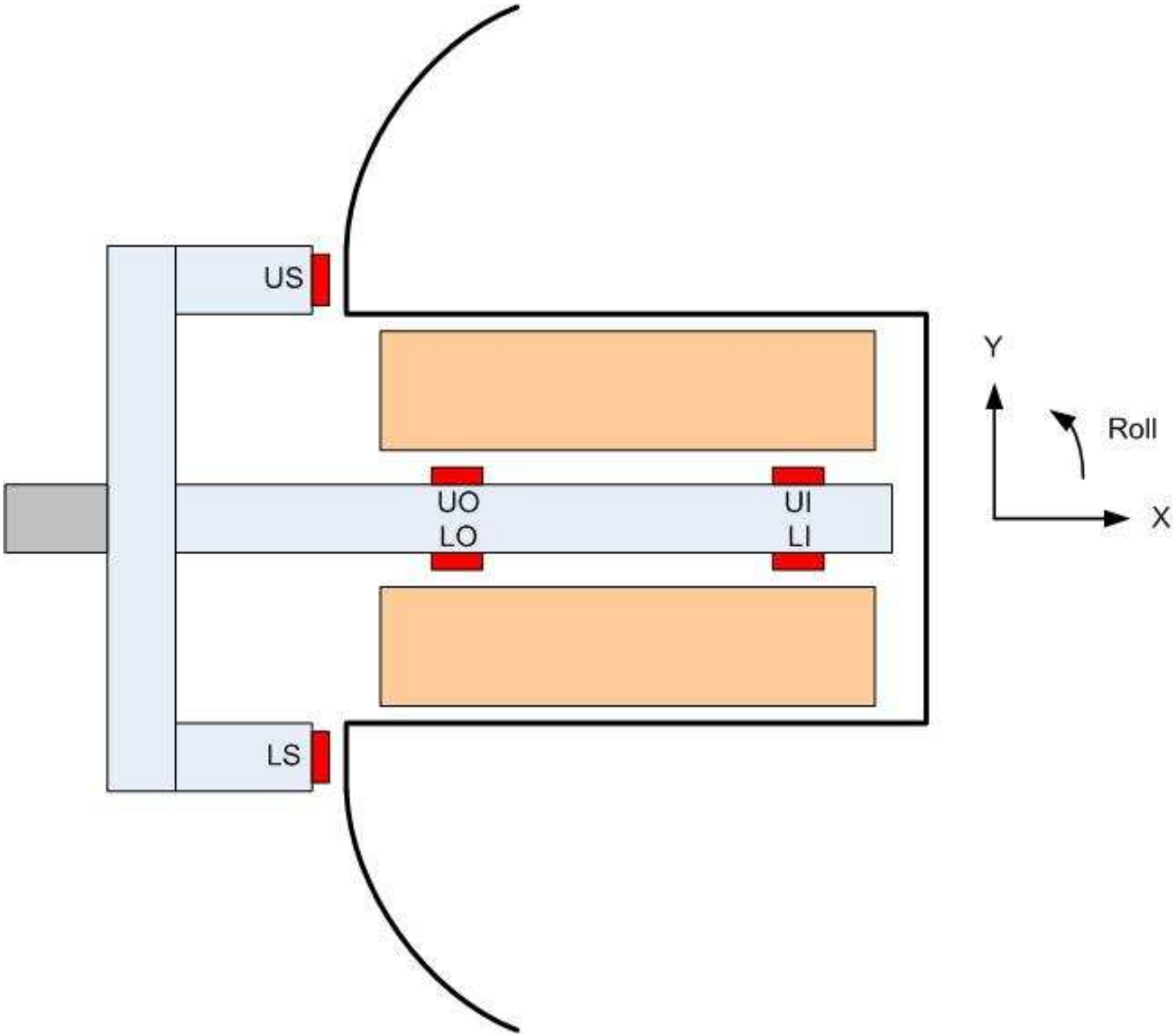
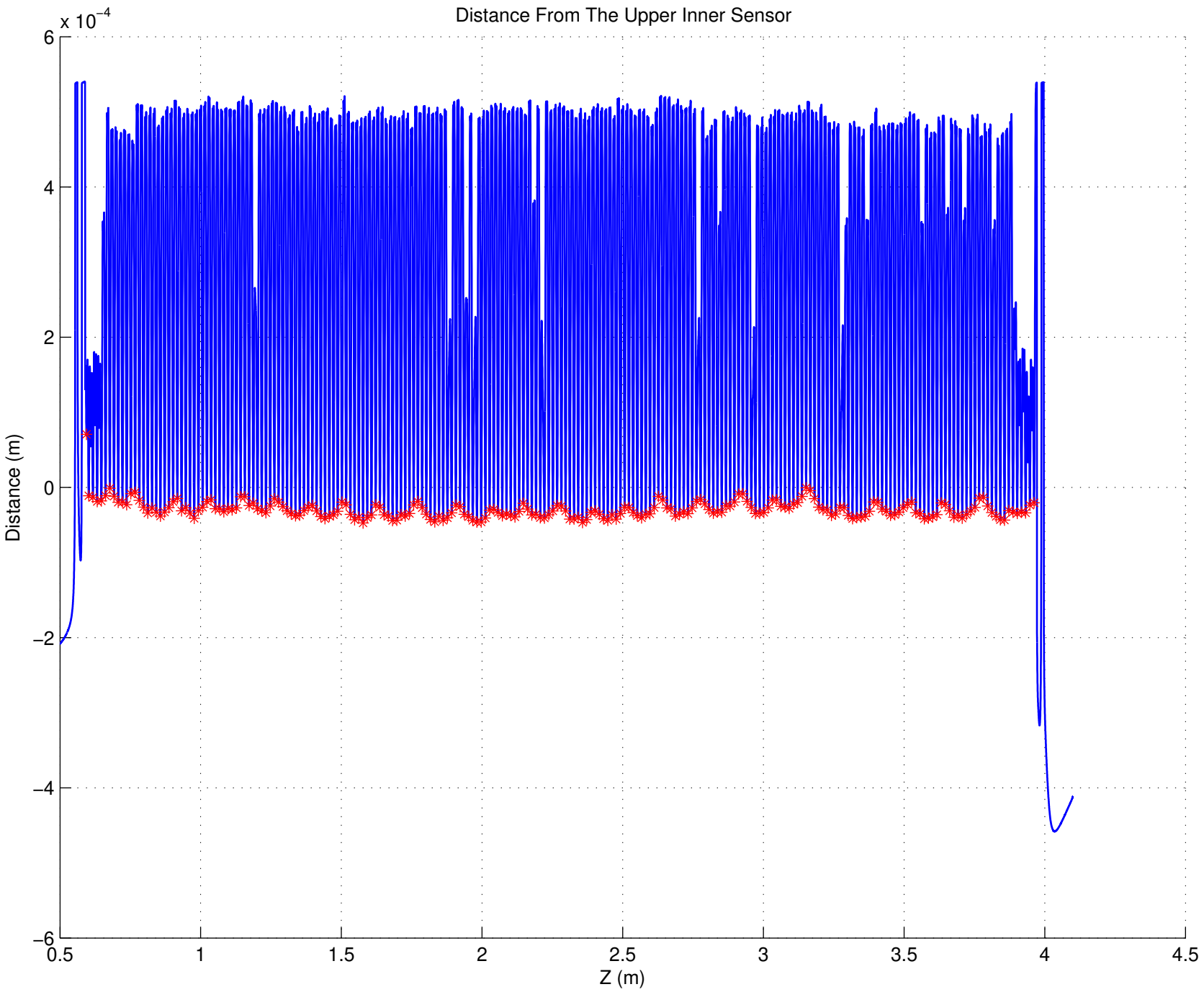
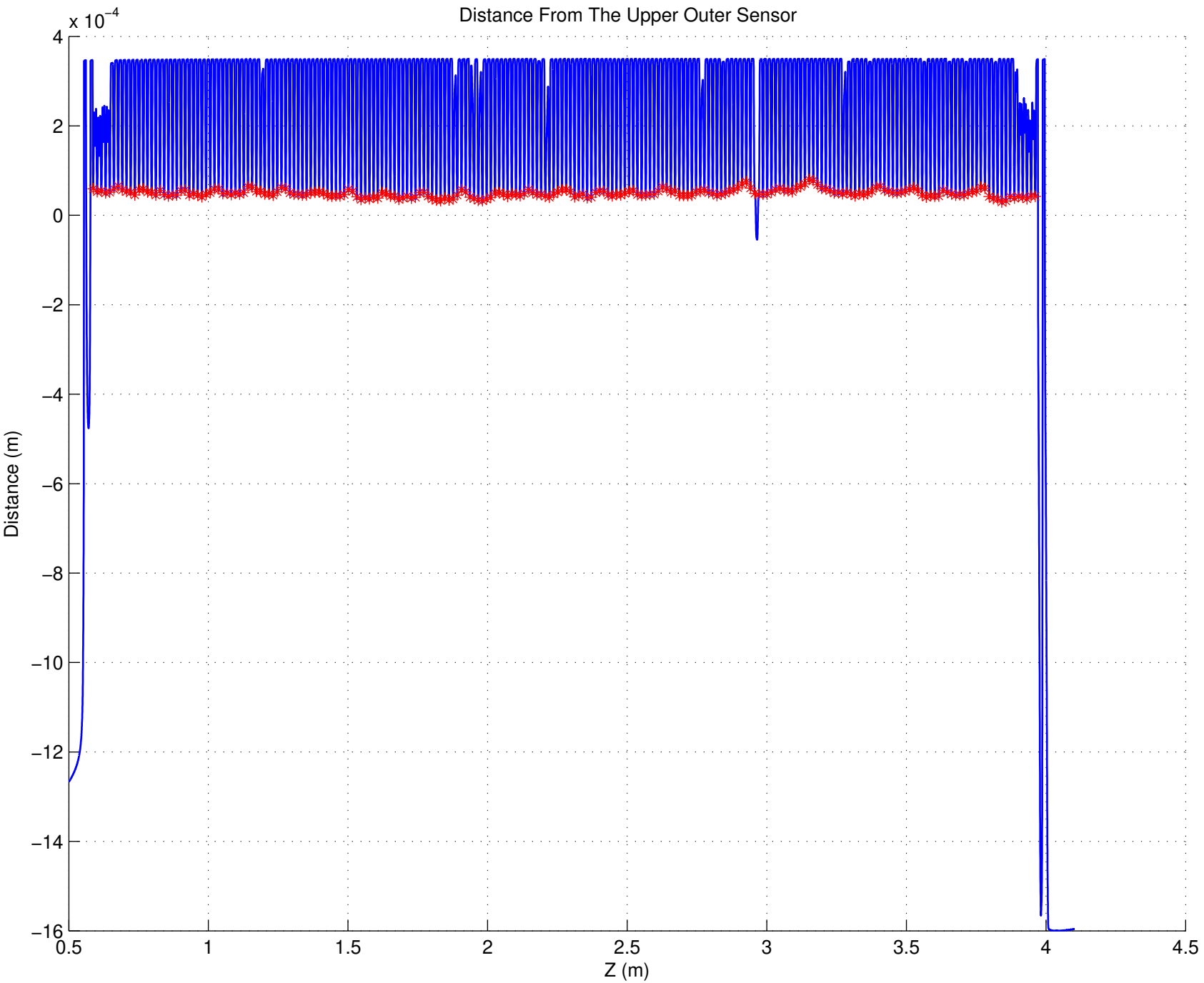
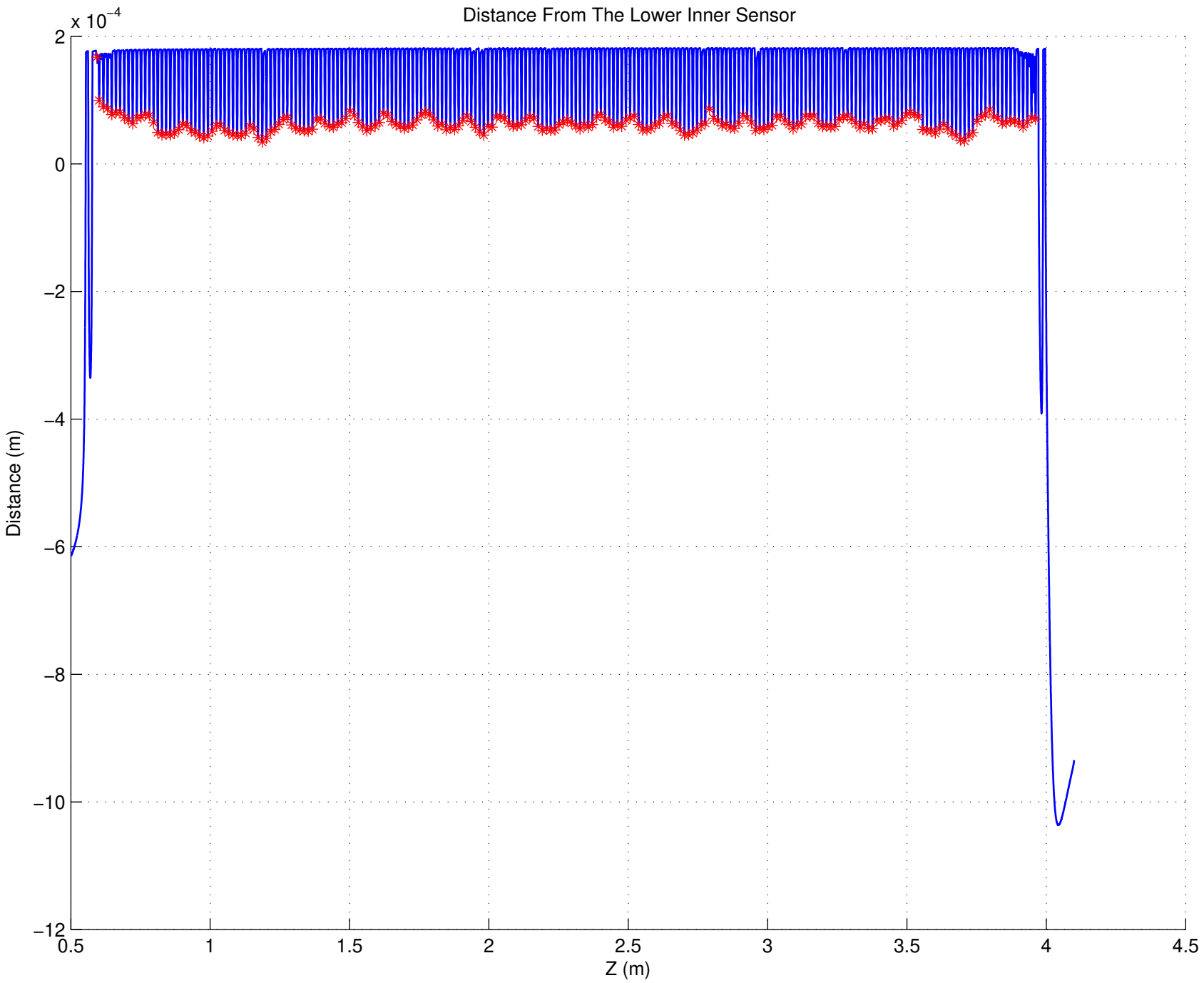
SLAC Magnetic Measurements
Mechanical Measurement Analysis

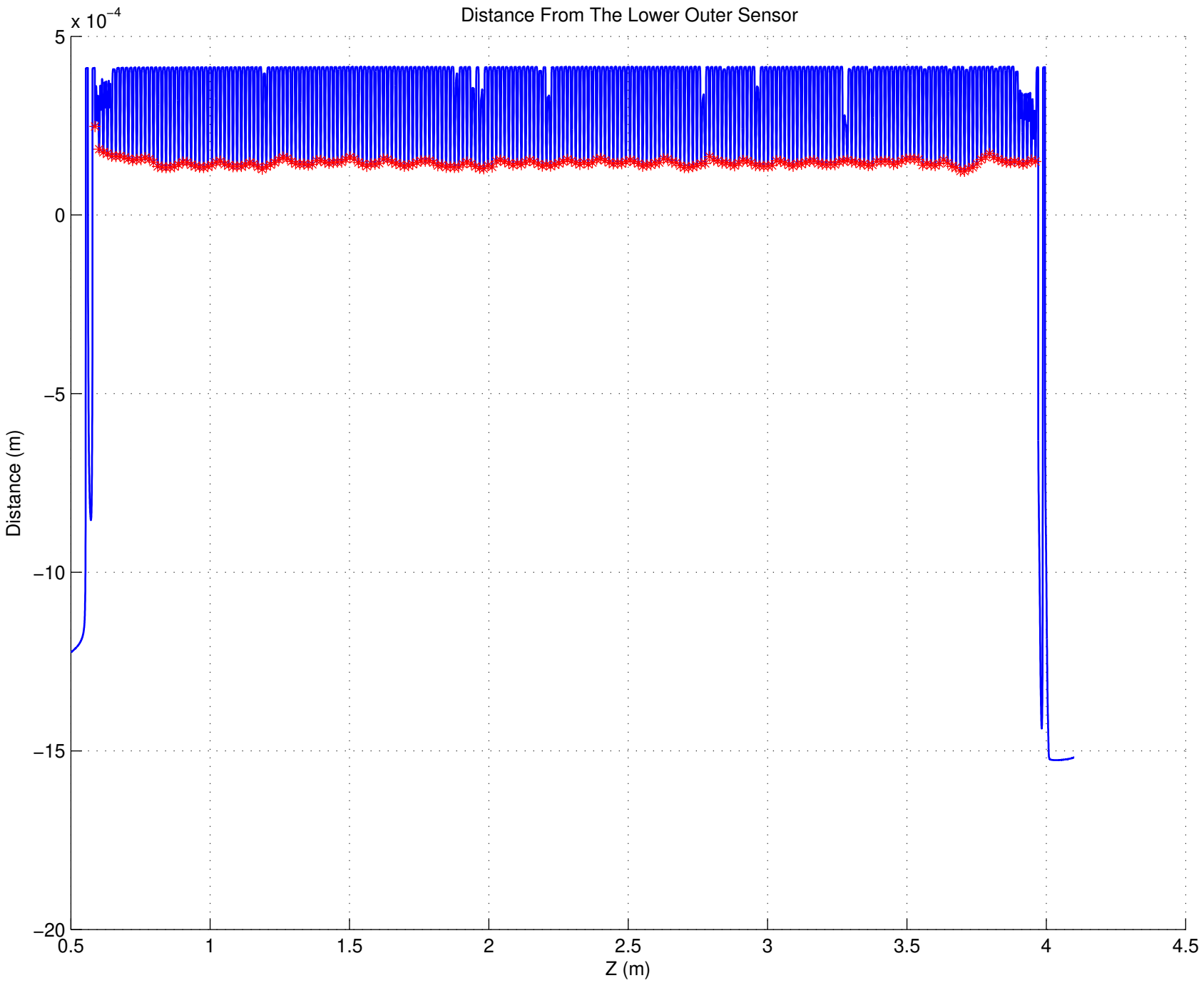
Parameters:
INPUT−FILE−DIR =V:\MET\MagServe\MagData\LCLS\Undulator\L143−112000−27\Temperature test\Align Cap Sensor\Run 022\
INPUT−FILE−NAME =mechp−dat.001

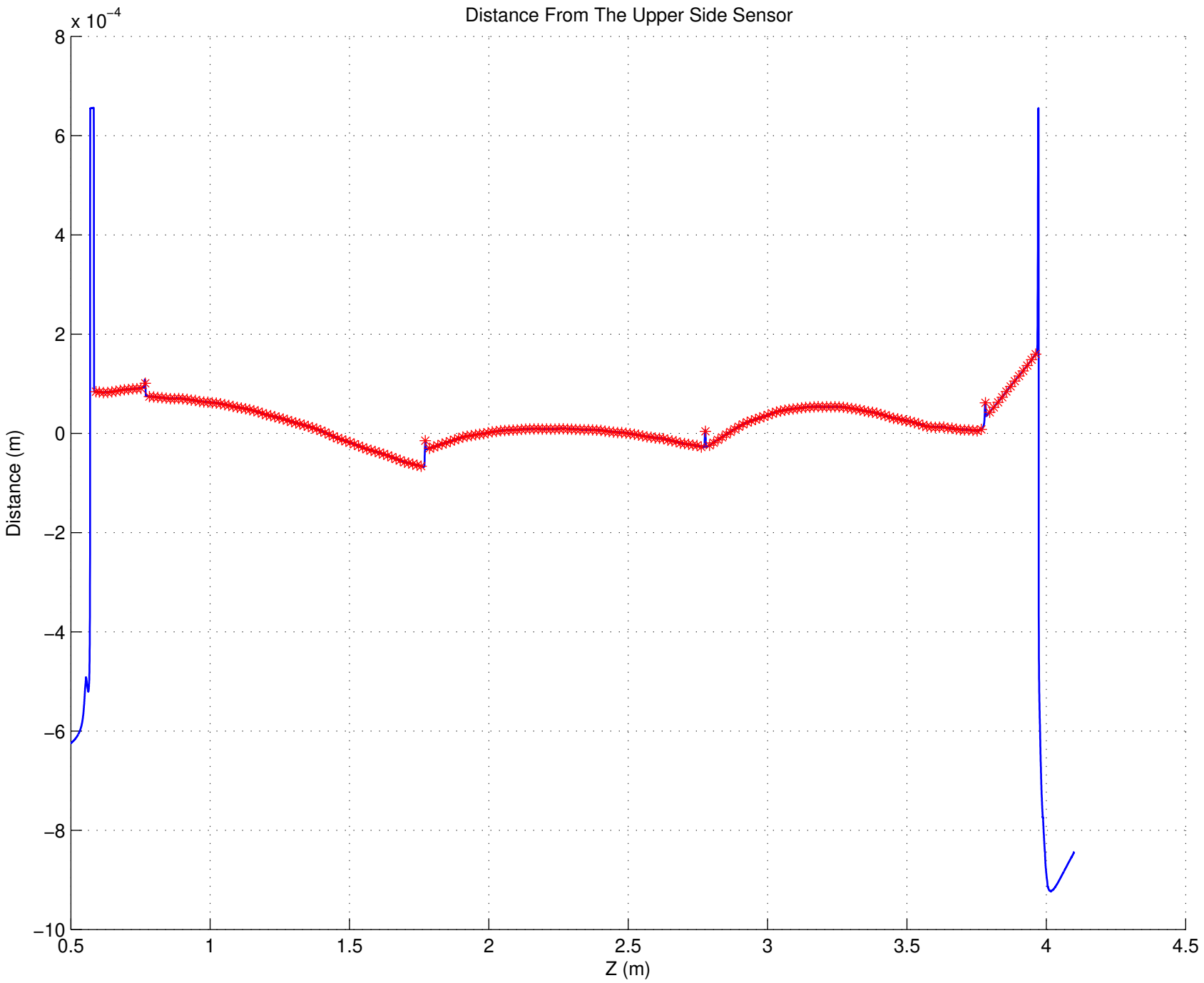

US
UO
LO
UI
LI
LS
Y
Roll
X

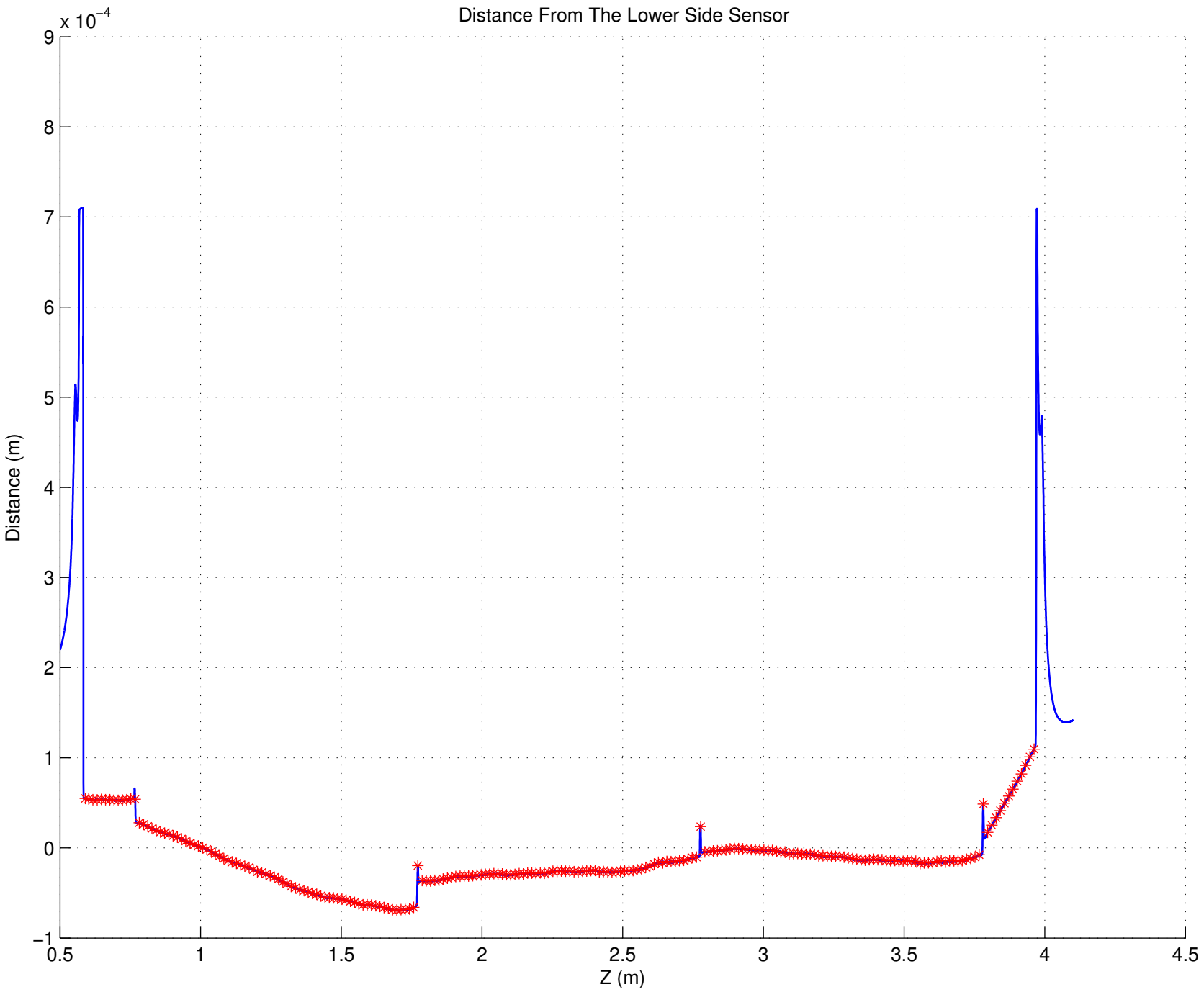

Distance From The Upper Inner Sensor
x 10^-4
6
4
2
0
−2
−4
−6
Distance (m)
0.5
1
1.5
2
2.5
3
3.5
4
4.5
Z (m)

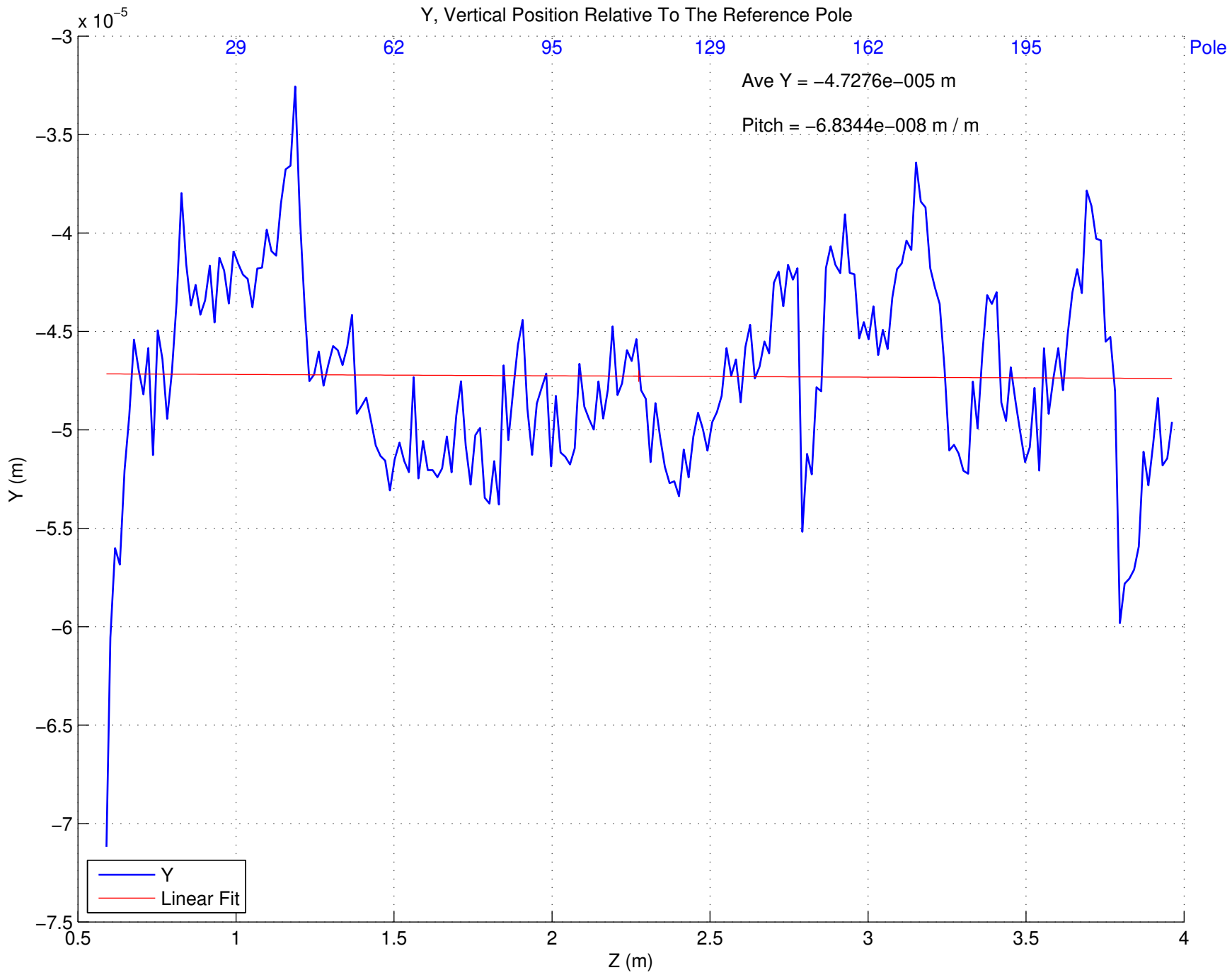

Distance From The Upper Outer Sensor
x 10^-4
4
2
0
−2
−4
−6
−8
−10
−12
−14
−16
Distance (m)
0.5
1
1.5
2
2.5
3
3.5
4
4.5
Z (m)

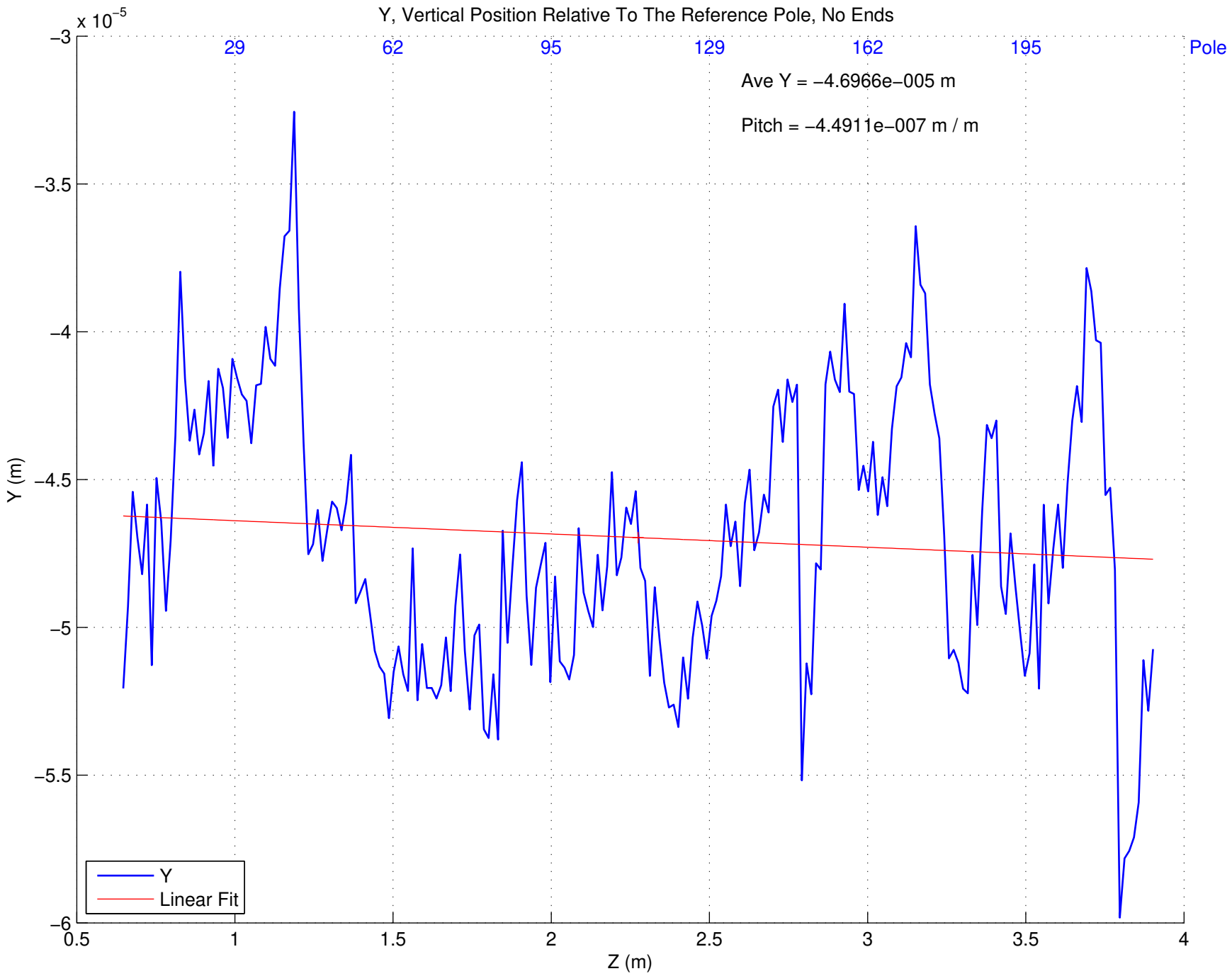

Distance From The Lower Inner Sensor
x 10^-4
2
0
−2
−4
−6
−8
−10
−12
Distance (m)
0.5
1
1.5
2
2.5
3
3.5
4
4.5
Z (m)

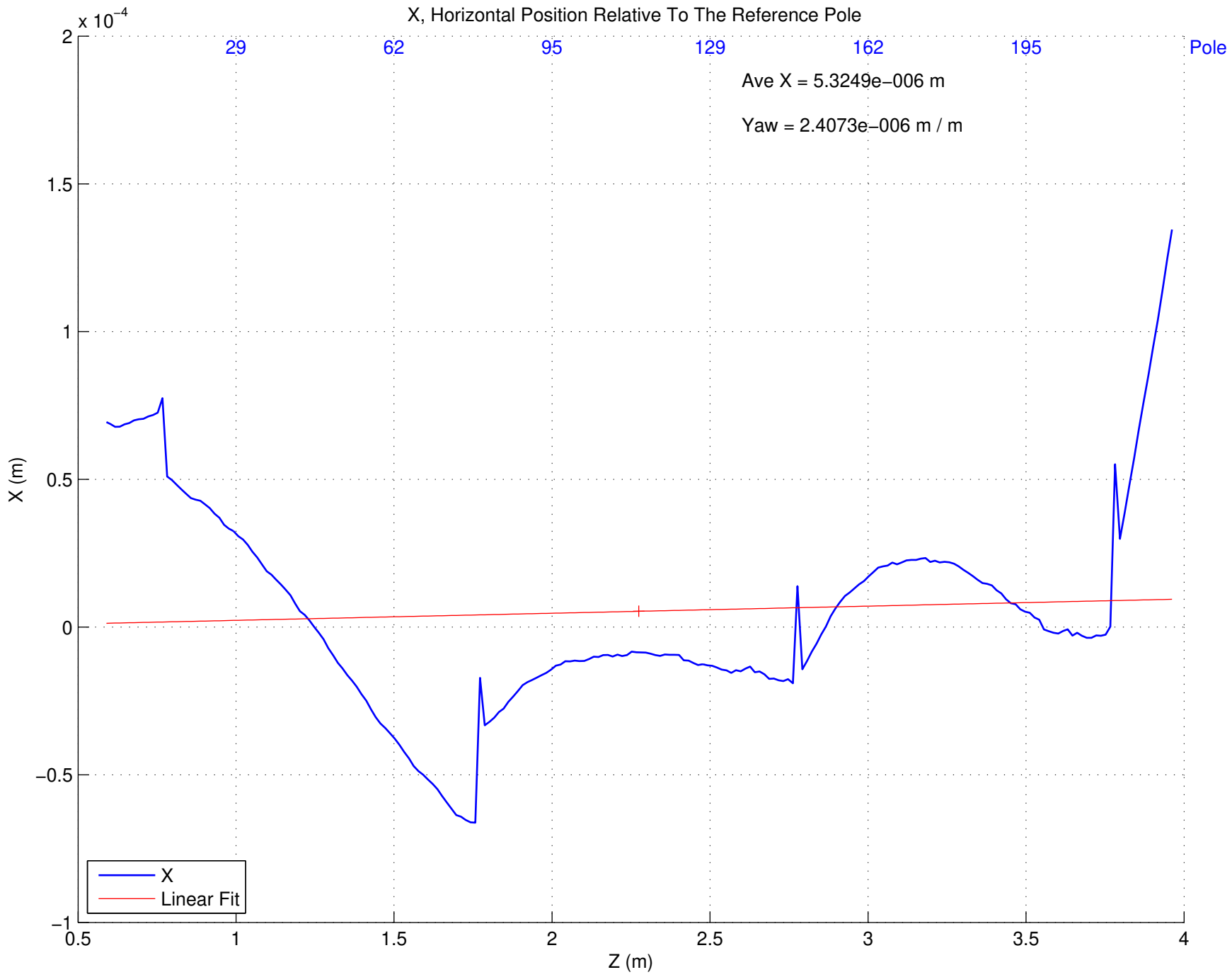

Distance From The Lower Outer Sensor
x 10^-4
5
0
−5
−10
−15
−20
Distance (m)
0.5
1
1.5
2
2.5
3
3.5
4
4.5
Z (m)

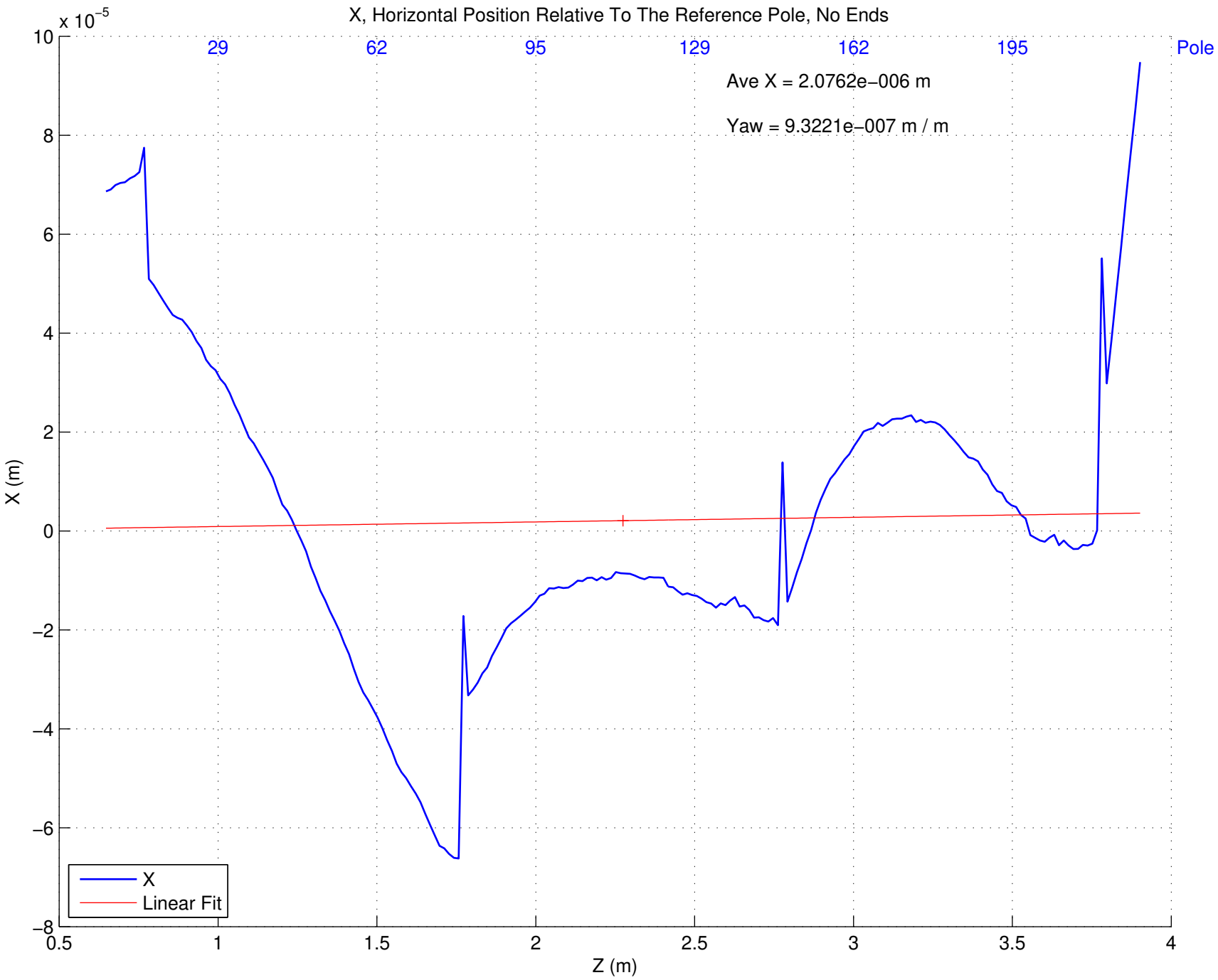

Distance From The Upper Side Sensor
x 10^-4
8
6
4
2
0
−2
−4
−6
−8
−10
Distance (m)
0.5
1
1.5
2
2.5
3
3.5
4
4.5
Z (m)

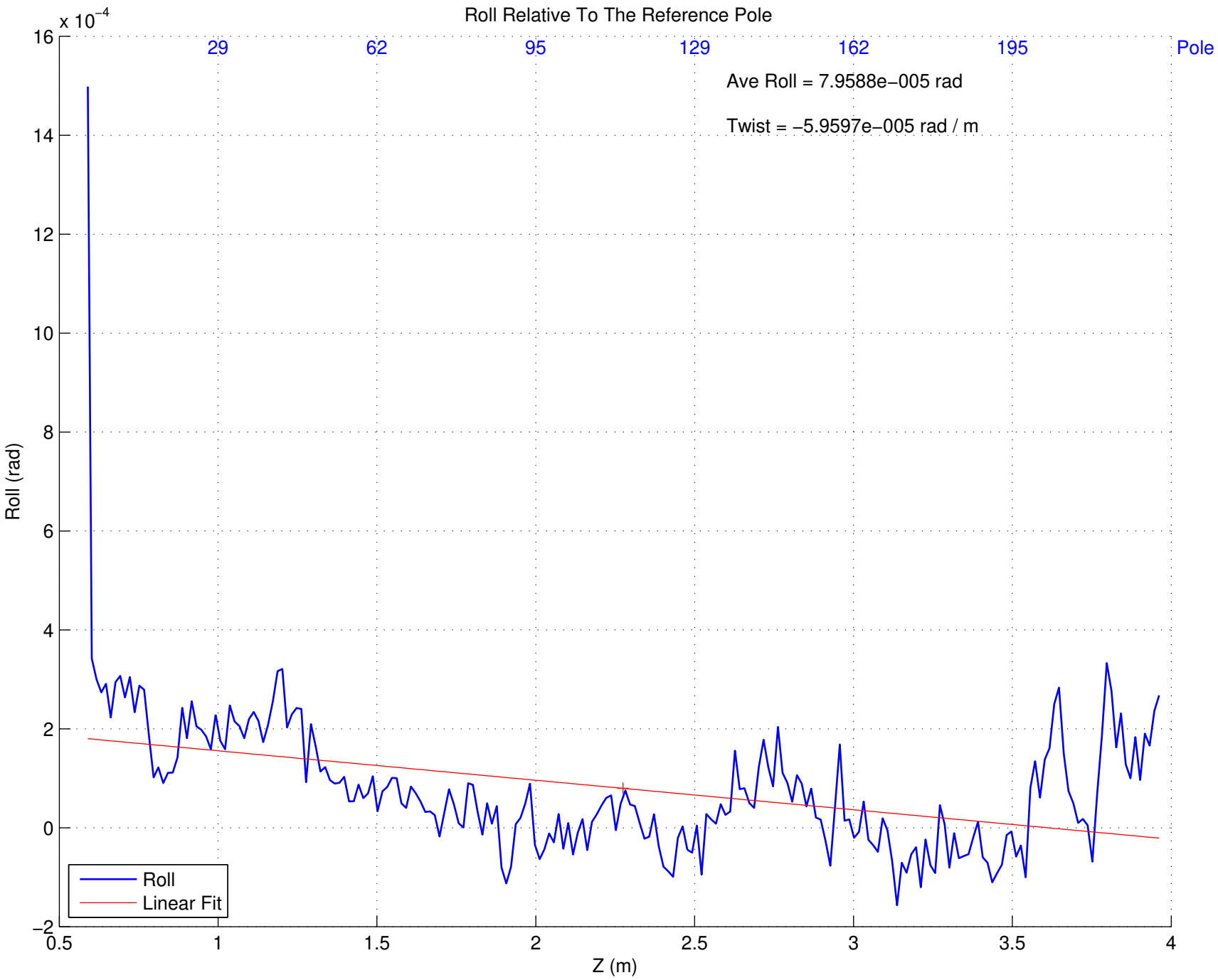

Distance From The Lower Side Sensor
x 10^-4
9
8
7
6
5
4
3
2
1
0
−1
Distance (m)
0.5
1
1.5
2
2.5
3
3.5
4
4.5
Z (m)

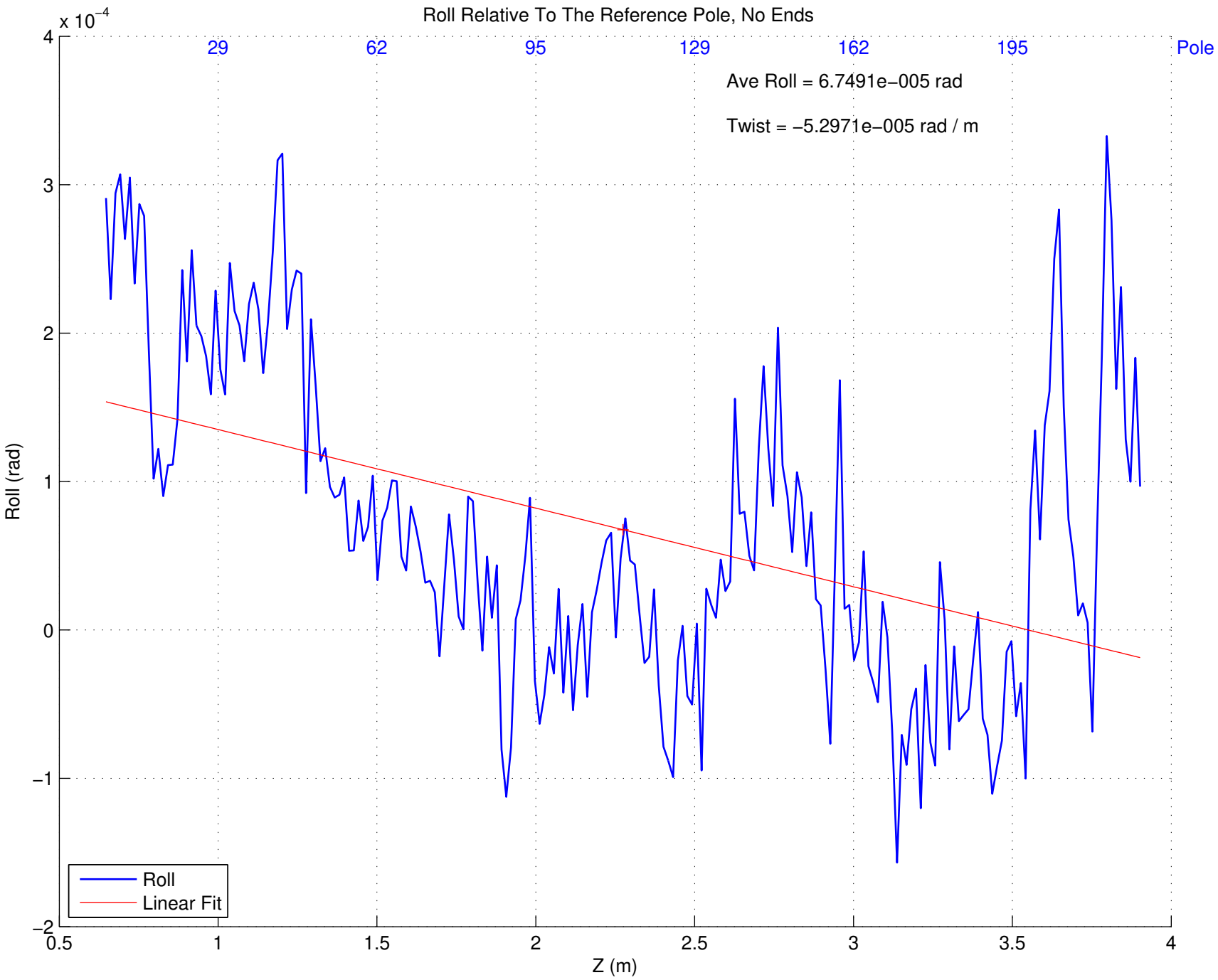

Y, Vertical Position Relative To The Reference Pole
x 10^-5
29
62
95
129
162
195
Pole
Ave Y = −4.7276e−005 m
Pitch = −6.8344e−008 m / m
−3
−3.5
−4
−4.5
−5
−5.5
−6
−6.5
−7
−7.5
Y (m)
0.5
1
1.5
2
2.5
3
3.5
4
Z (m)
Y
Linear Fit

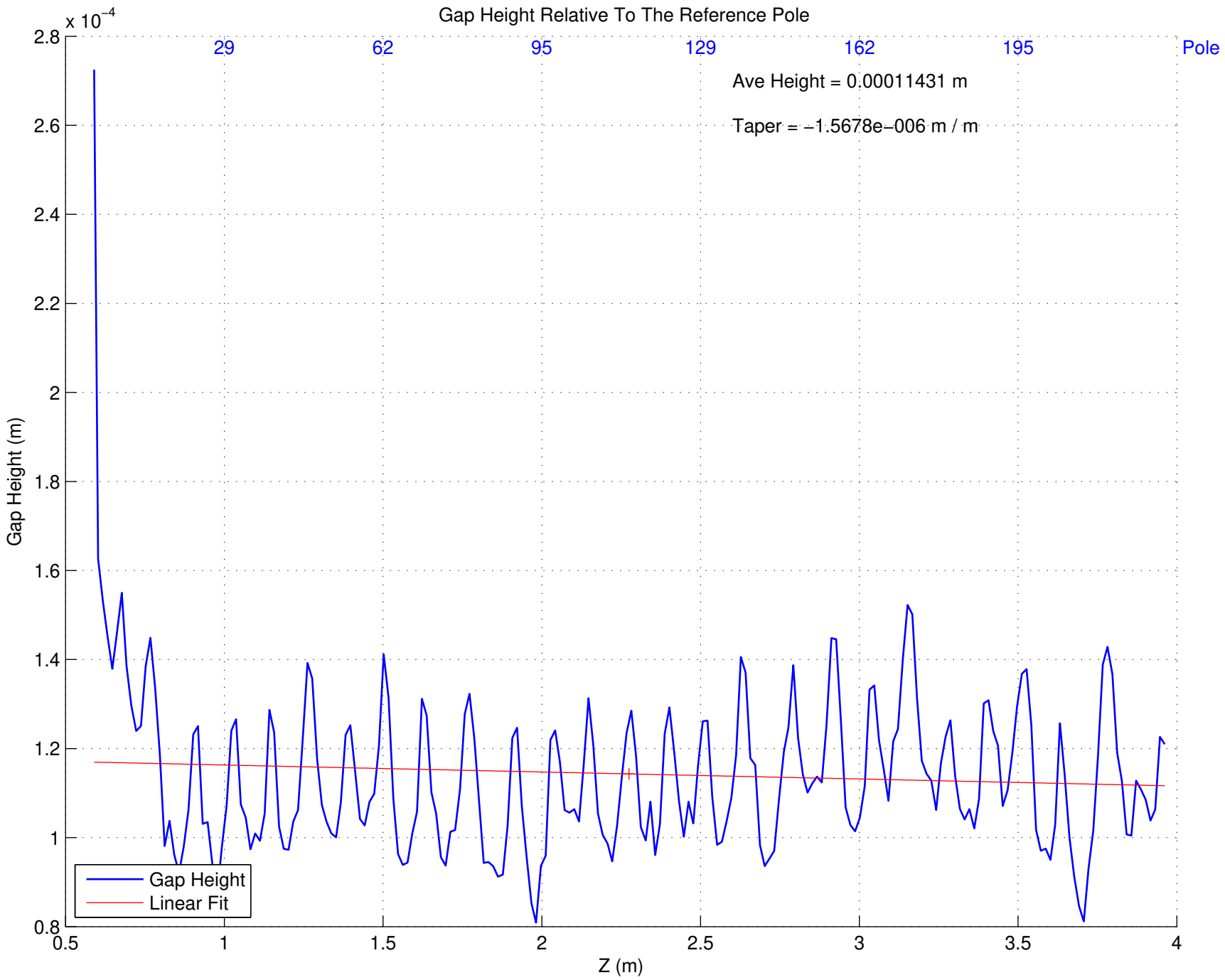

Y, Vertical Position Relative To The Reference Pole, No Ends
x 10^-5
29
62
95
129
162
195
Pole
Ave Y = −4.6966e−005 m
Pitch = −4.4911e−007 m / m
−3
−3.5
−4
−4.5
−5
−5.5
−6
Y (m)
0.5
1
1.5
2
2.5
3
3.5
4
Z (m)
Y
Linear Fit

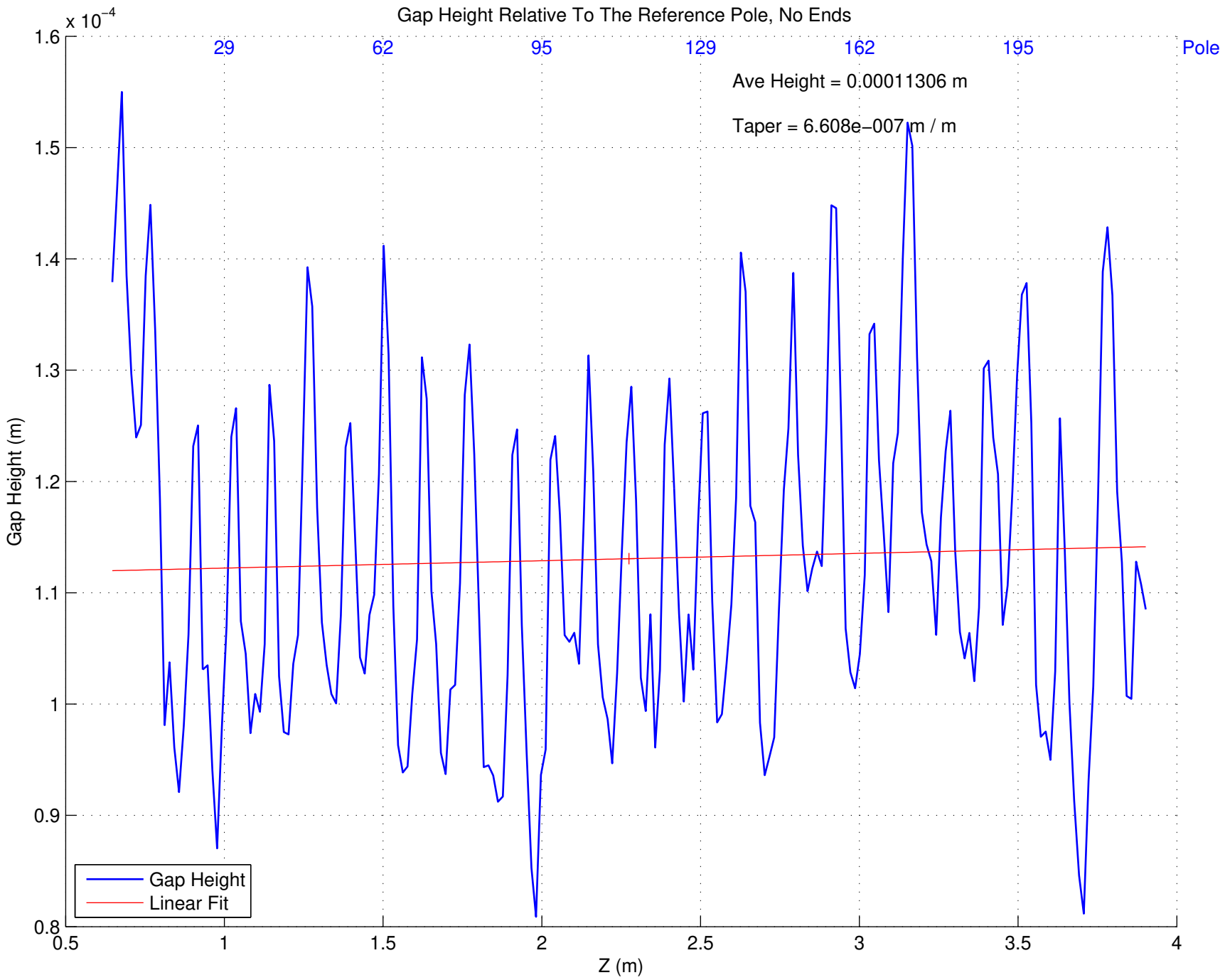

X, Horizontal Position Relative To The Reference Pole
x 10^-4
29
62
95
129
162
195
Pole
Ave X = 5.3249e−006 m
Yaw = 2.4073e−006 m / m
X (m)
Z (m)
X
Linear Fit

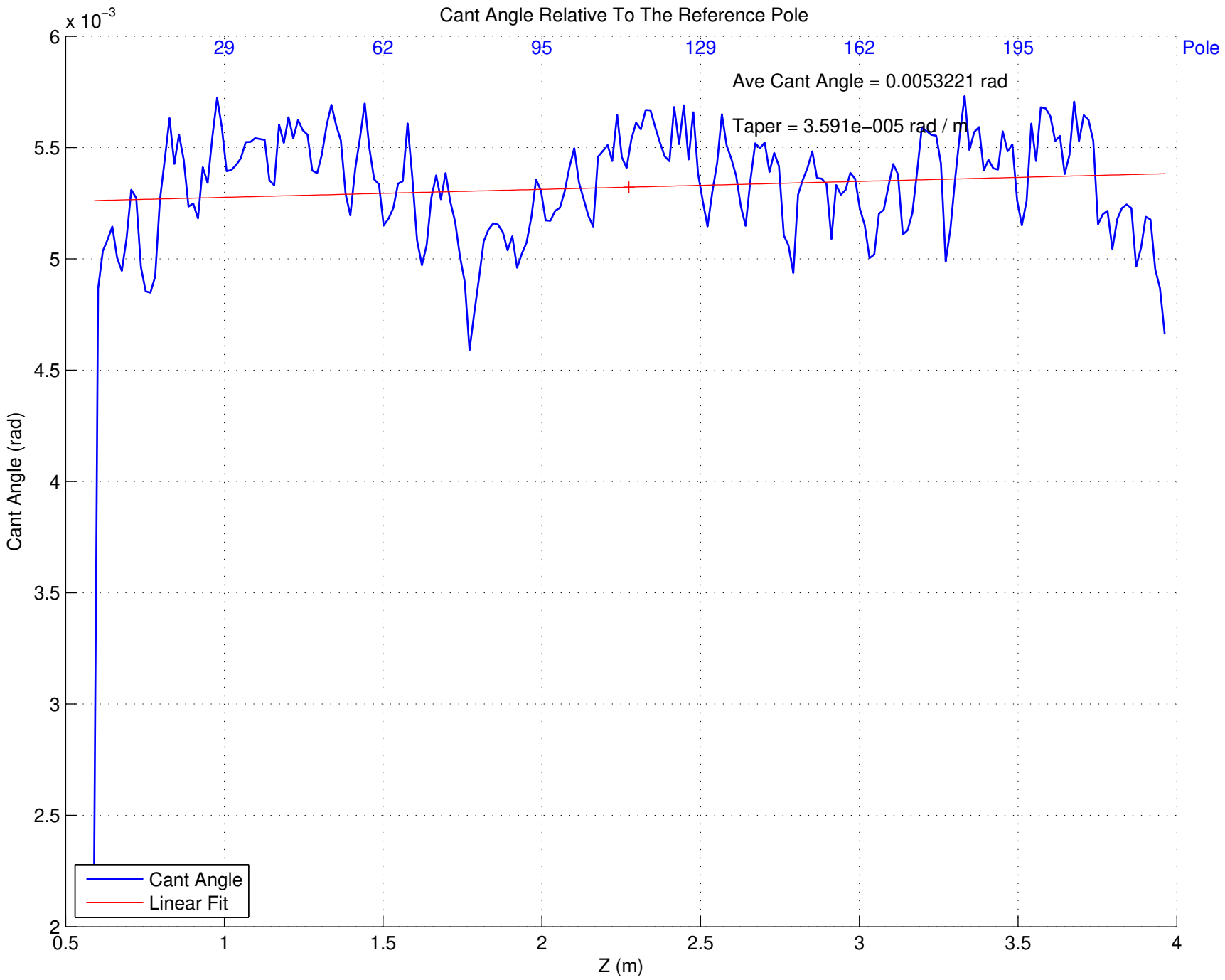

X, Horizontal Position Relative To The Reference Pole, No Ends
x 10^-5
29
62
95
129
162
195
Pole
Ave X = 2.0762e−006 m
Yaw = 9.3221e−007 m / m
X (m)
Z (m)
X
Linear Fit

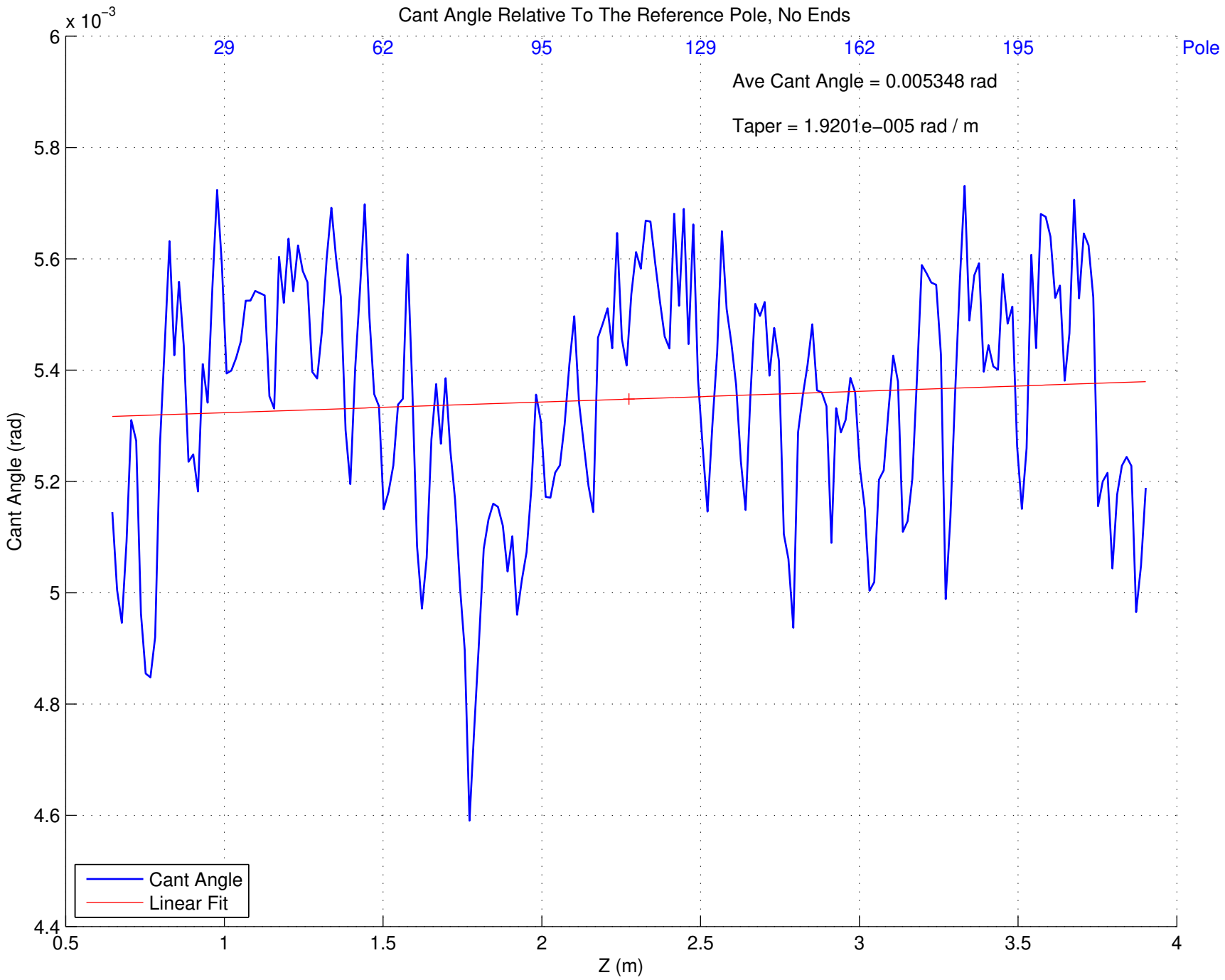

Roll Relative To The Reference Pole
x 10^-4
29
62
95
129
162
195
Pole
Ave Roll = 7.9588e−005 rad
Twist = −5.9597e−005 rad / m
Roll (rad)
Z (m)
Roll
Linear Fit


Roll Relative To The Reference Pole, No Ends
x 10^-4
29
62
95
129
162
195
Pole
Ave Roll = 6.7491e−005 rad
Twist = −5.2971e−005 rad / m
Roll (rad)
Z (m)
Roll
Linear Fit


Gap Height Relative To The Reference Pole
x 10^-4
29
62
95
129
162
195
Pole
Ave Height = 0.00011431 m
Taper = -1.5678e-006 m / m
Gap Height (m)
Z (m)
Gap Height
Linear Fit
2.8
2.6
2.4
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.5
1
1.5
2
2.5
3
3.5
4


Gap Height Relative To The Reference Pole, No Ends
x 10^-4
29
62
95
129
162
195
Pole
Ave Height = 0.00011306 m
Taper = 6.608e−007 m / m
Gap Height (m)
Z (m)
Gap Height
Linear Fit
1.6
1.5
1.4
1.3
1.2
1.1
1
0.9
0.8
0.5
1
1.5
2
2.5
3
3.5
4


Cant Angle Relative To The Reference Pole
x 10^-3
29
62
95
129
162
195
Pole
Ave Cant Angle = 0.0053221 rad
Taper = 3.591e−005 rad / m
Cant Angle (rad)
Z (m)
Cant Angle
Linear Fit
6
5.5
5
4.5
4
3.5
3
2.5
2
0.5
1
1.5
2
2.5
3
3.5
4


Cant Angle Relative To The Reference Pole, No Ends
x 10^-3
29
62
95
129
162
195
Pole
Ave Cant Angle = 0.005348 rad
Taper = 1.9201e−005 rad / m
Cant Angle (rad)
Z (m)
Cant Angle
Linear Fit