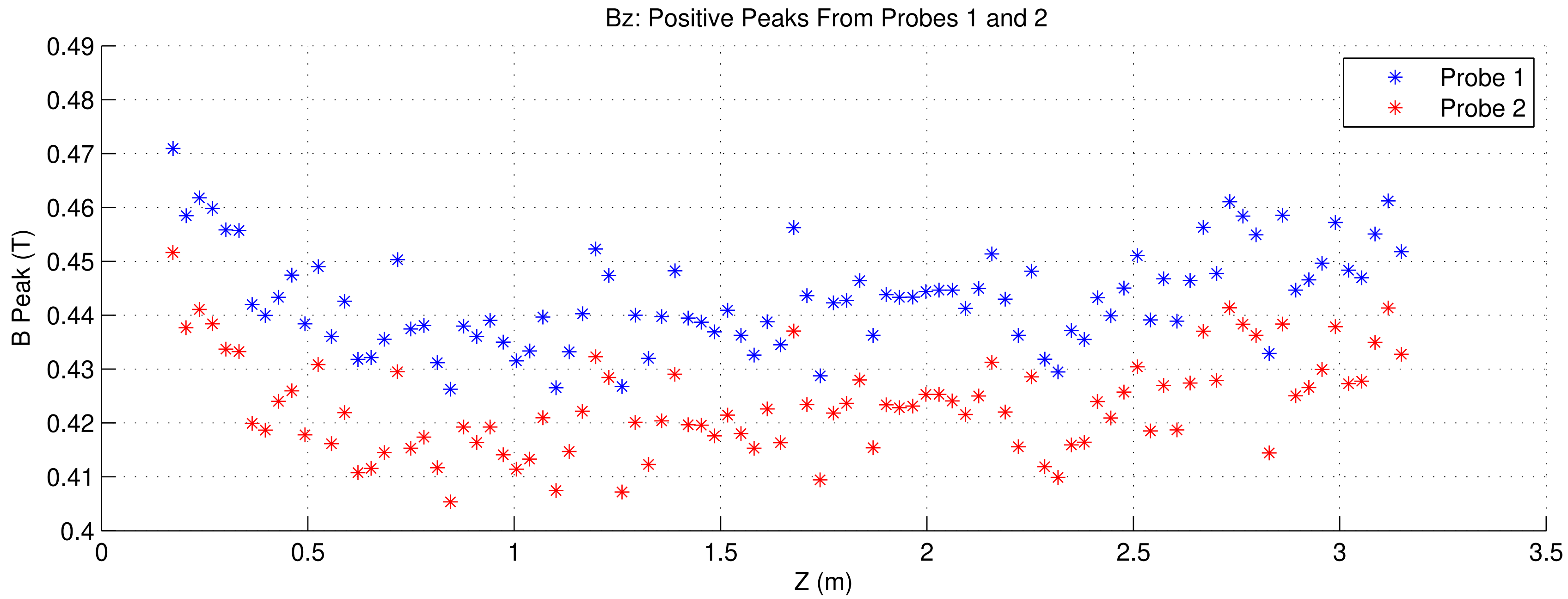

Bx: Negative Peaks From Probes 1 and 2
B Peak (T)
Z (m)
−0.73
−0.74
−0.75
−0.76
−0.77
−0.78
0
0.5
1
1.5
2
2.5
3
3.5



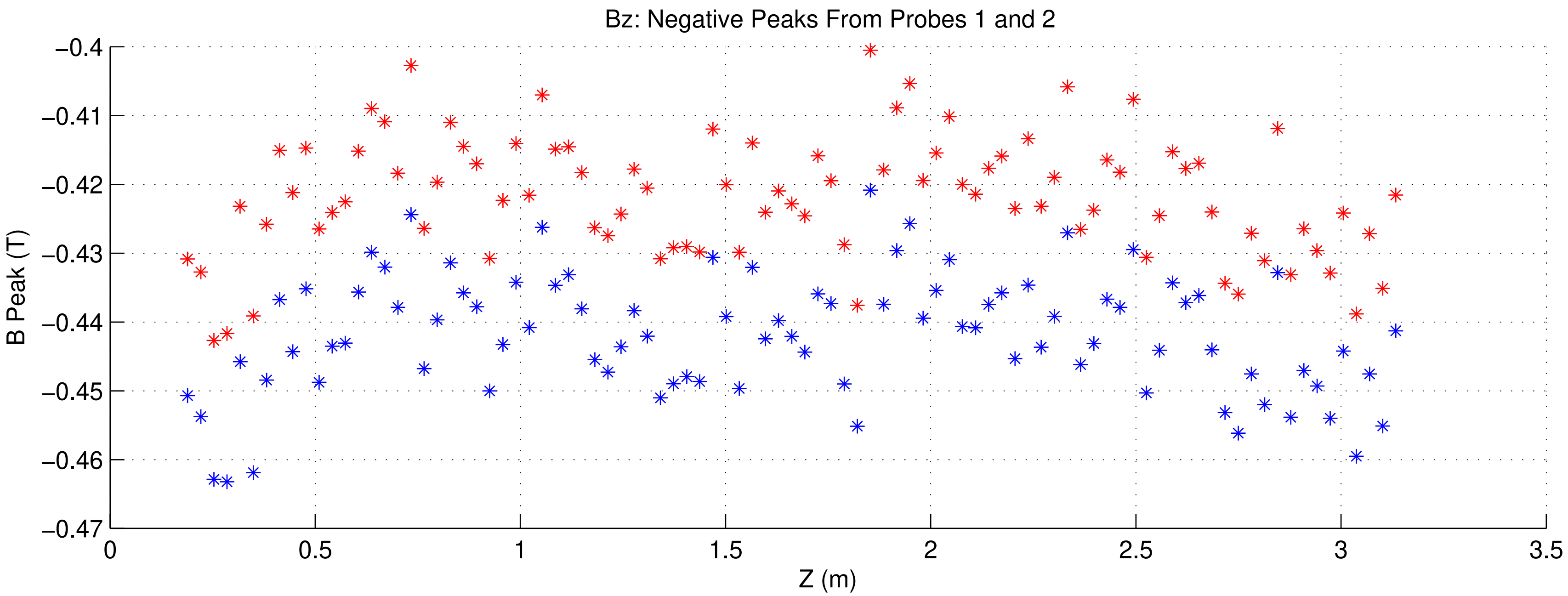
By: Positive Peaks From Probes 1 and 2
Probe 1
Probe 2
B Peak (T)
Z (m)
0.77
0.76
0.75
0.74
0.73
0.72
0.71
0.7
0
0.5
1
1.5
2
2.5
3
3.5



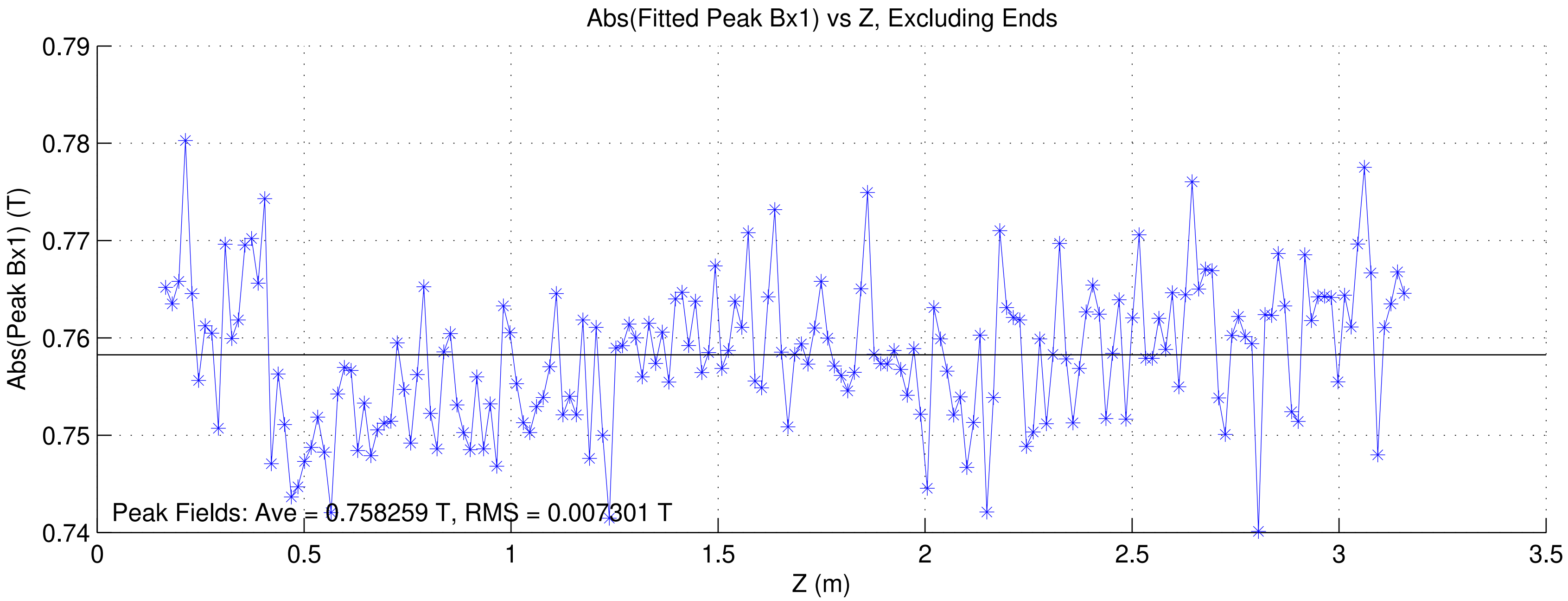
By: Negative Peaks From Probes 1 and 2
B Peak (T)
Z (m)
−0.69
−0.7
−0.71
−0.72
−0.73
−0.74
−0.75
−0.76
−0.77
0
0.5
1
1.5
2
2.5
3
3.5

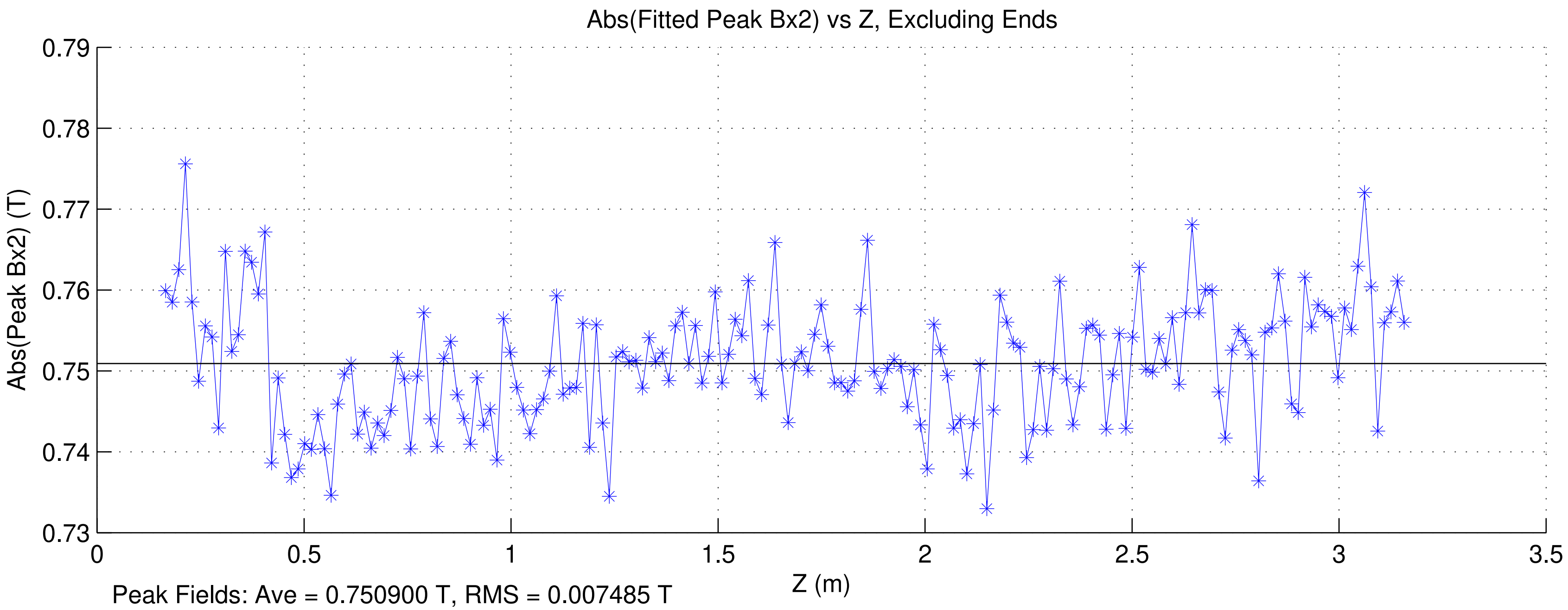


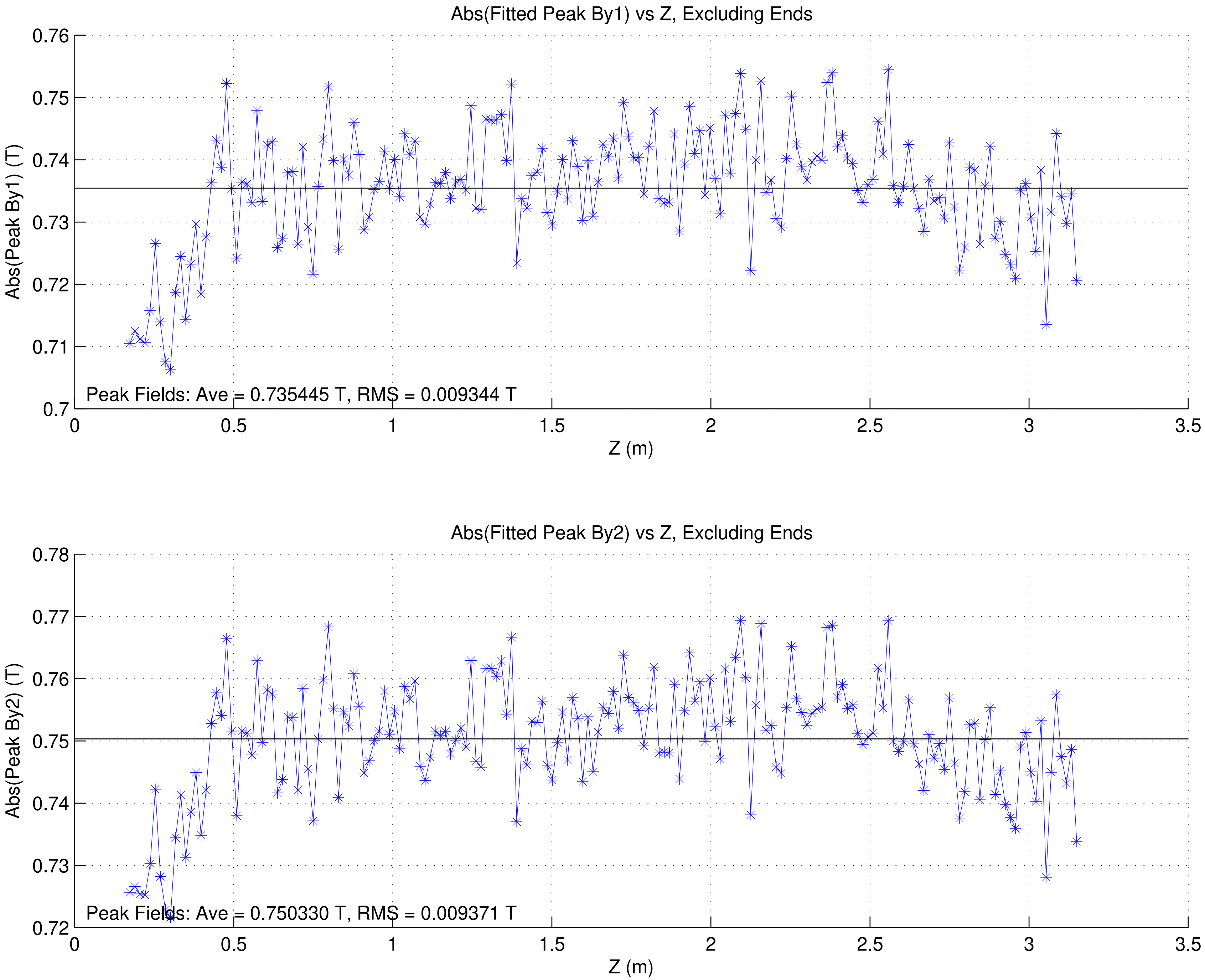
Bz: Positive Peaks From Probes 1 and 2
Probe 1
Probe 2
B Peak (T)
Z (m)



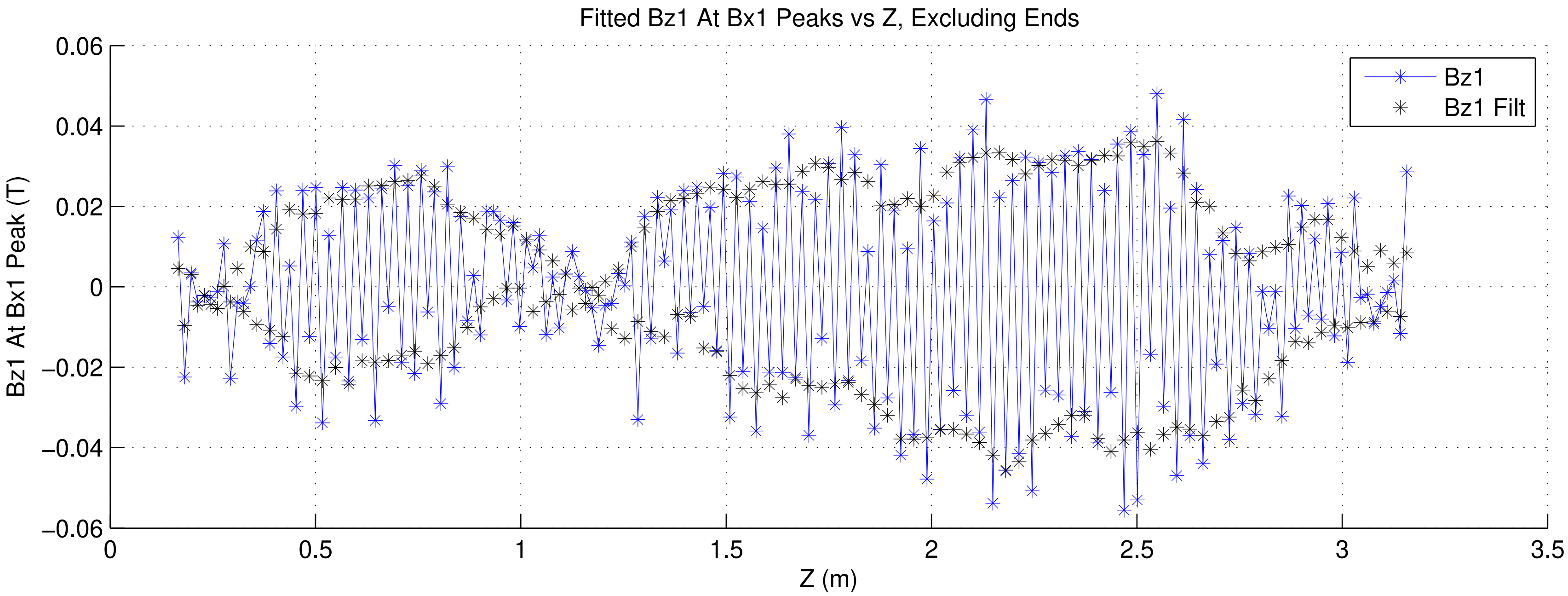
Bz: Negative Peaks From Probes 1 and 2
B Peak (T)
Z (m)

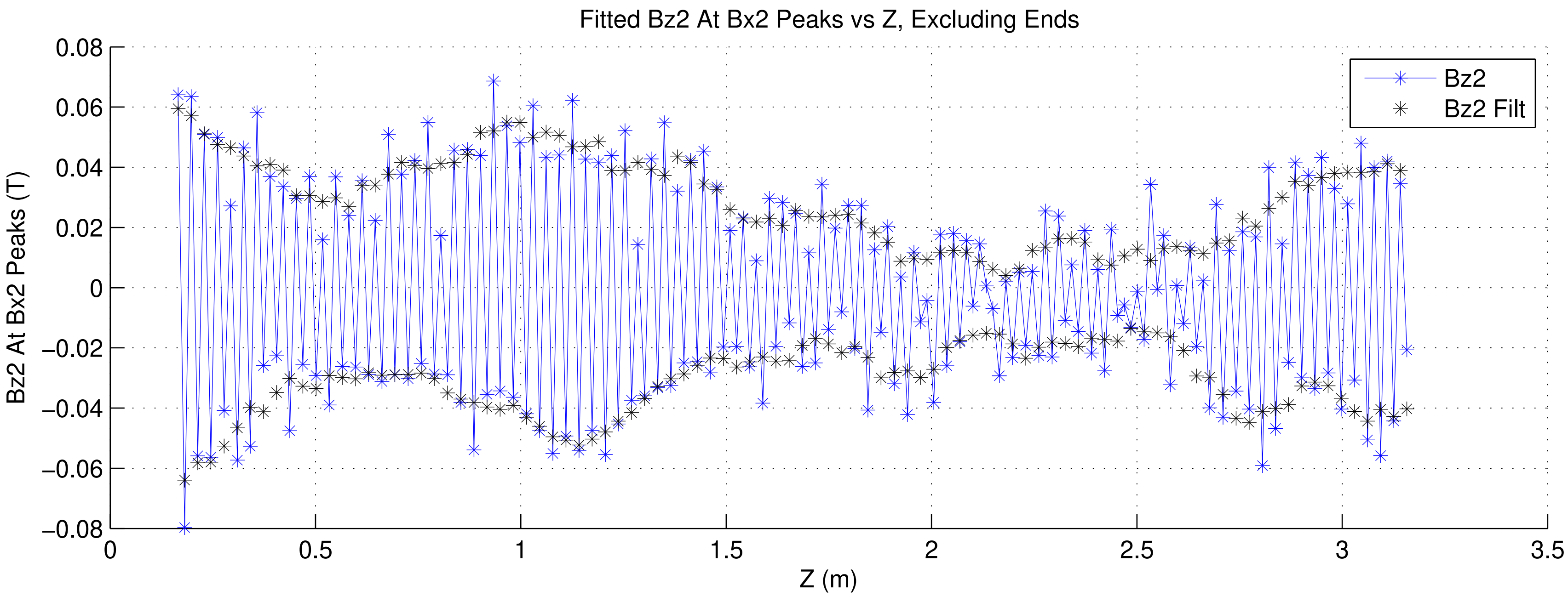

Abs(Fitted Peak Bx1) vs Z, Excluding Ends
Abs(Peak Bx1) (T)
0.79
0.78
0.77
0.76
0.75
0.74
0
0.5
1
1.5
2
2.5
3
3.5
Z (m)
Peak Fields: Ave = 0.758259 T, RMS = 0.007301 T

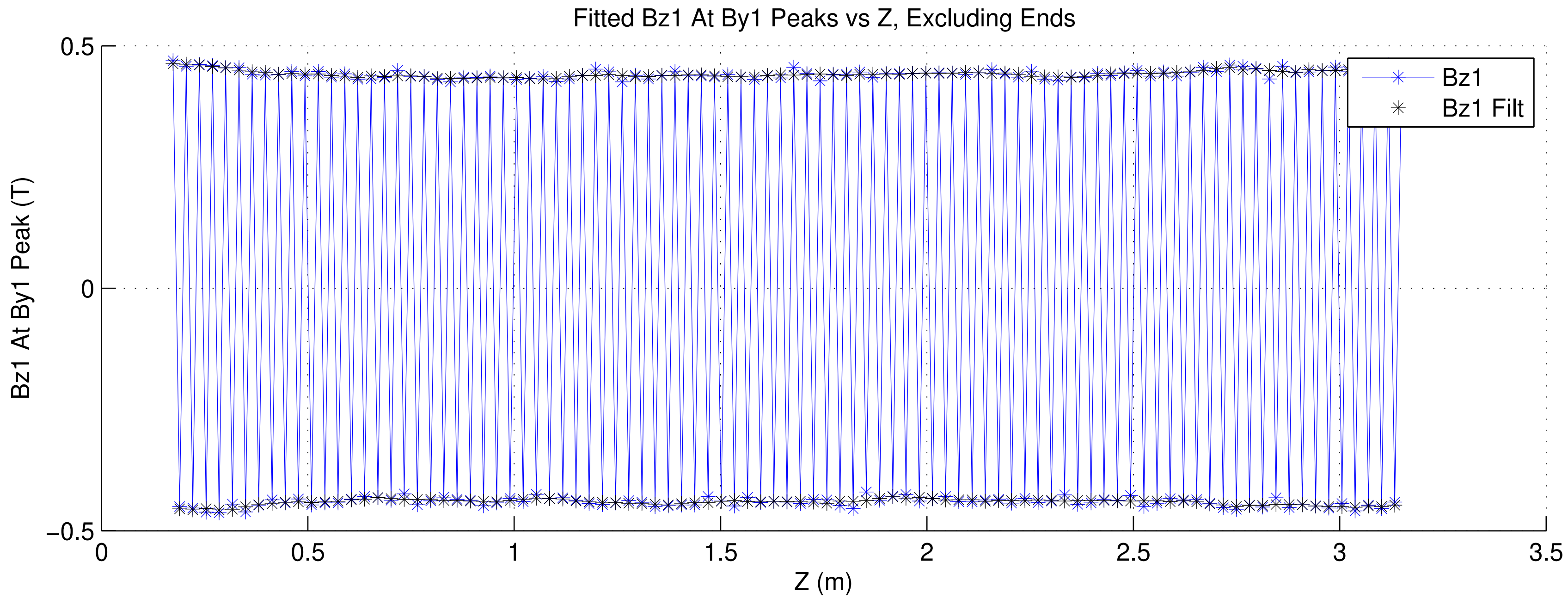

Abs(Fitted Peak Bx2) vs Z, Excluding Ends
Abs(Peak Bx2) (T)
0.79
0.78
0.77
0.76
0.75
0.74
0.73
0
0.5
1
1.5
2
2.5
3
3.5
Z (m)
Peak Fields: Ave = 0.750900 T, RMS = 0.007485 T

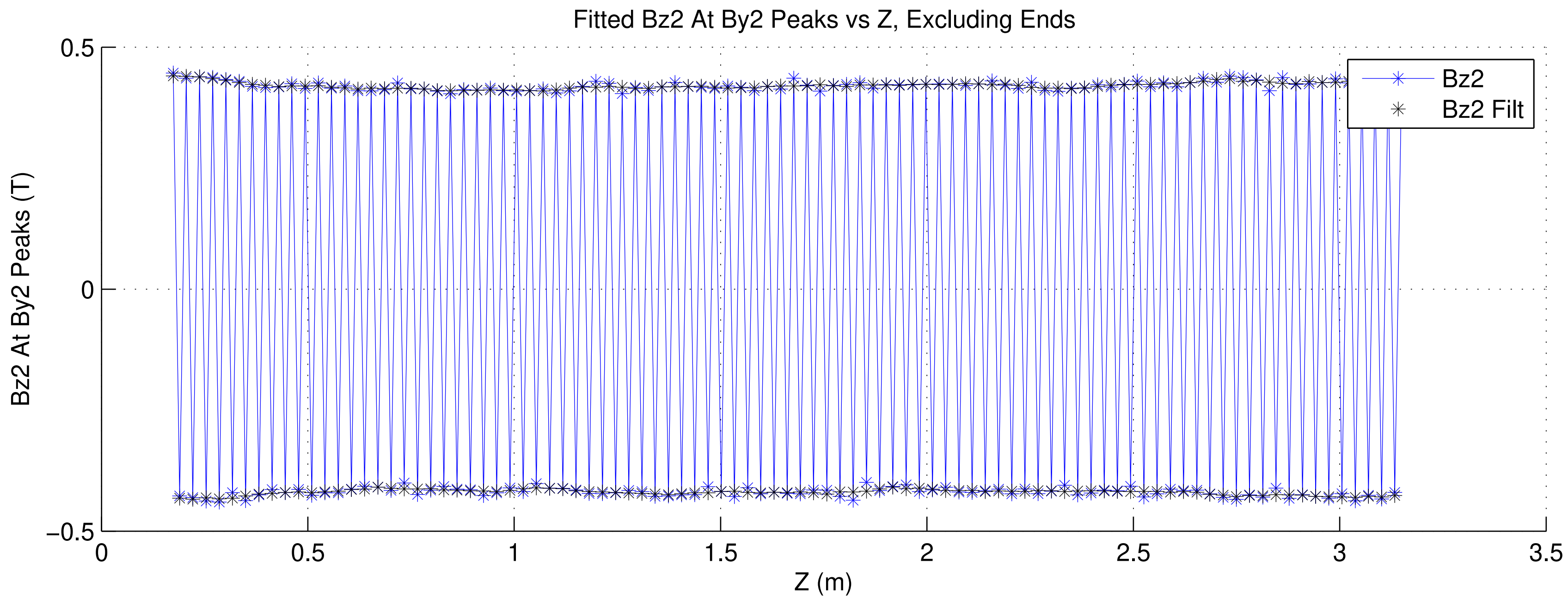


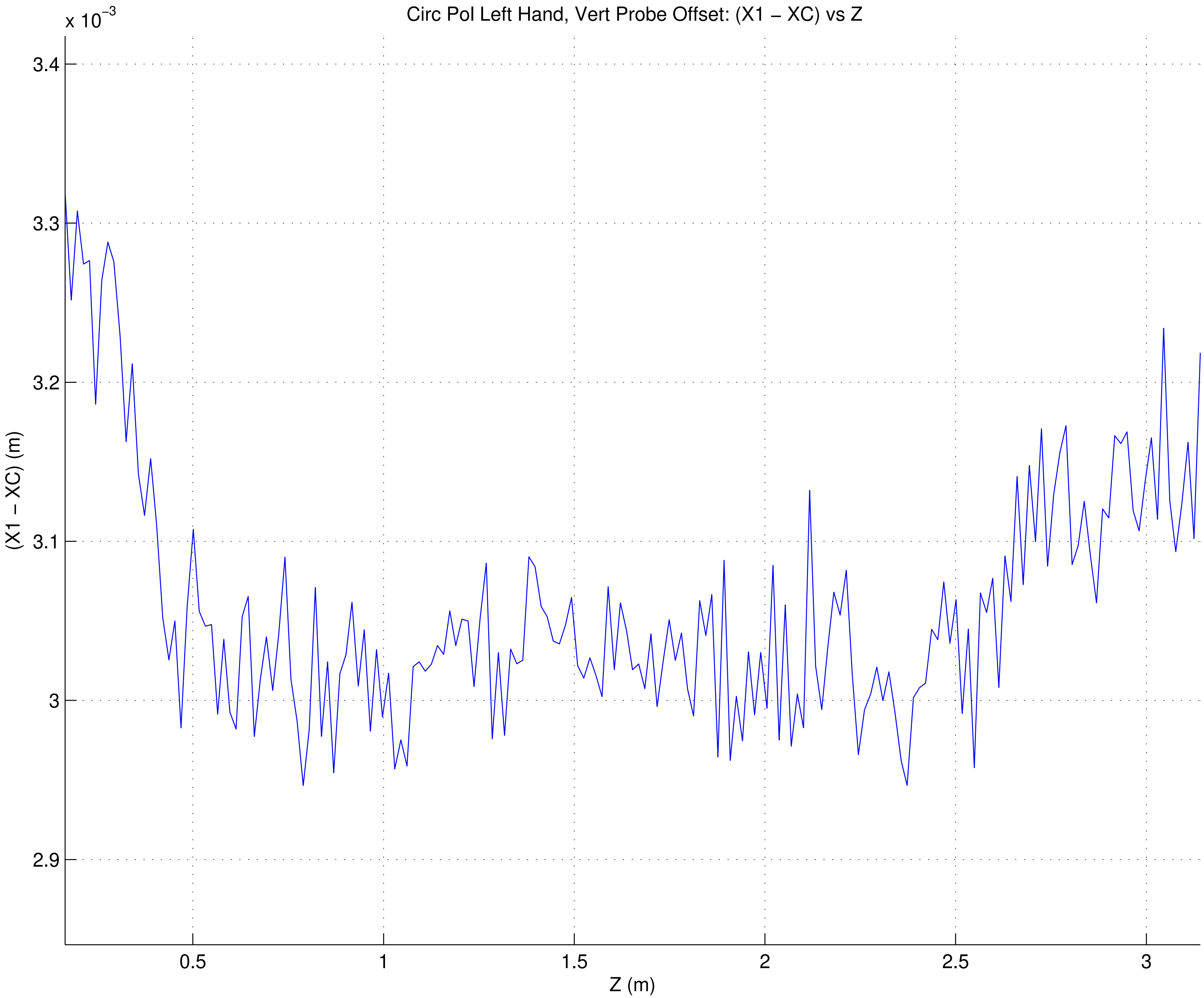
Abs(Fitted Peak By1) vs Z, Excluding Ends
Abs(Peak By1) (T)
0.76
0.75
0.74
0.73
0.72
0.71
0.7
Peak Fields: Ave = 0.735445 T, RMS = 0.009344 T
0
0.5
1
1.5
2
2.5
3
3.5
Z (m)
Abs(Fitted Peak By2) vs Z, Excluding Ends
Abs(Peak By2) (T)
0.78
0.77
0.76
0.75
0.74
0.73
0.72
Peak Fields: Ave = 0.750330 T, RMS = 0.009371 T
0
0.5
1
1.5
2
2.5
3
3.5
Z (m)


Fitted Bz1 At Bx1 Peaks vs Z, Excluding Ends
Bz1
Bz1 Filt
Bz1 At Bx1 Peak (T)
Z (m)
0.06
0.04
0.02
0
−0.02
−0.04
−0.06
0
0.5
1
1.5
2
2.5
3
3.5

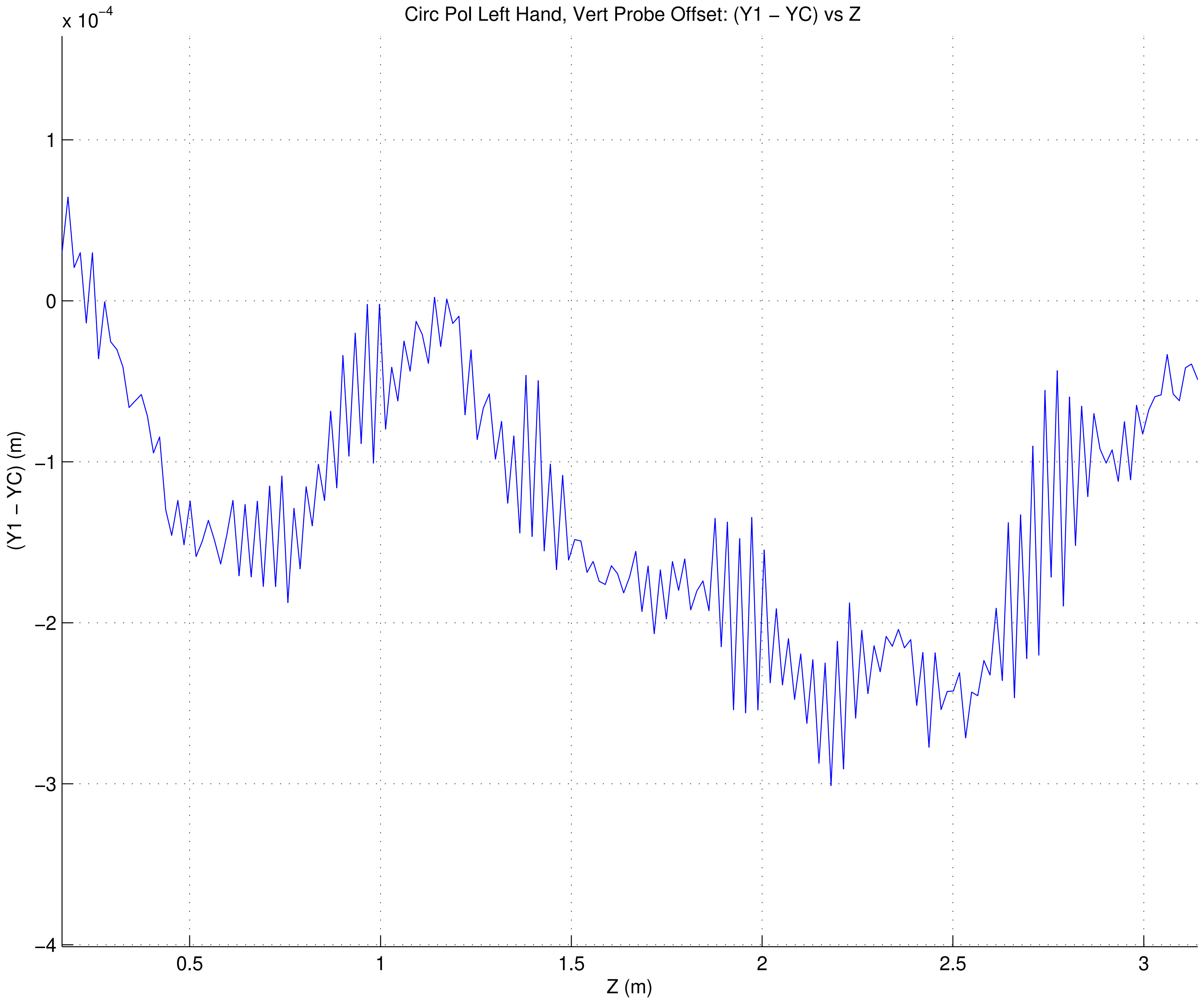

Fitted Bz2 At Bx2 Peaks vs Z, Excluding Ends
Bz2
Bz2 Filt
Bz2 At Bx2 Peaks (T)
Z (m)
0.08
0.06
0.04
0.02
0
−0.02
−0.04
−0.06
−0.08
0
0.5
1
1.5
2
2.5
3
3.5

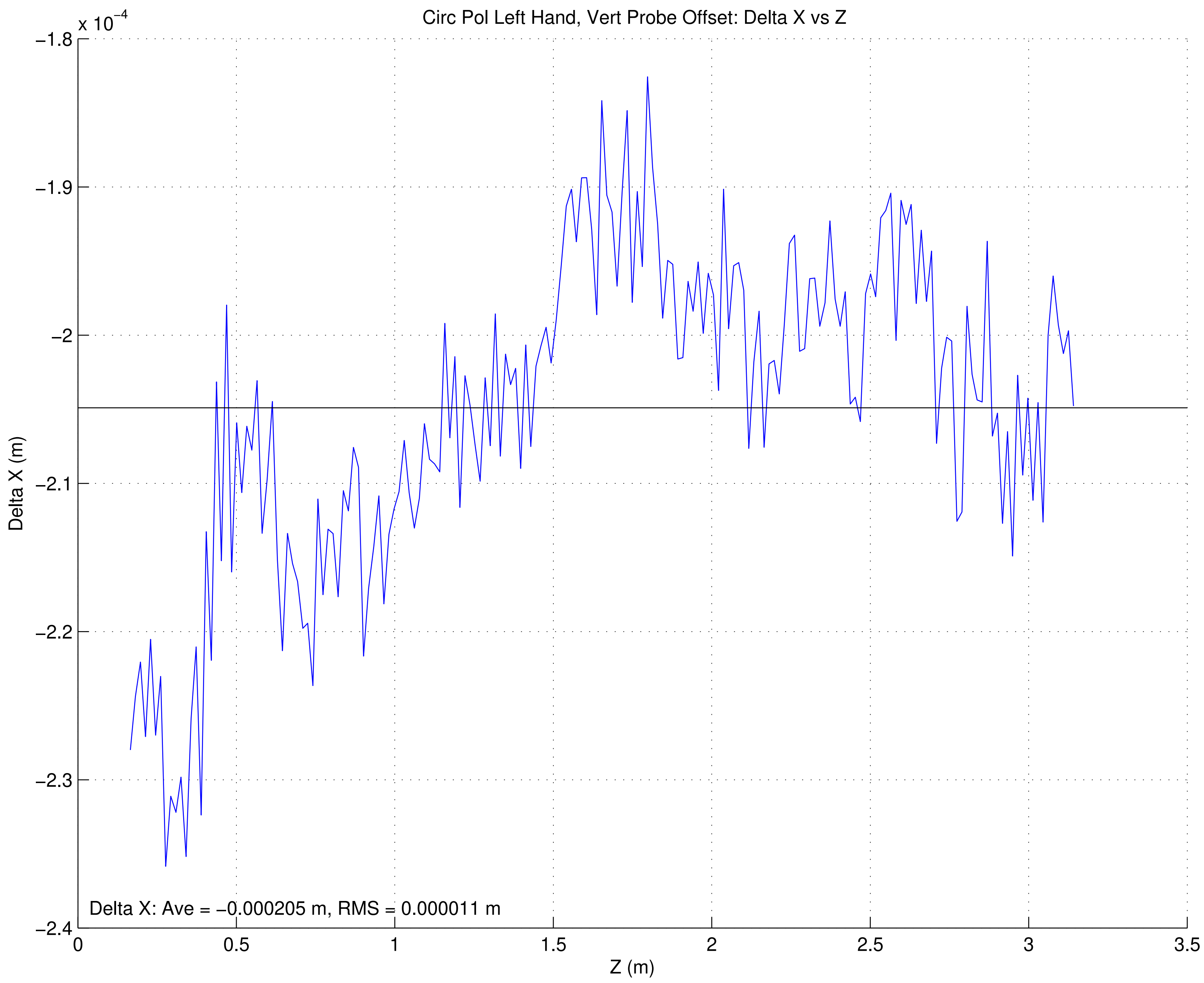

Fitted Bz1 At By1 Peaks vs Z, Excluding Ends
Bz1 At By1 Peak (T)
Z (m)
Bz1
Bz1 Filt
0.5
0
−0.5
0
0.5
1
1.5
2
2.5
3
3.5

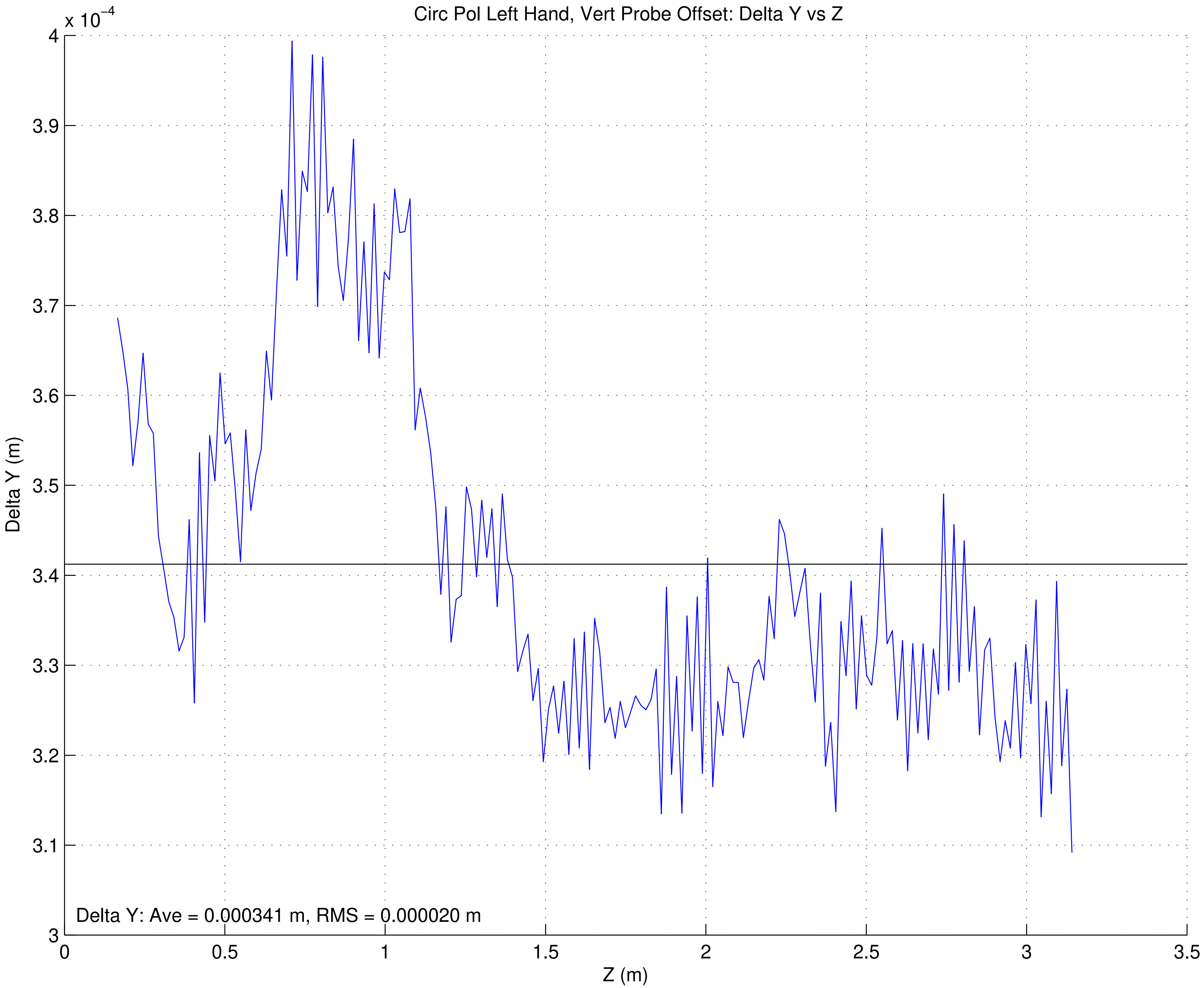

Fitted Bz2 At By2 Peaks vs Z, Excluding Ends
Bz2 At By2 Peaks (T)
Z (m)
Bz2
Bz2 Filt
0.5
0
−0.5
0
0.5
1
1.5
2
2.5
3
3.5



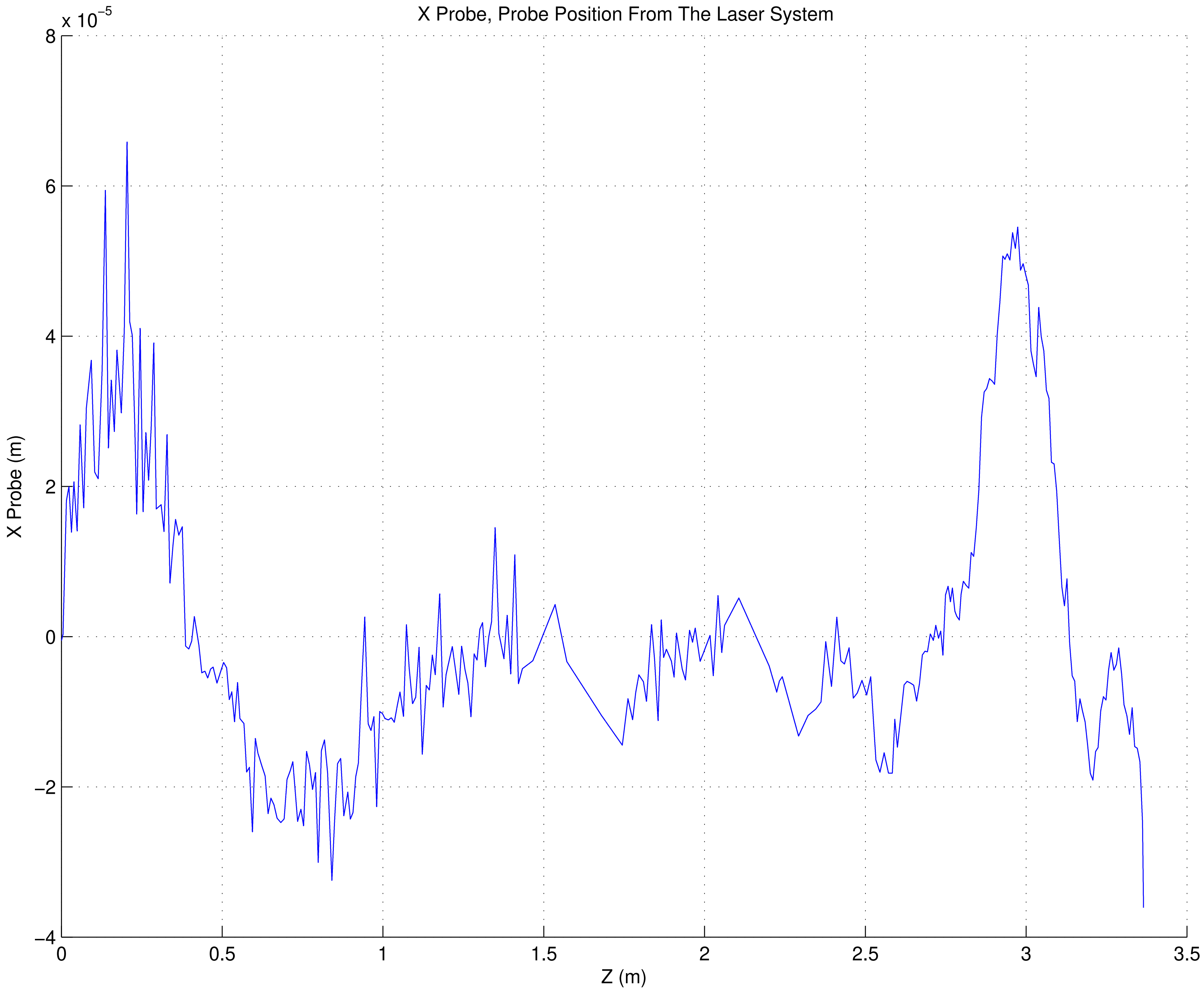
Circ Pol Left Hand, Vert Probe Offset: (X1 − XC) vs Z
x 10^−3
3.4
3.3
3.2
3.1
3
2.9
(X1 − XC) (m)
0.5
1
1.5
2
2.5
3
Z (m)


Circ Pol Left Hand, Vert Probe Offset: (Y1 – YC) vs Z
x 10^-4
1
0
–1
–2
–3
–4
(Y1 – YC) (m)
0.5
1
1.5
2
2.5
3
Z (m)

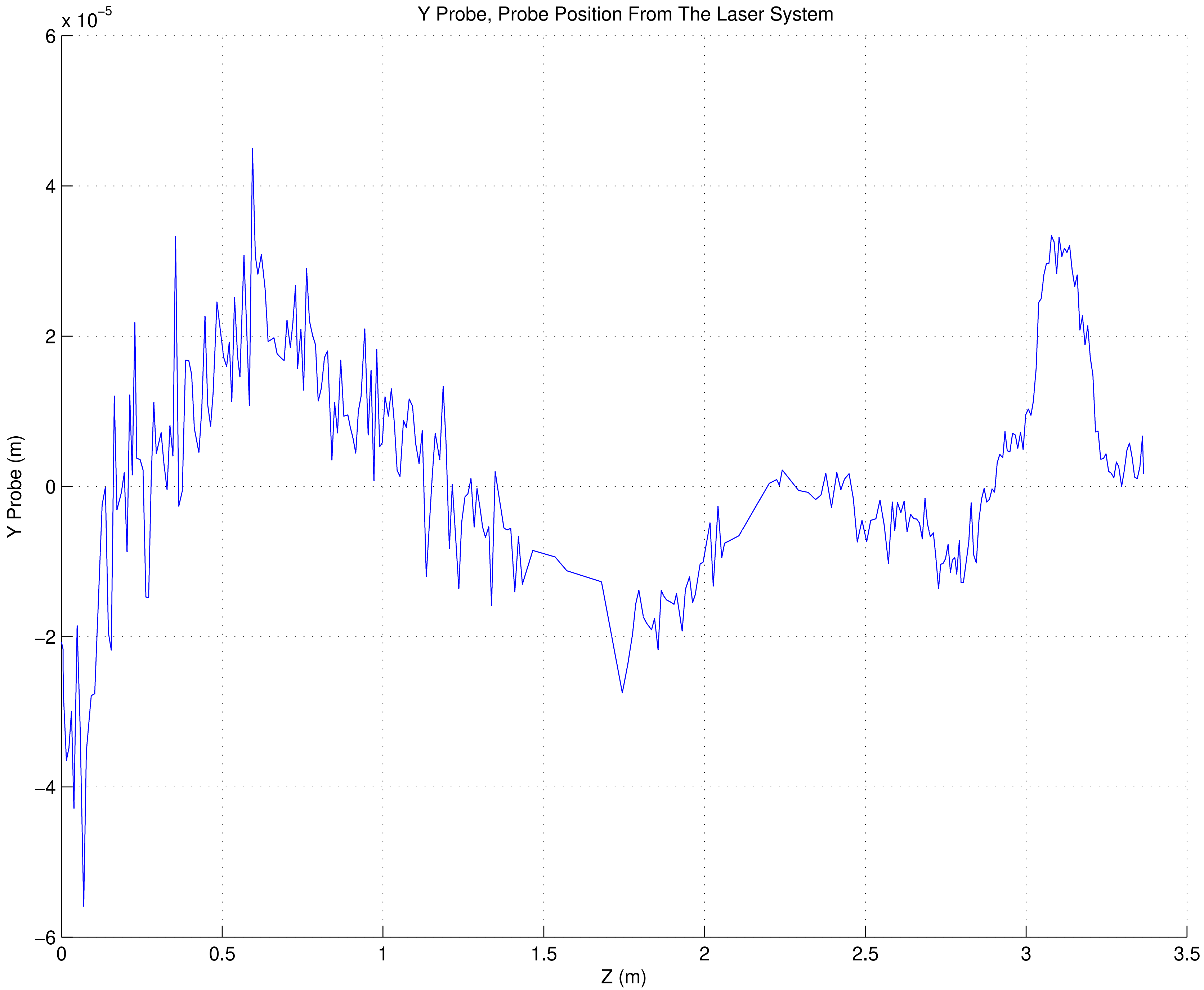

Circ Pol Left Hand, Vert Probe Offset: Delta X vs Z
x 10^-4
−1.8
−1.9
−2
−2.1
−2.2
−2.3
−2.4
Delta X (m)
0
0.5
1
1.5
2
2.5
3
3.5
Z (m)
Delta X: Ave = −0.000205 m, RMS = 0.000011 m



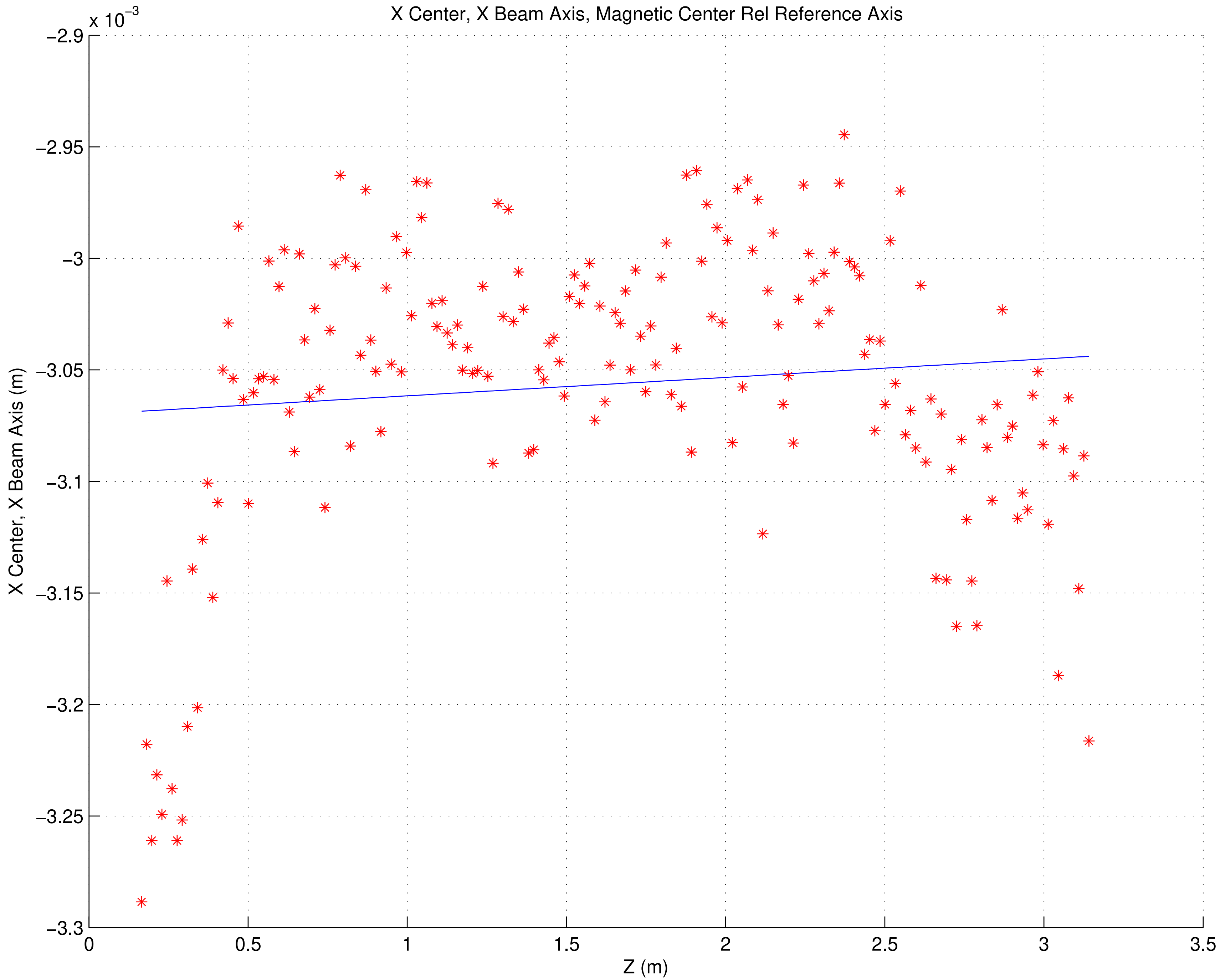
Circ Pol Left Hand, Vert Probe Offset: Delta Y vs Z
x 10^-4
4
3.9
3.8
3.7
3.6
3.5
3.4
3.3
3.2
3.1
3
Delta Y (m)
0
0.5
1
1.5
2
2.5
3
3.5
Z (m)
Delta Y: Ave = 0.000341 m, RMS = 0.000020 m



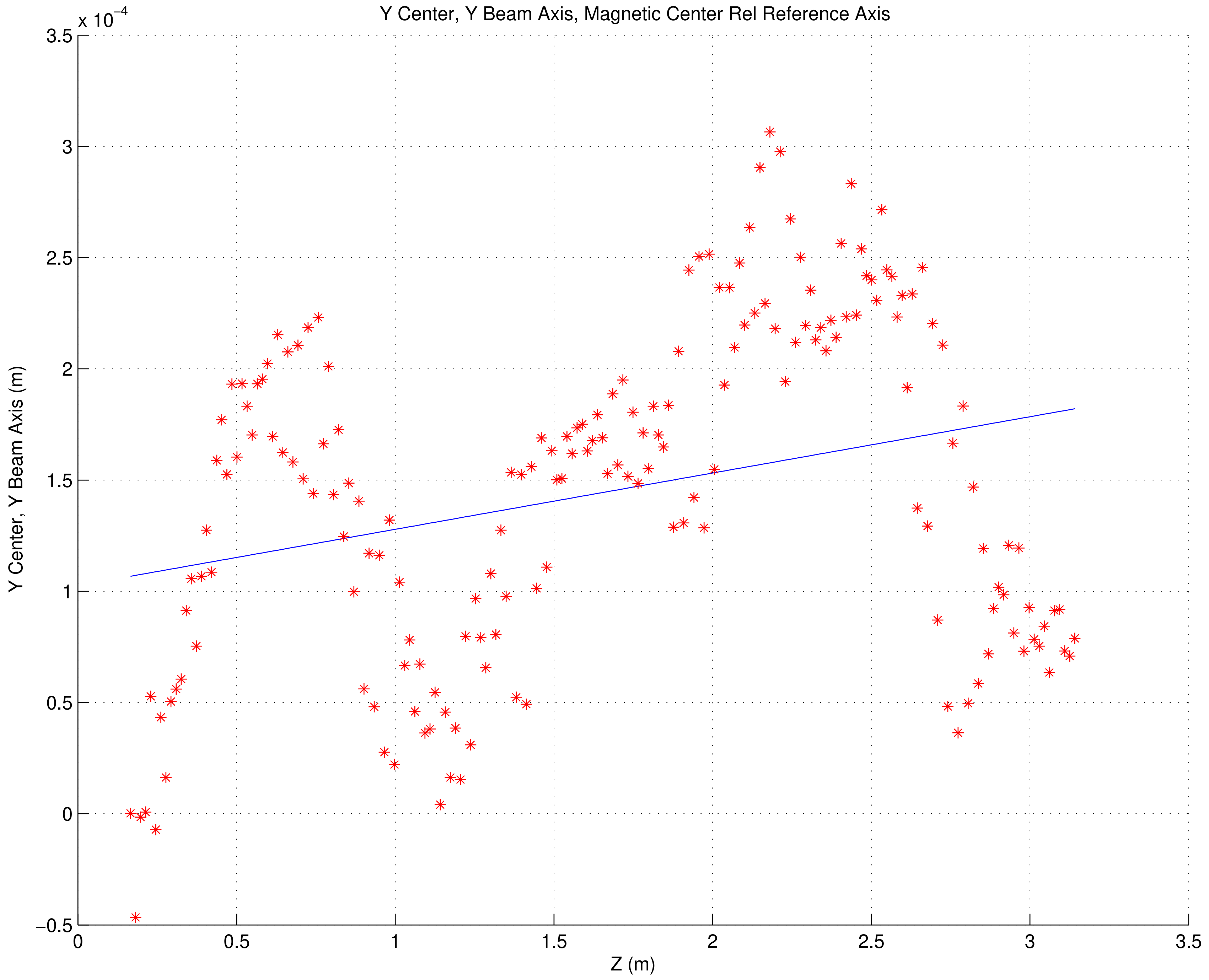
X Probe, Probe Position From The Laser System
x 10^−5
8
6
4
2
0
−2
−4
X Probe (m)
0
0.5
1
1.5
2
2.5
3
3.5
Z (m)

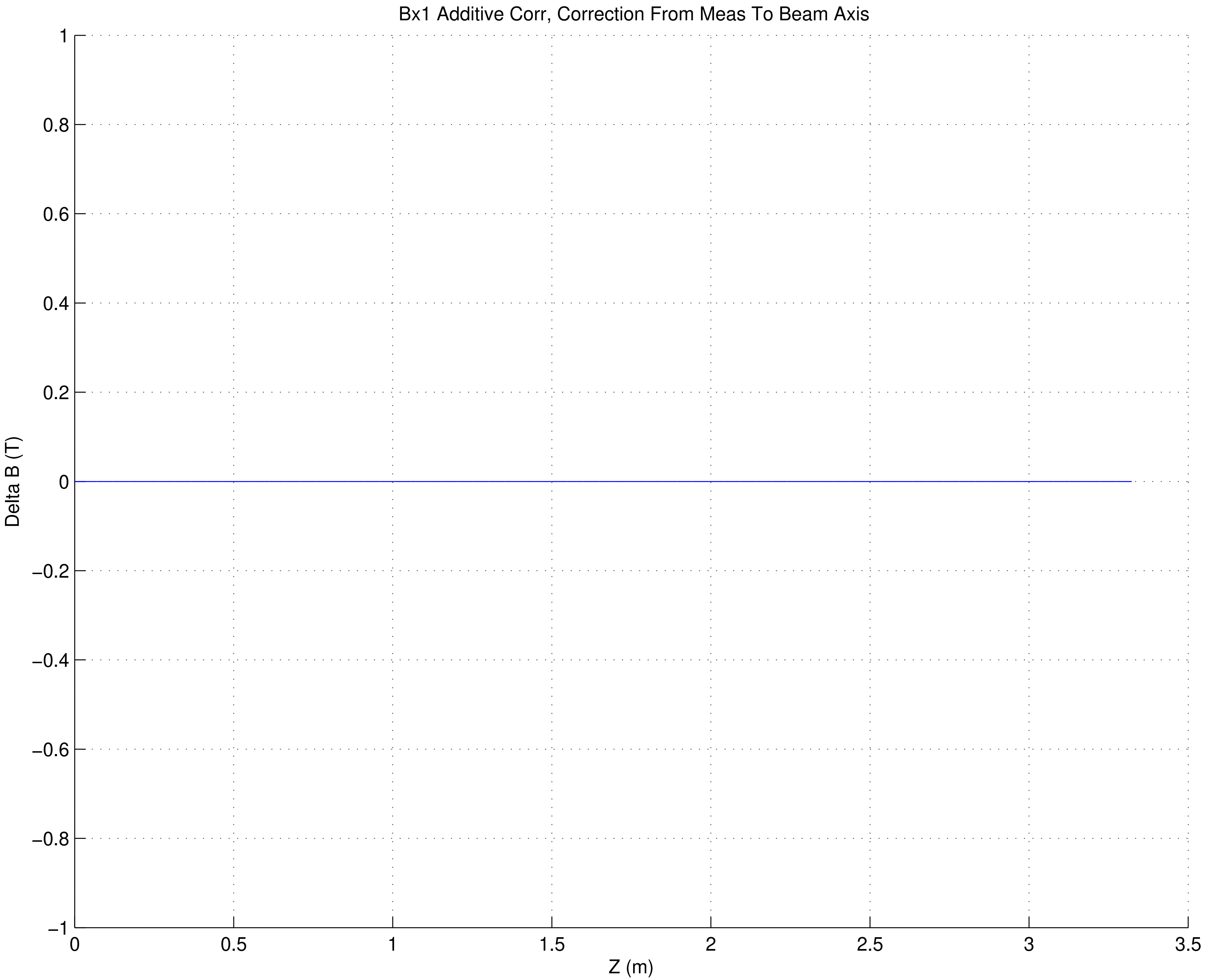


Y Probe, Probe Position From The Laser System
x 10^−5
6
4
2
0
−2
−4
−6
Y Probe (m)
0
0.5
1
1.5
2
2.5
3
3.5
Z (m)

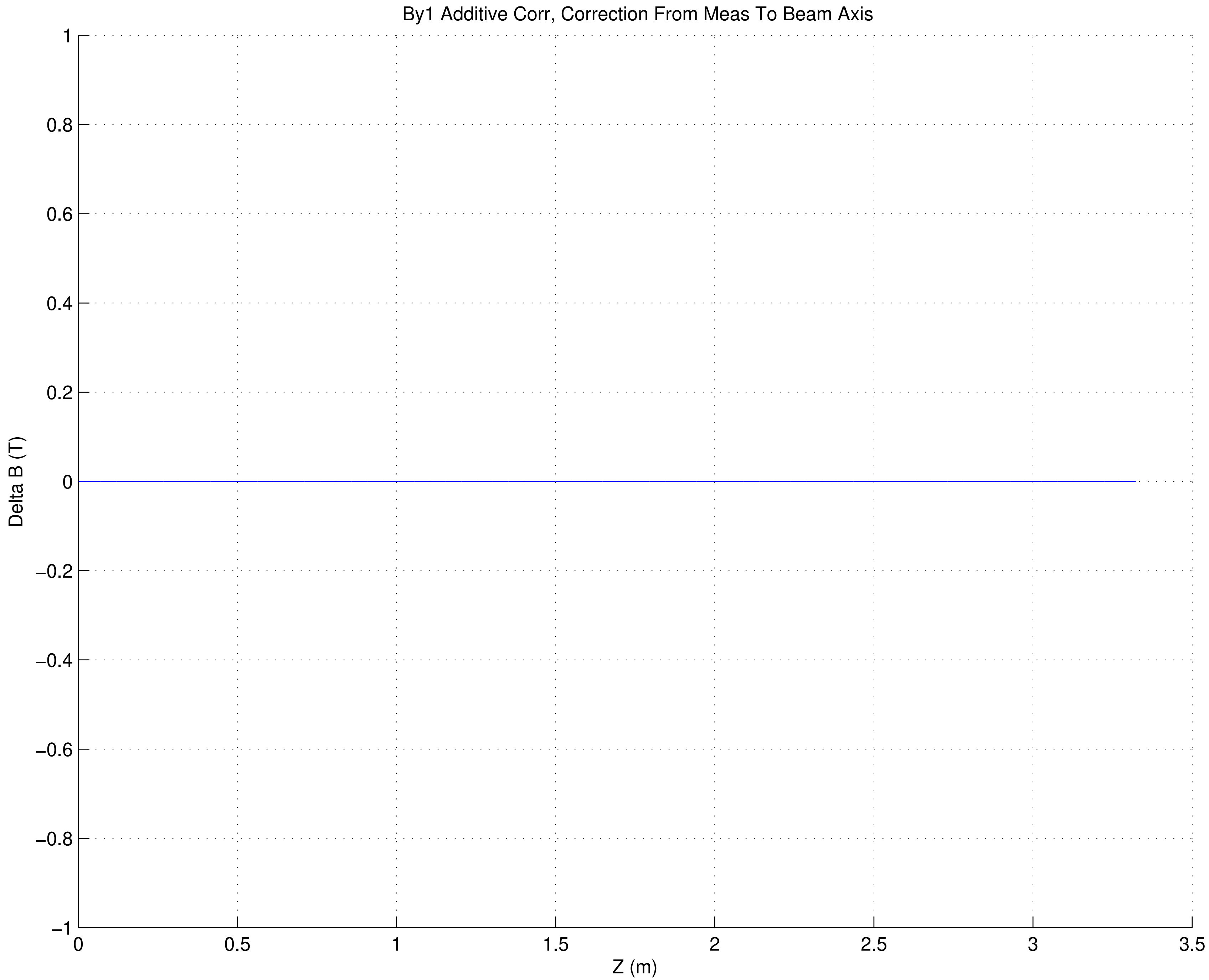


X Center, X Beam Axis, Magnetic Center Rel Reference Axis
x 10^-3
-2.9
-2.95
-3
-3.05
-3.1
-3.15
-3.2
-3.25
-3.3
X Center, X Beam Axis (m)
0
0.5
1
1.5
2
2.5
3
3.5
Z (m)

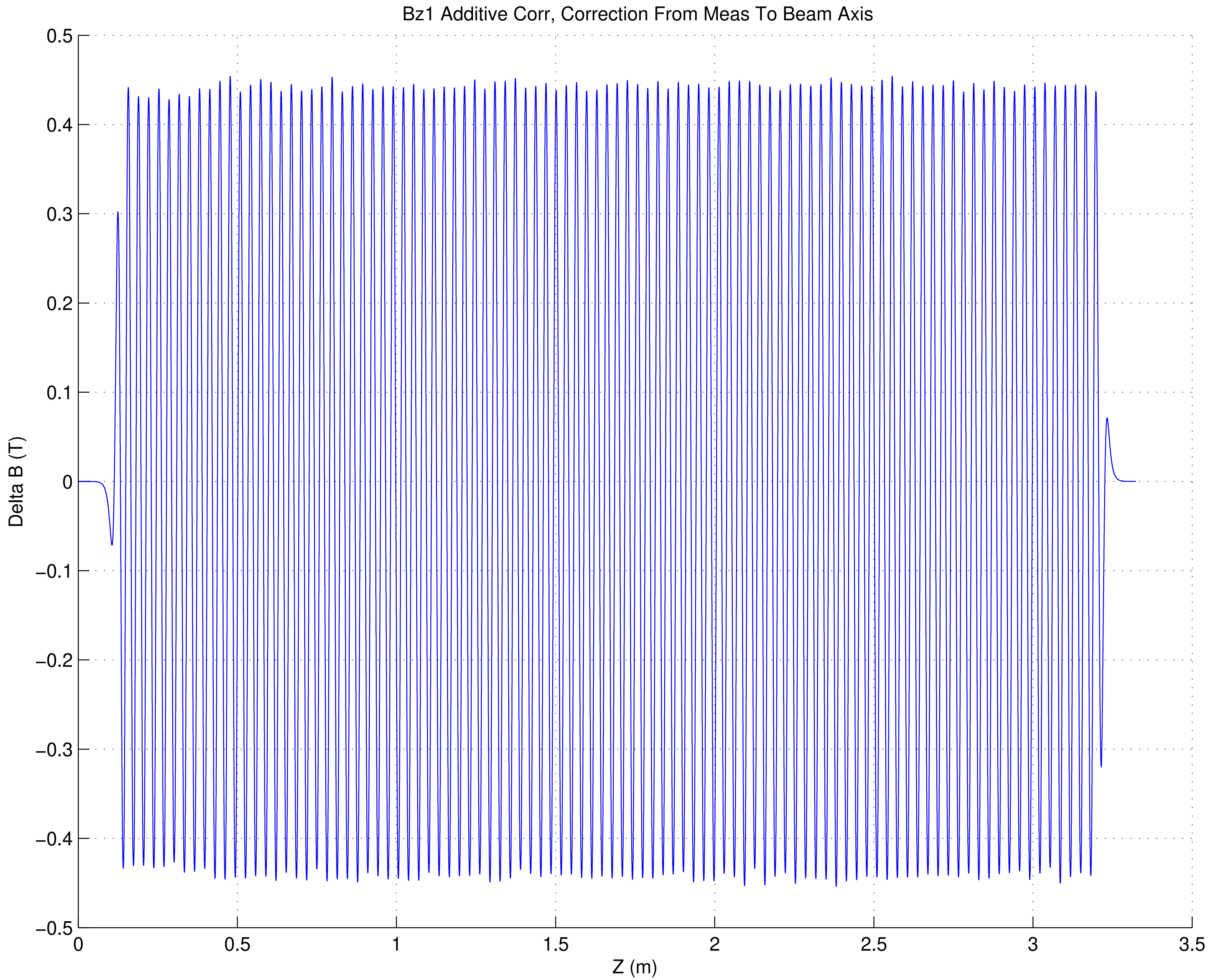

Y Center, Y Beam Axis, Magnetic Center Rel Reference Axis
x 10^{-4}
3.5
3
2.5
2
1.5
1
0.5
0
−0.5
Y Center, Y Beam Axis (m)
0
0.5
1
1.5
2
2.5
3
3.5
Z (m)

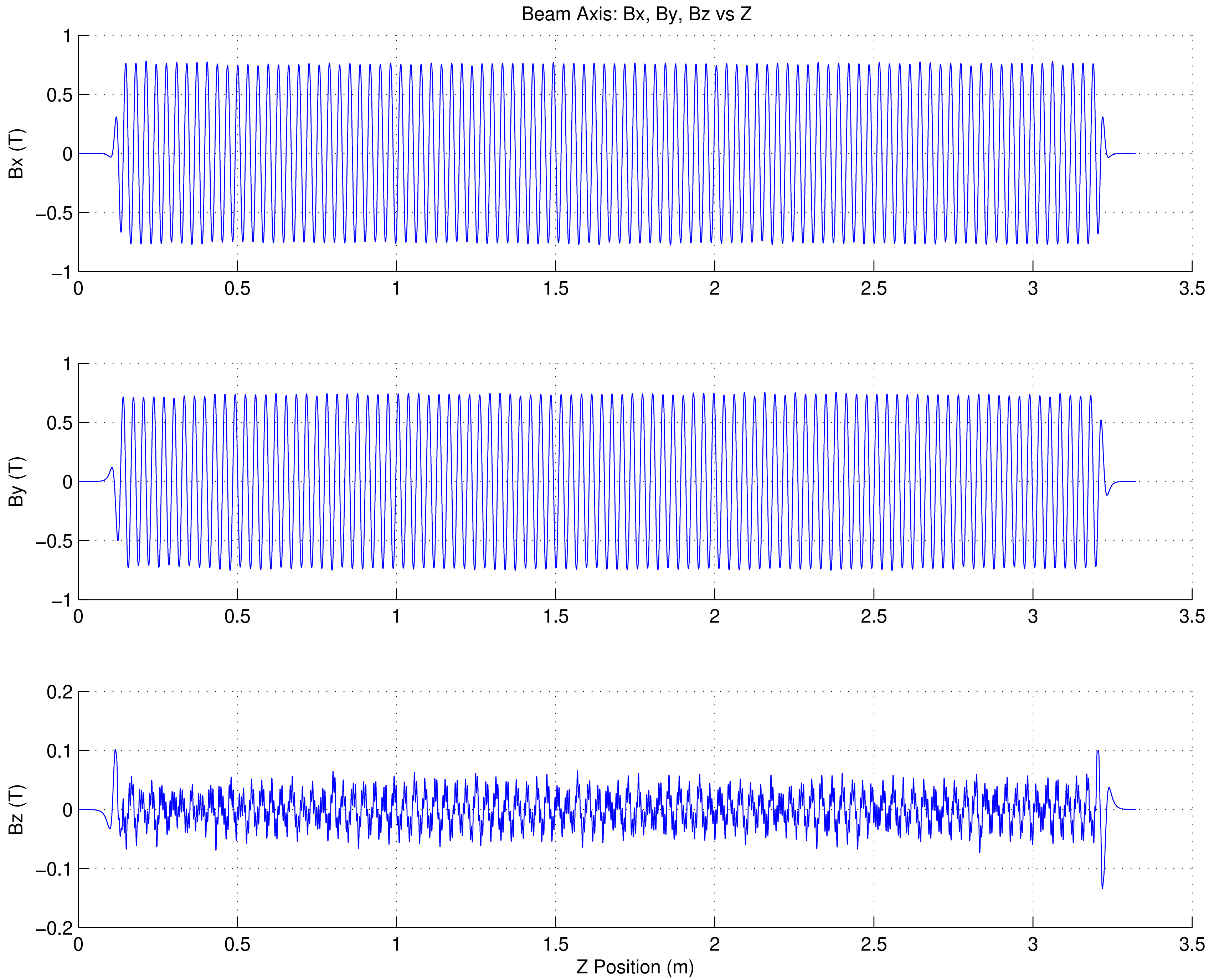


Bx1 Additive Corr, Correction From Meas To Beam Axis
Delta B (T)
Z (m)
1
0.8
0.6
0.4
0.2
0
−0.2
−0.4
−0.6
−0.8
−1
0
0.5
1
1.5
2
2.5
3
3.5



By1 Additive Corr, Correction From Meas To Beam Axis
Delta B (T)
Z (m)
1
0.8
0.6
0.4
0.2
0
−0.2
−0.4
−0.6
−0.8
−1
0
0.5
1
1.5
2
2.5
3
3.5


Bz1 Additive Corr, Correction From Meas To Beam Axis
Delta B (T)
Z (m)
0.5
0.4
0.3
0.2
0.1
0
−0.1
−0.2
−0.3
−0.4
−0.5
0
0.5
1
1.5
2
2.5
3
3.5


Beam Axis: Bx, By, Bz vs Z
Bx (T)
By (T)
Bz (T)
Z Position (m)
1
0.5
0
−0.5
−1
0.2
0.1
−0.1
−0.2
0
0.5
1
1.5
2
2.5
3
3.5