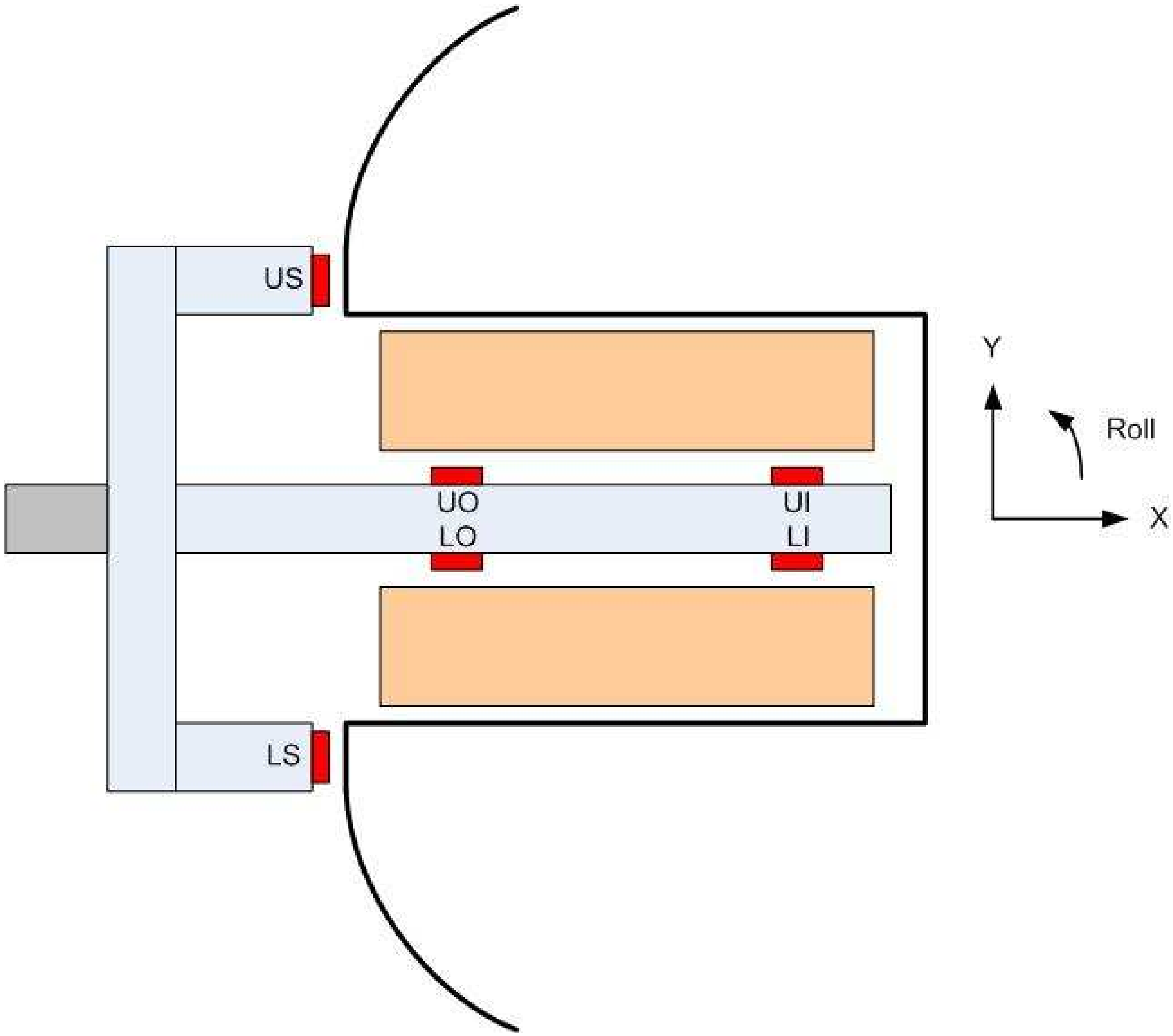
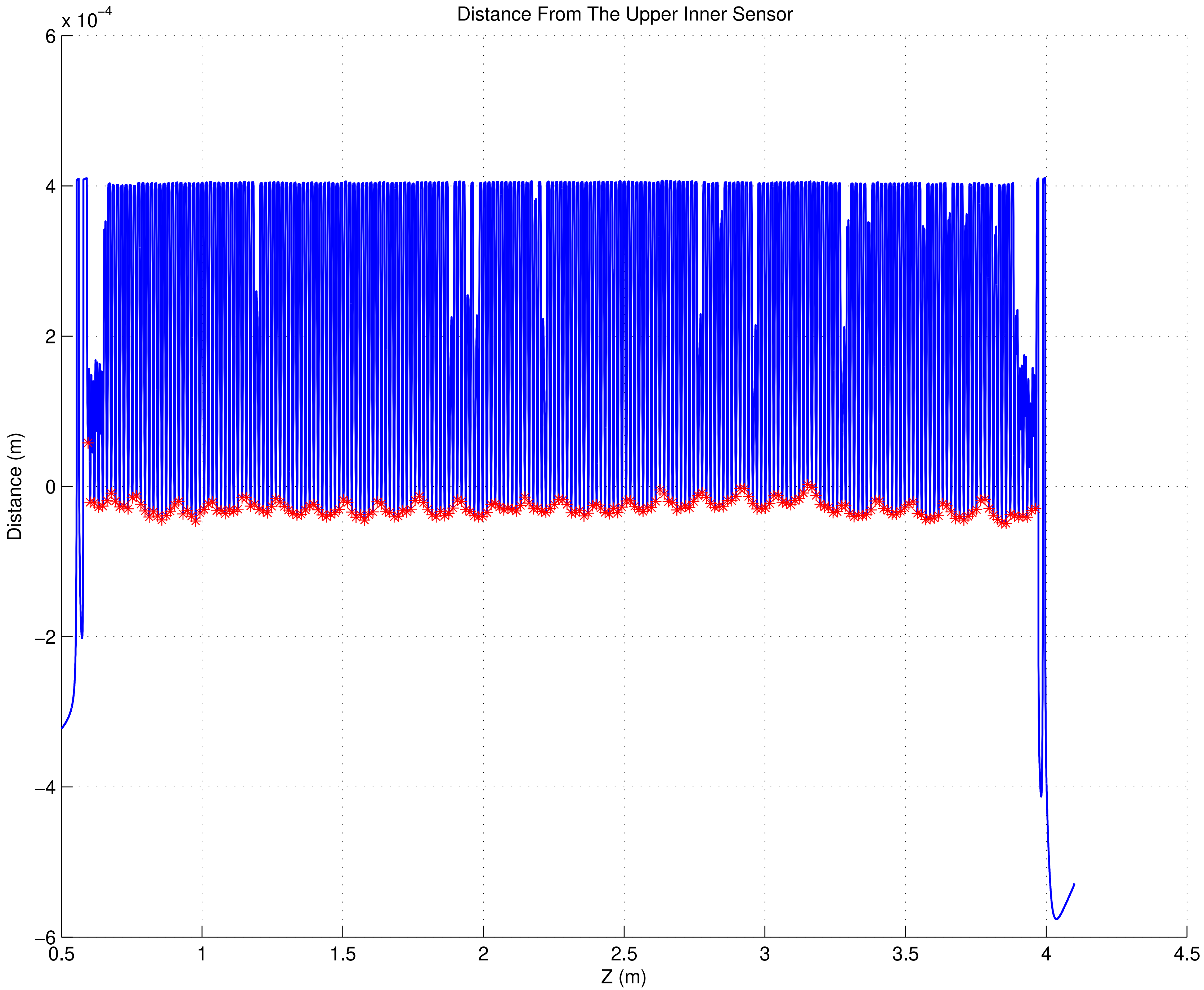
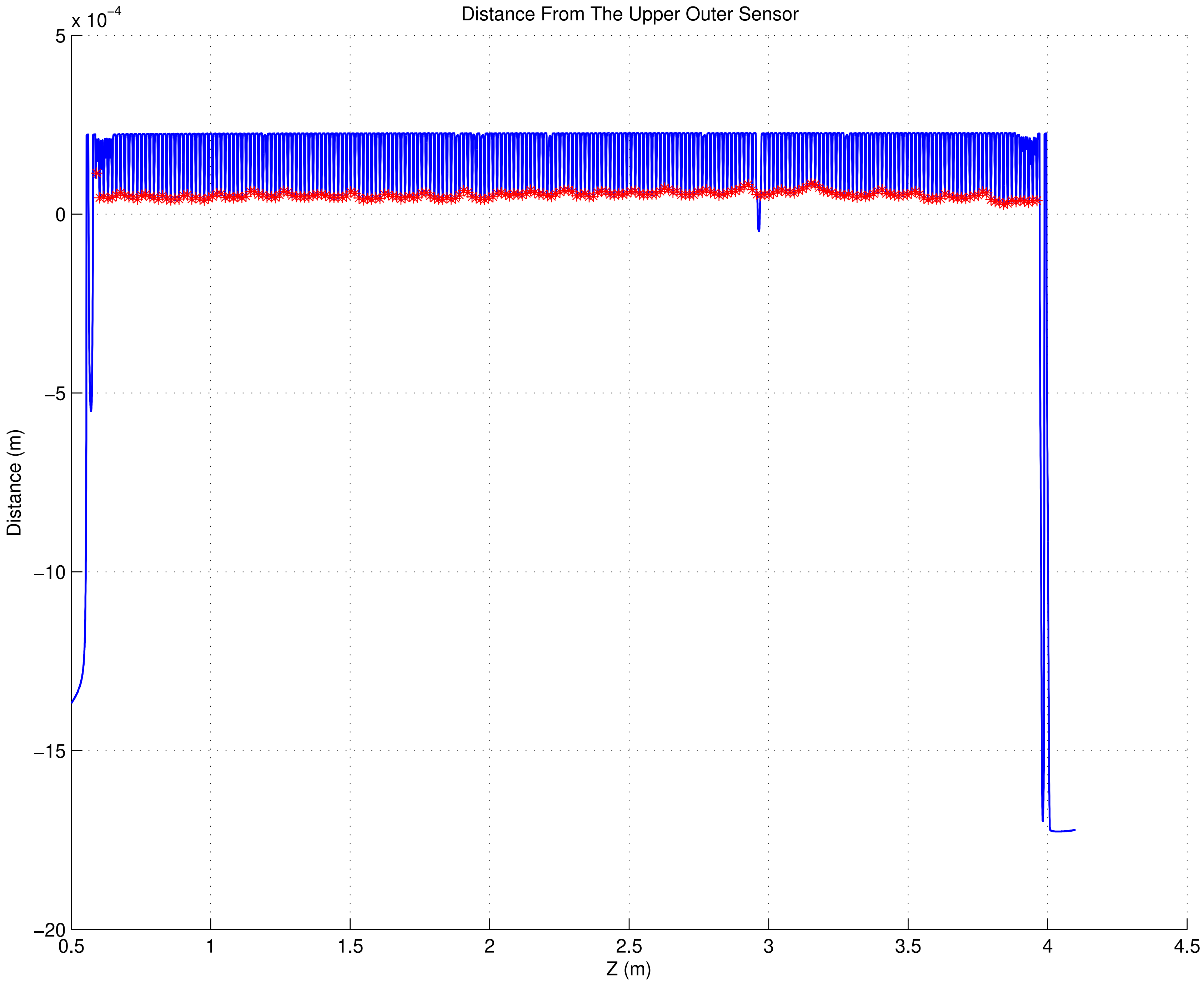
SLAC Magnetic Measurements
Mechanical Measurement Analysis

Parameters:
INPUT−FILE−DIR =V:\MET\MagServe\MagData\LCLS\Undulator\L143−112000−27\Temperature test\Align Cap Sensor\Run 017\
INPUT−FILE−NAME =mechp−dat.001

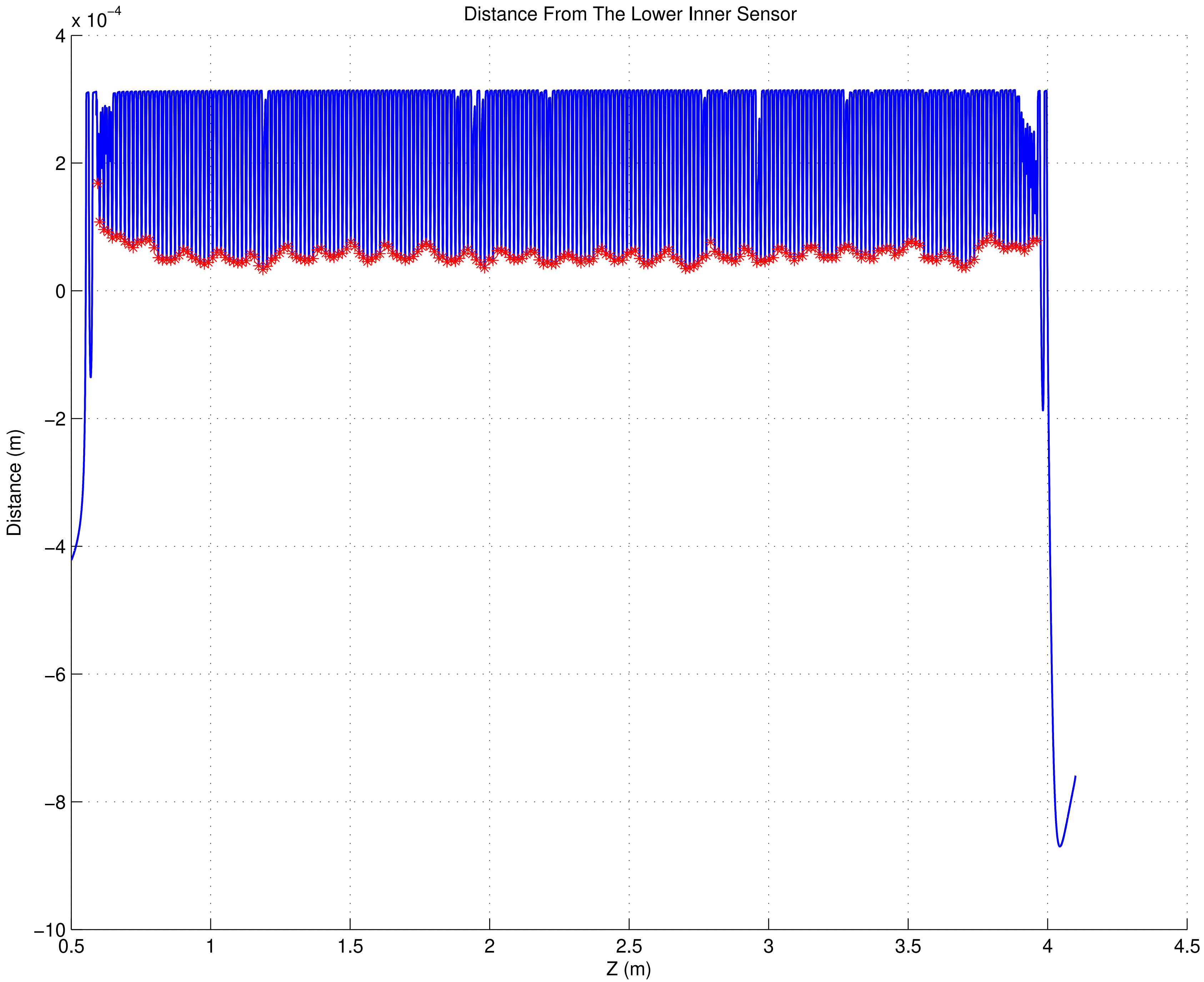

US
LS
UO
LO
UI
LI
Y
X
Roll



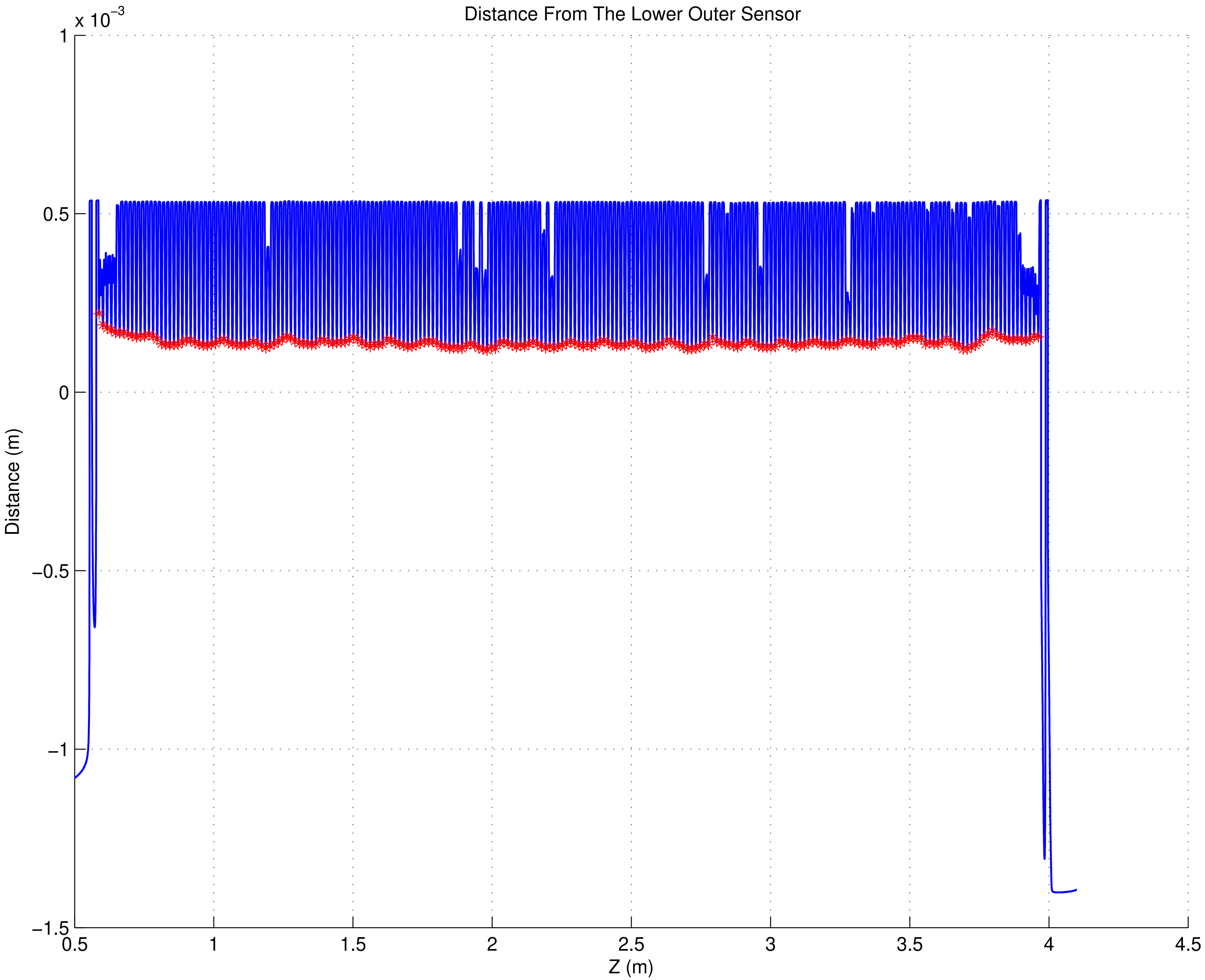
Distance From The Upper Inner Sensor
x 10^−4
6
4
2
0
−2
−4
−6
Distance (m)
0.5
1
1.5
2
2.5
3
3.5
4
4.5
Z (m)



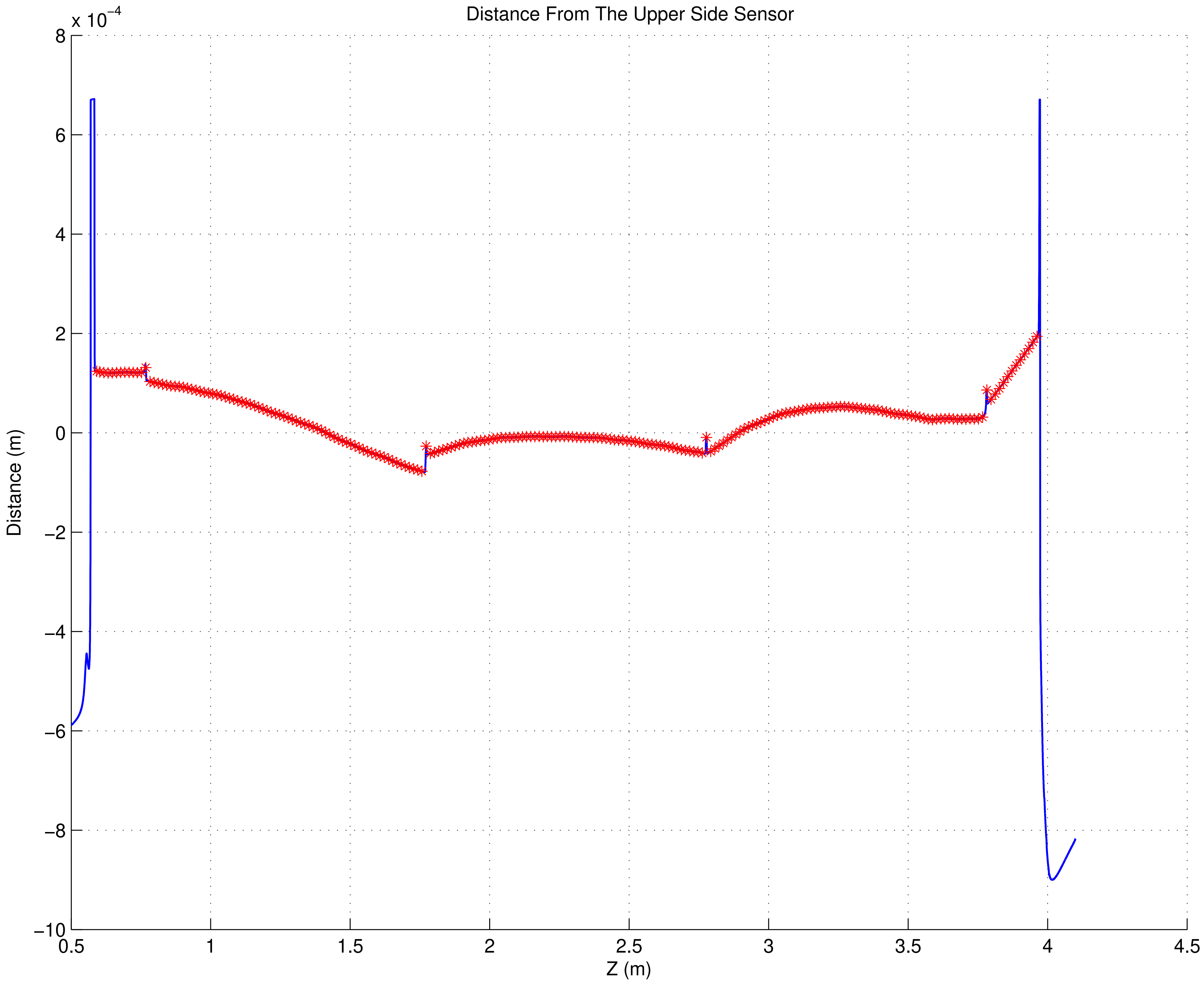
Distance From The Upper Outer Sensor
x 10^-4
5
0
−5
−10
−15
−20
Distance (m)
0.5
1
1.5
2
2.5
3
3.5
4
4.5
Z (m)



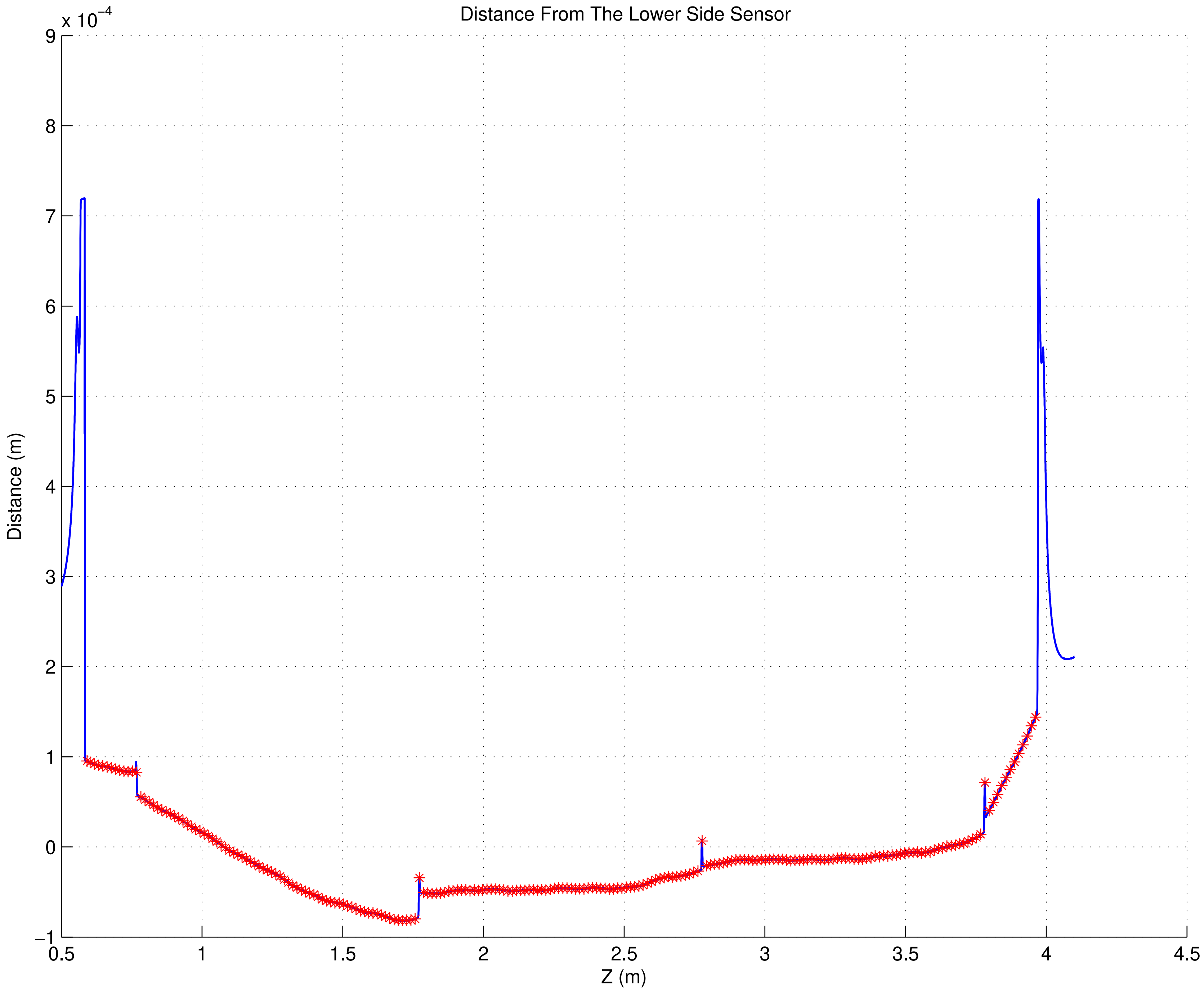
Distance From The Lower Inner Sensor
x 10^-4
4
2
0
−2
−4
−6
−8
−10
Distance (m)
0.5
1
1.5
2
2.5
3
3.5
4
4.5
Z (m)



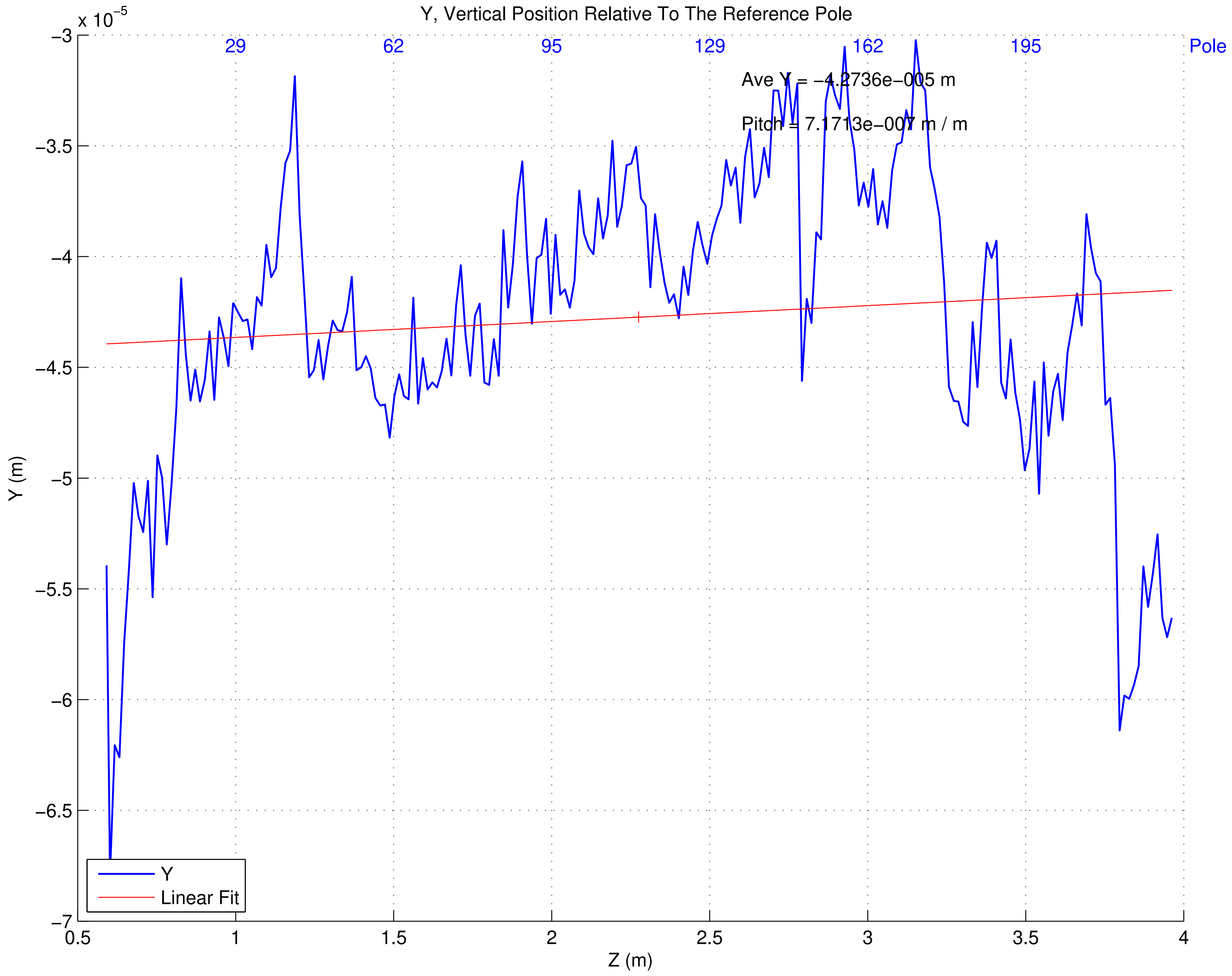
Distance From The Lower Outer Sensor
x 10^-3
1
0.5
0
−0.5
−1
−1.5
Distance (m)
0.5
1
1.5
2
2.5
3
3.5
4
4.5
Z (m)

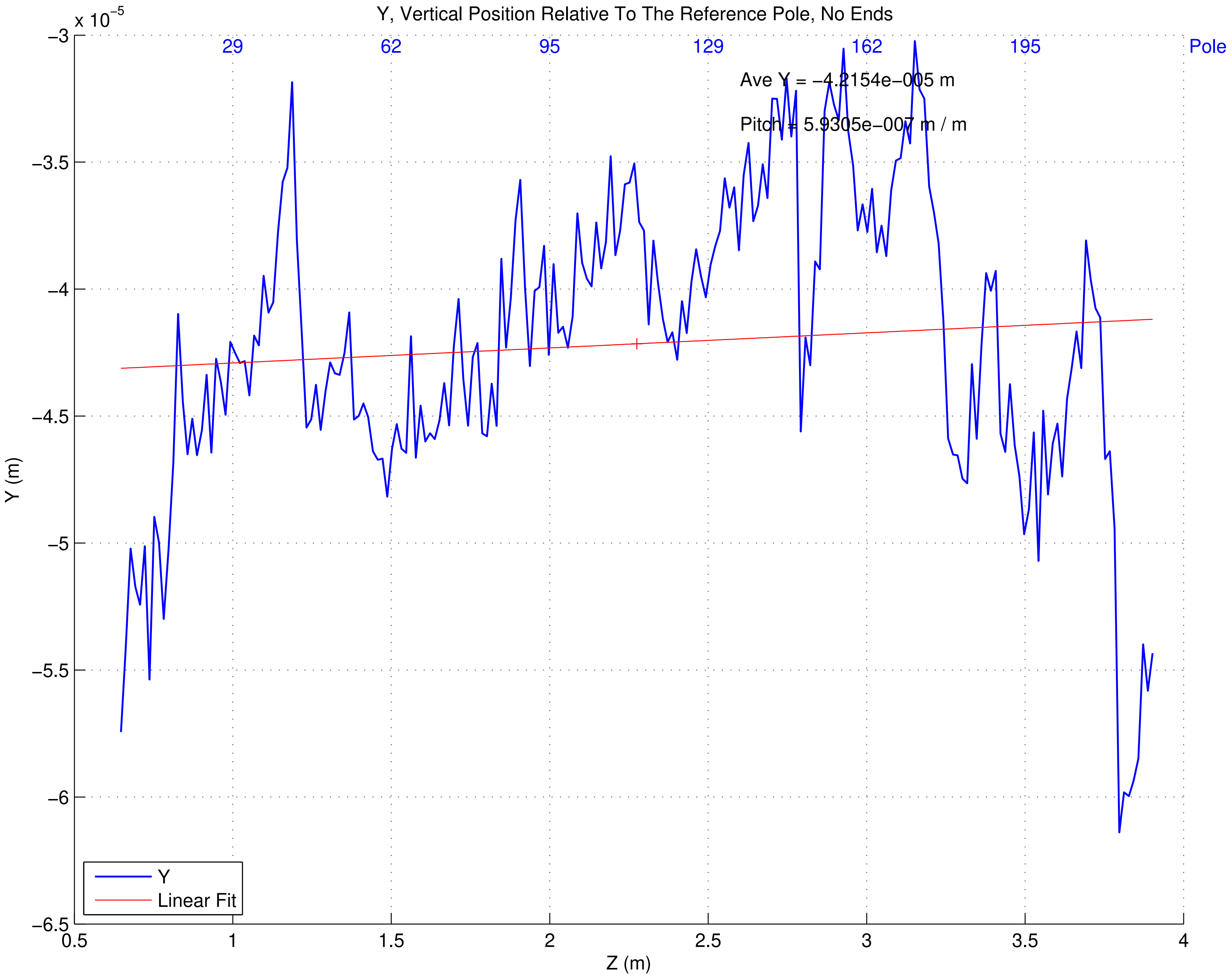


Distance From The Upper Side Sensor
x 10^−4
8
6
4
2
0
−2
−4
−6
−8
−10
0.5
1
1.5
2
2.5
3
3.5
4
4.5
Distance (m)
Z (m)

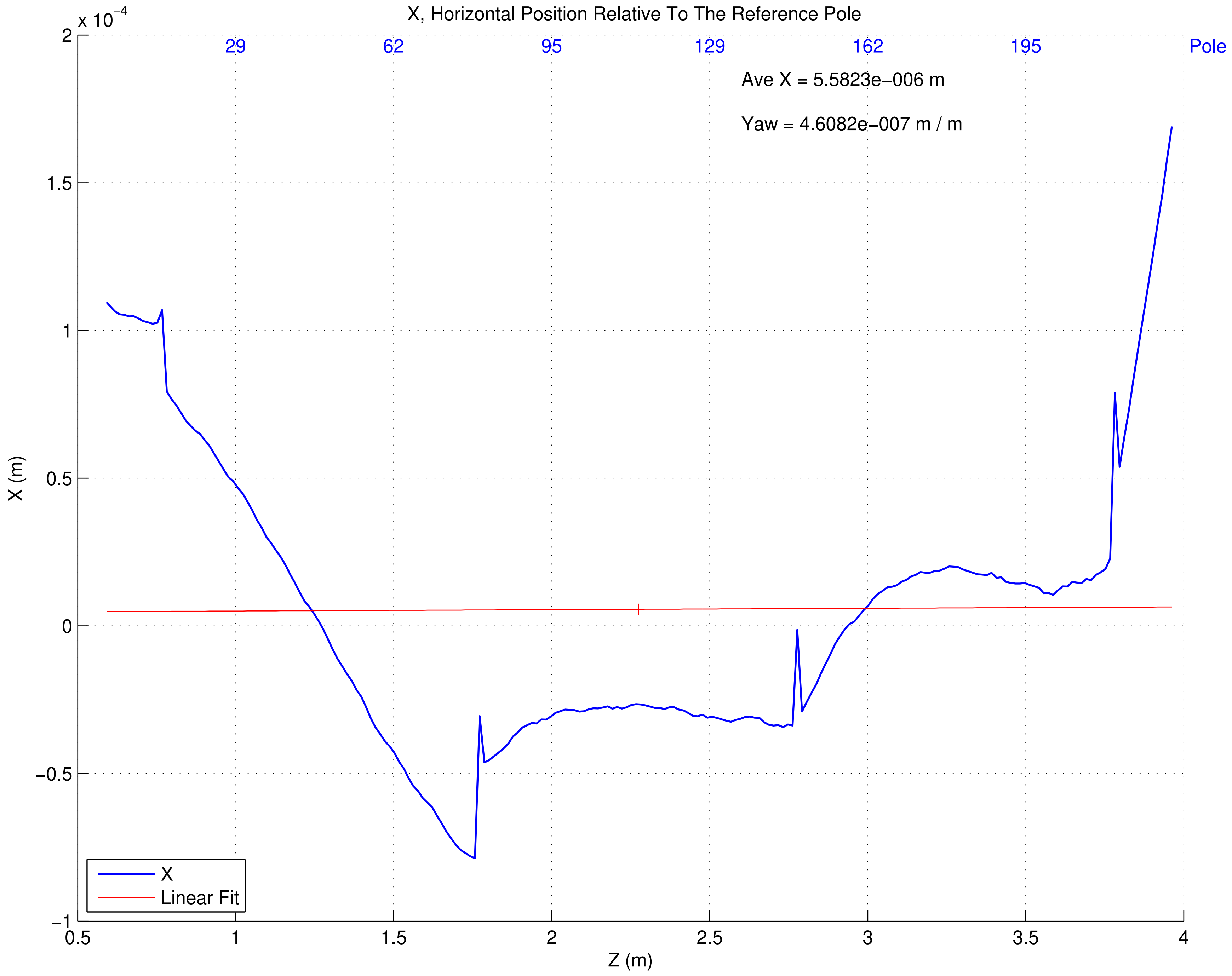


Distance From The Lower Side Sensor
x 10^-4
9
8
7
6
5
4
3
2
1
0
−1
Distance (m)
0.5
1
1.5
2
2.5
3
3.5
4
4.5
Z (m)

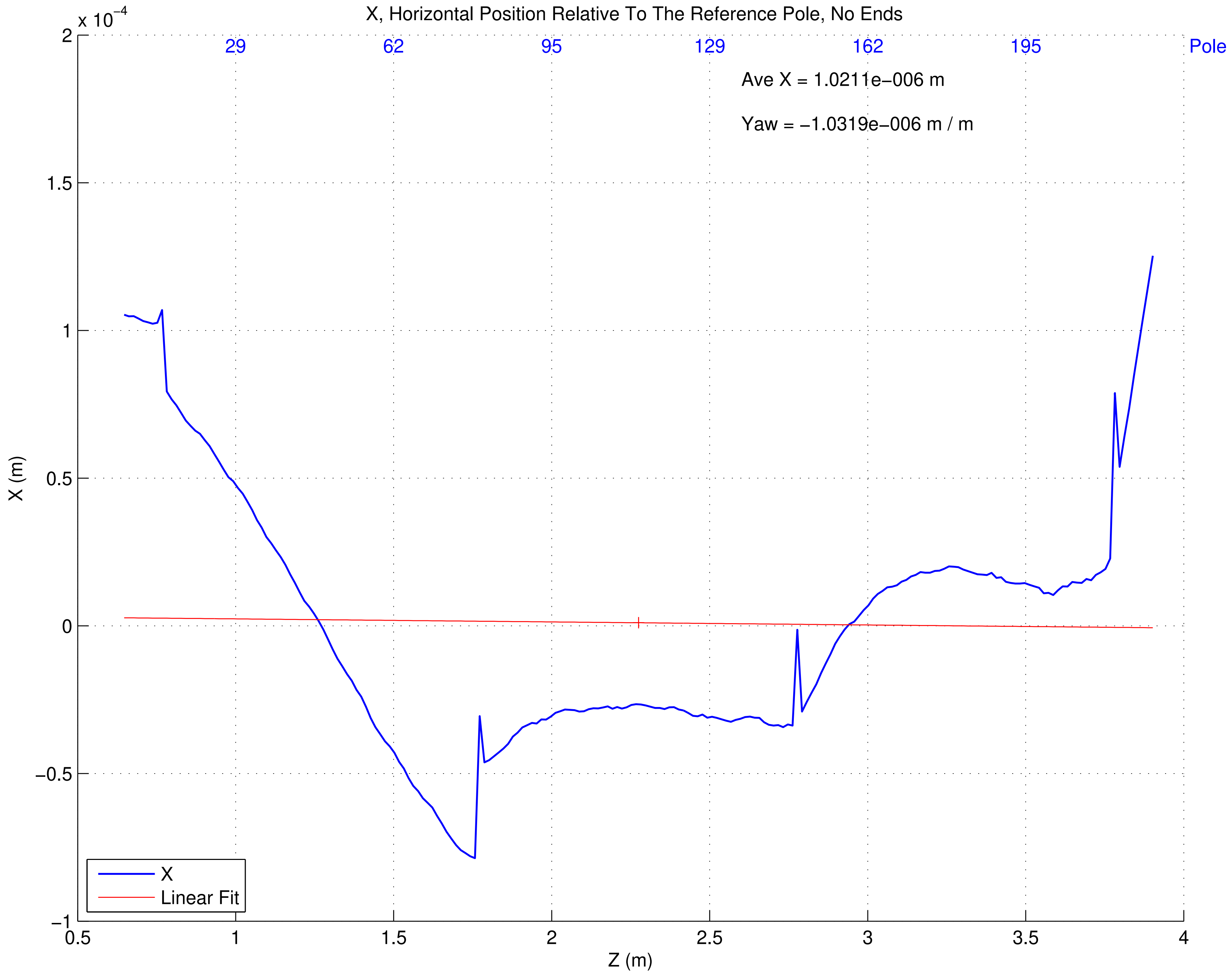

Y, Vertical Position Relative To The Reference Pole
x 10^-5
29
62
95
129
162
195
Pole
Ave Y = −4.2736e−005 m
Pitch = 7.1713e−007 m / m
Y (m)
Z (m)
Y
Linear Fit
−3
−3.5
−4
−4.5
−5
−5.5
−6
−6.5
−7
0.5
1
1.5
2
2.5
3
3.5
4



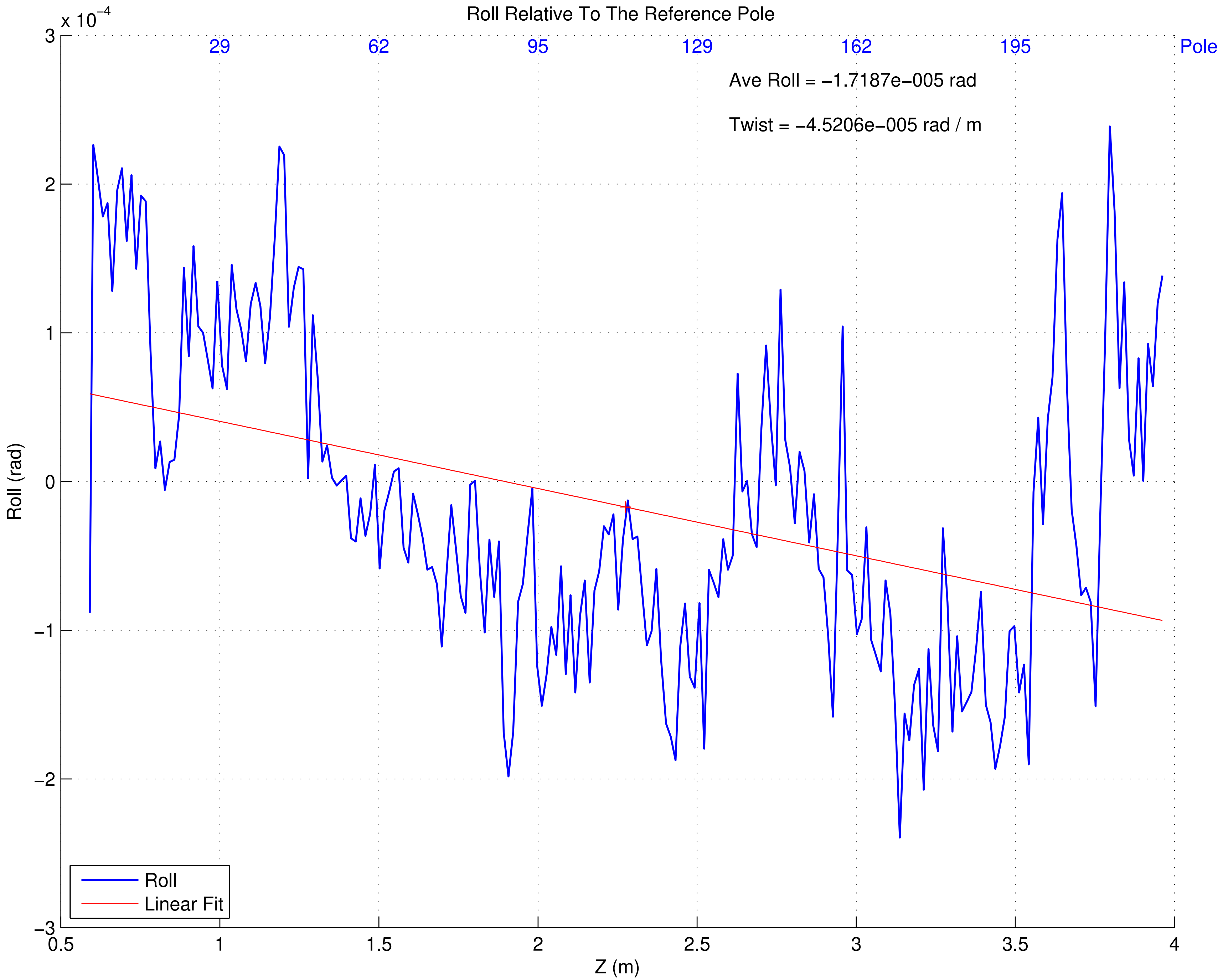
Y, Vertical Position Relative To The Reference Pole, No Ends
x 10^−5
29
62
95
129
162
195
Pole
Ave Y = −4.2154e−005 m
Pitch = 5.9305e−007 m / m
−3
−3.5
−4
−4.5
−5
−5.5
−6
−6.5
Y (m)
0.5
1
1.5
2
2.5
3
3.5
4
Z (m)
Y
Linear Fit



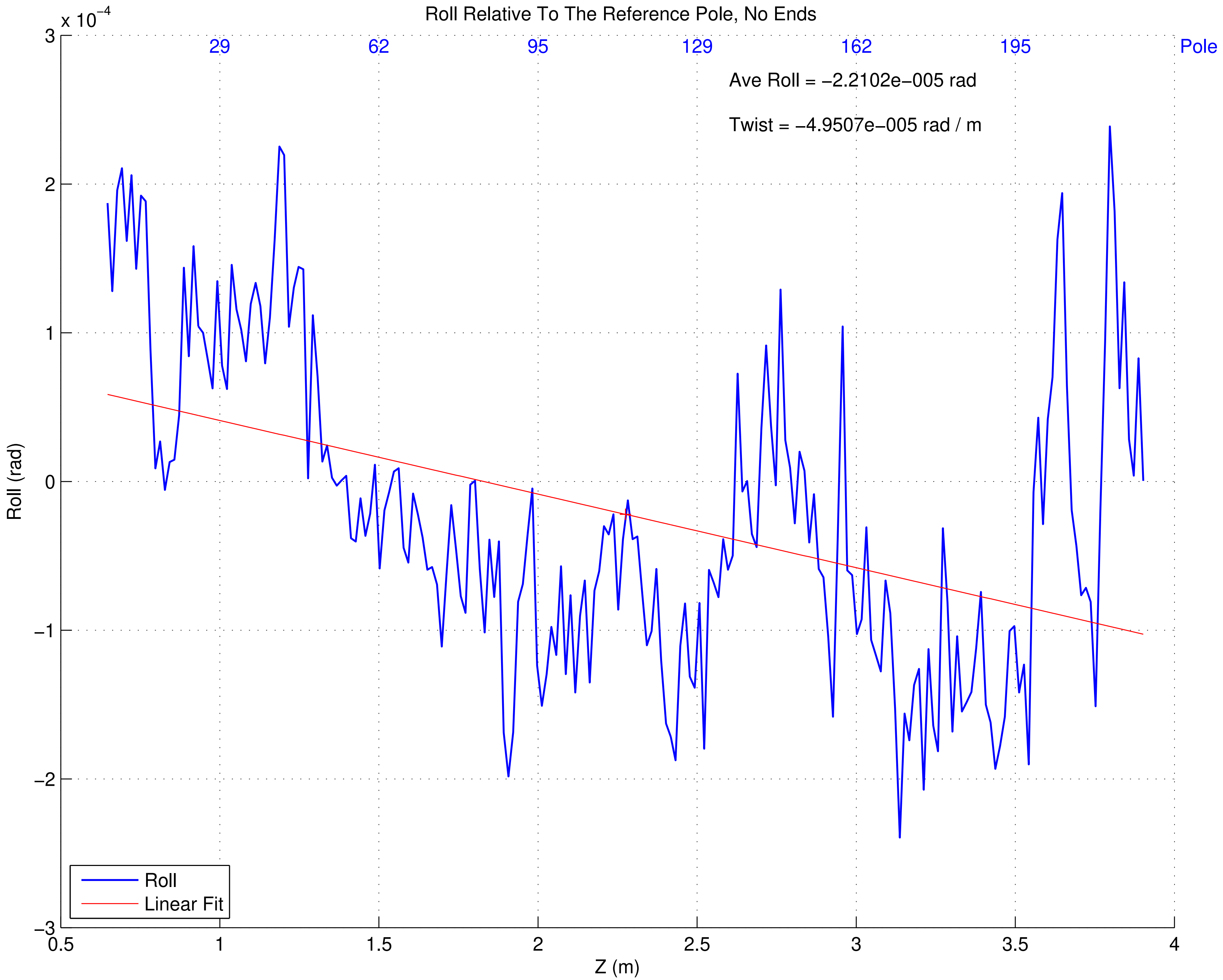
X, Horizontal Position Relative To The Reference Pole
x 10^-4
29
62
95
129
162
195
Pole
Ave X = 5.5823e−006 m
Yaw = 4.6082e−007 m / m
X (m)
Z (m)
2
1.5
1
0.5
0
−0.5
−1
0.5
1
1.5
2
2.5
3
3.5
4
X
Linear Fit



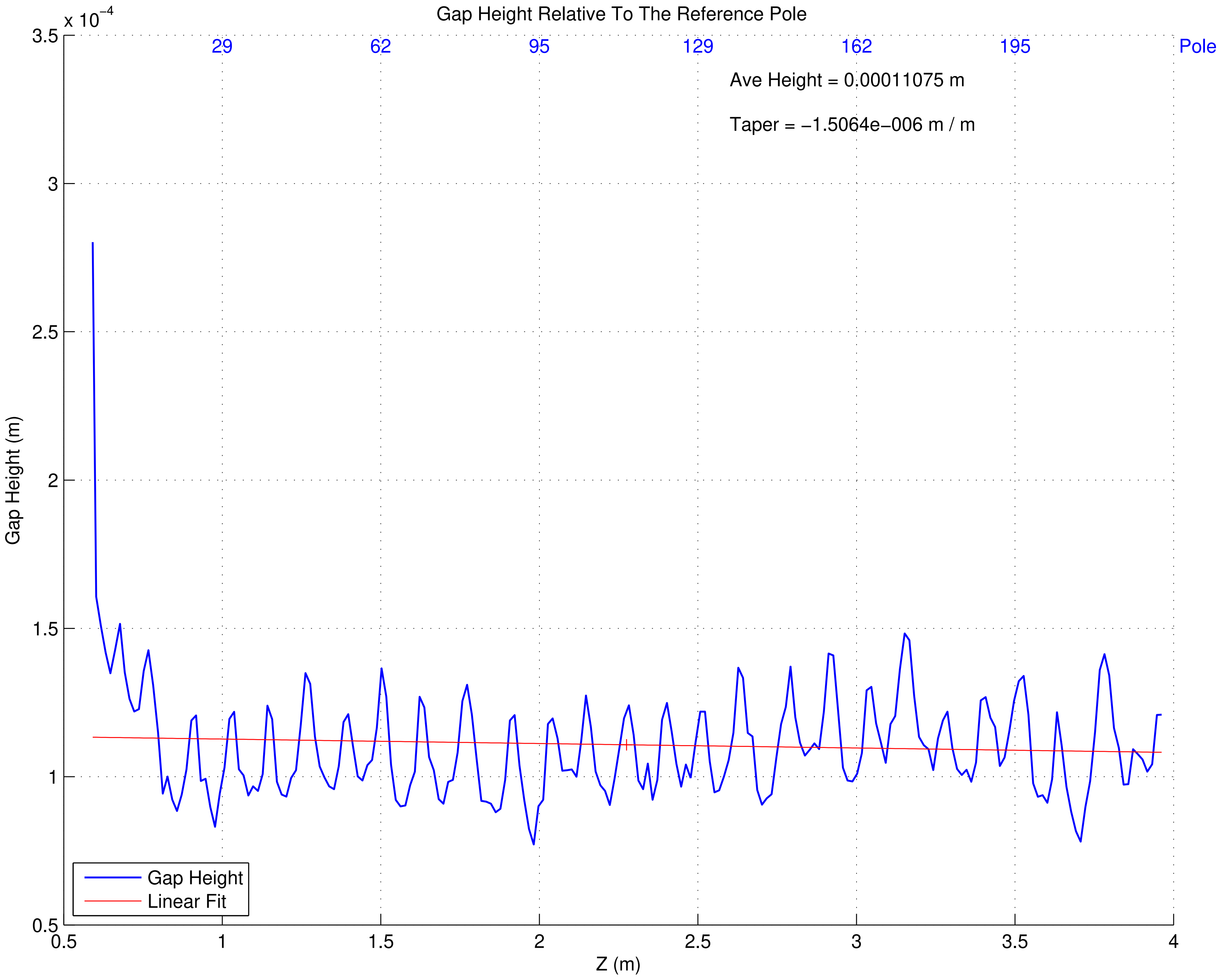
X, Horizontal Position Relative To The Reference Pole, No Ends
x 10^-4
29
62
95
129
162
195
Pole
Ave X = 1.0211e−006 m
Yaw = −1.0319e−006 m / m
2
1.5
1
0.5
0
−0.5
−1
X (m)
0.5
1
1.5
2
2.5
3
3.5
4
Z (m)
X
Linear Fit

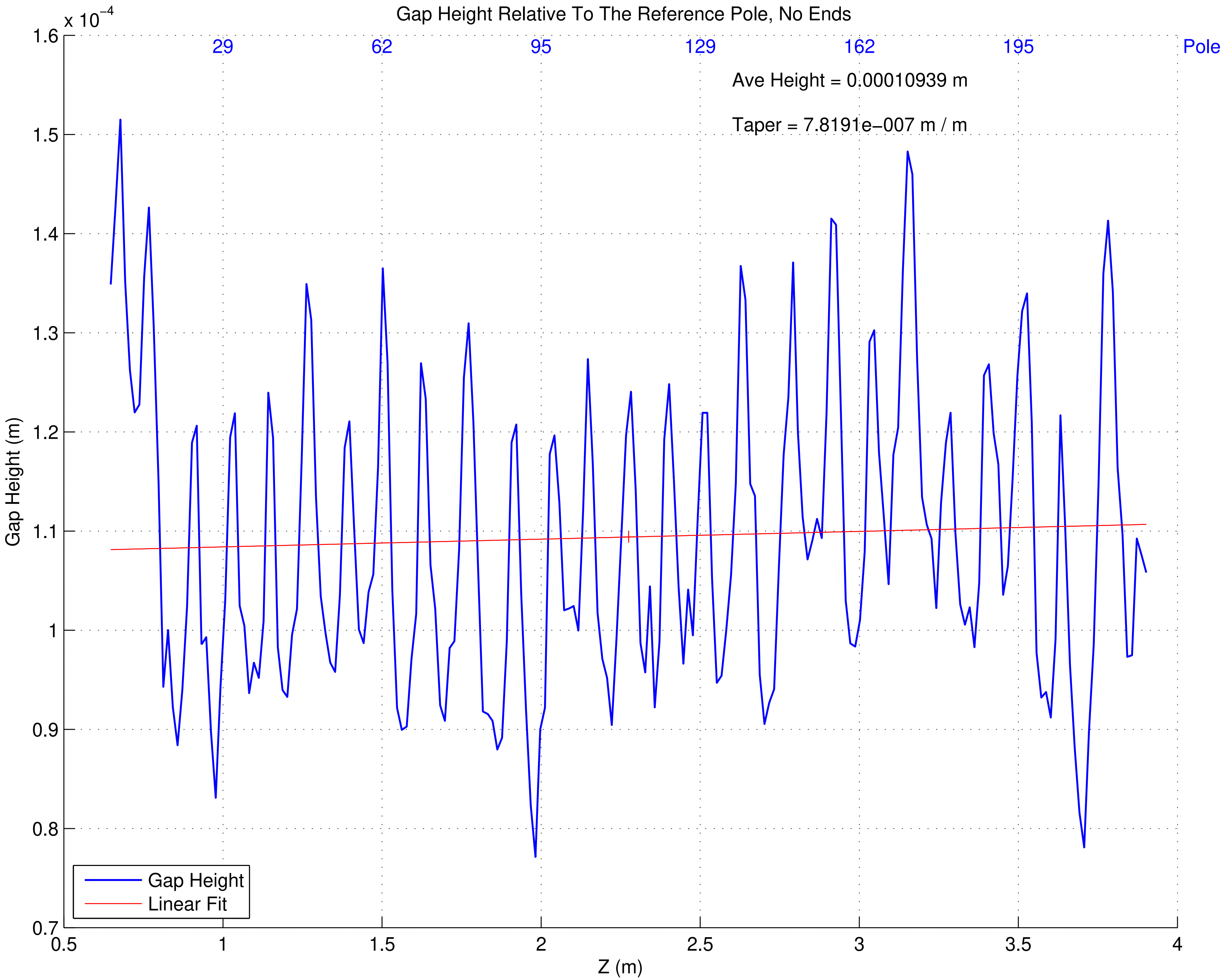


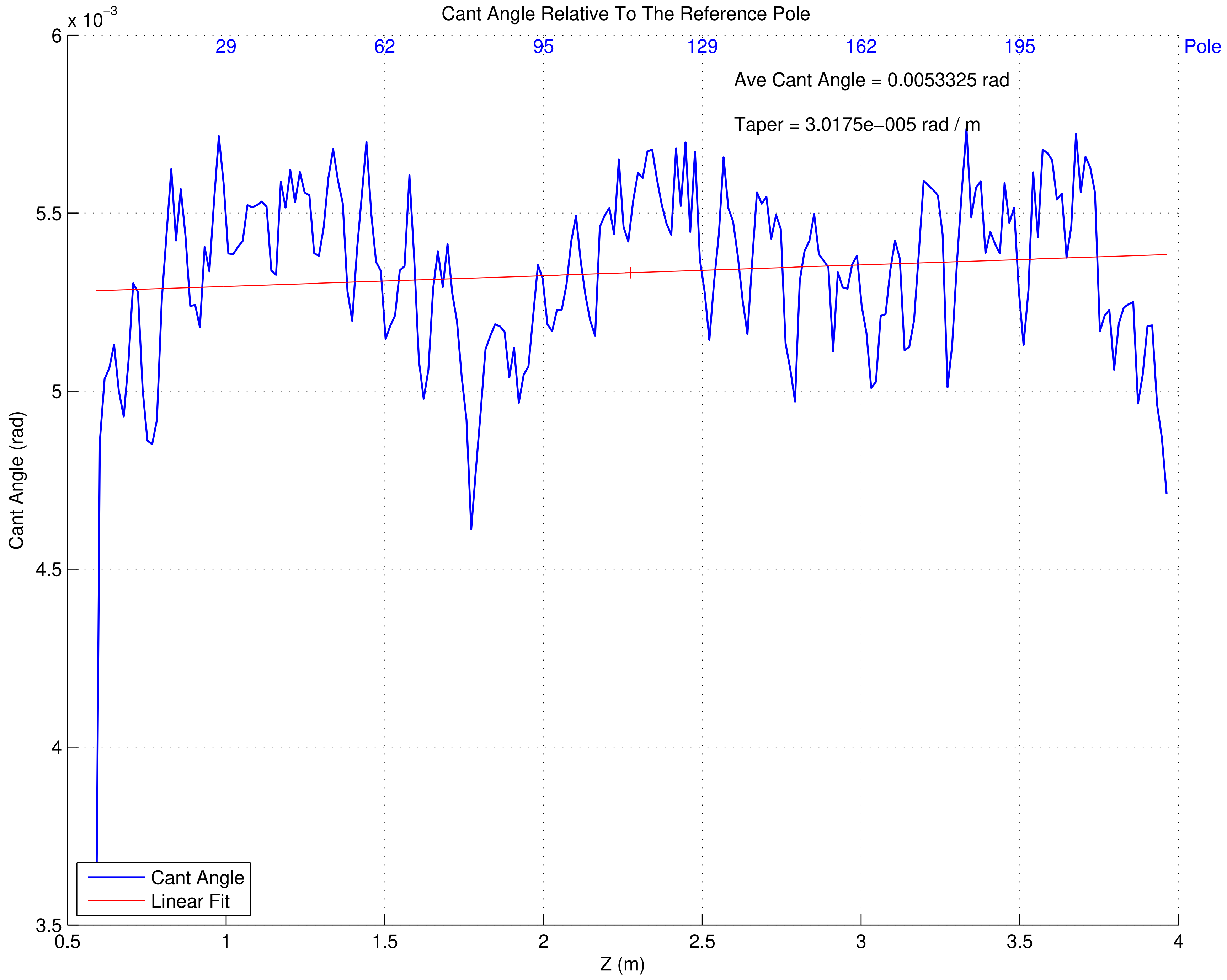
Roll Relative To The Reference Pole
x 10^-4
29
62
95
129
162
195
Pole
Ave Roll = −1.7187e−005 rad
Twist = −4.5206e−005 rad / m
Roll (rad)
Z (m)
Roll
Linear Fit
3
2
1
0
−1
−2
−3
0.5
1
1.5
2
2.5
3
3.5
4



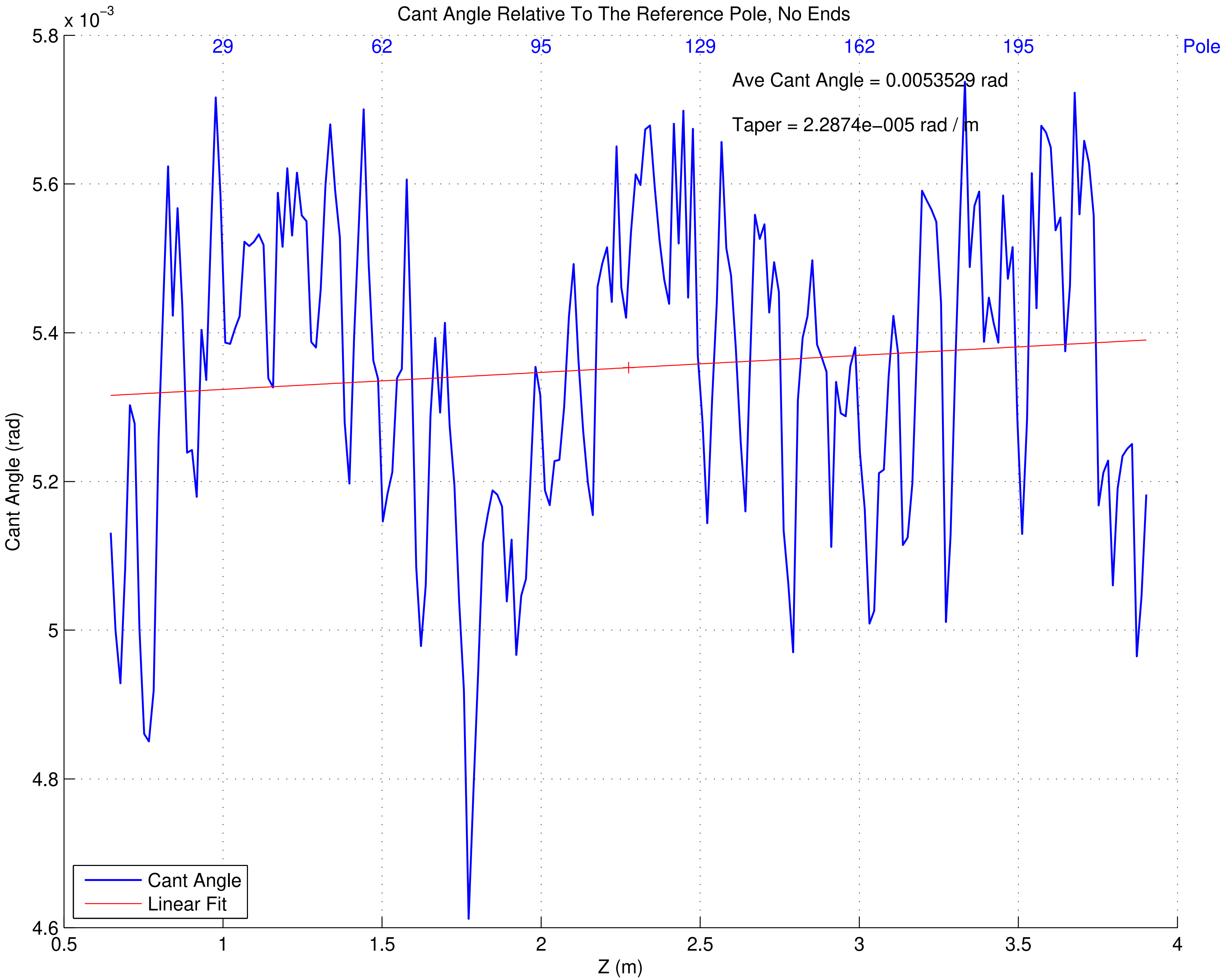
Roll Relative To The Reference Pole, No Ends
x 10^−4
Ave Roll = −2.2102e−005 rad
Twist = −4.9507e−005 rad / m
29
62
95
129
162
195
Pole
Roll (rad)
Z (m)
Roll
Linear Fit
3
2
1
0
−1
−2
−3
0.5
1
1.5
2
2.5
3
3.5
4


Gap Height Relative To The Reference Pole
x 10^-4
3.5
3
2.5
2
1.5
1
0.5
Gap Height (m)
29
62
95
129
162
195
Pole
Ave Height = 0.00011075 m
Taper = −1.5064e−006 m / m
Gap Height
Linear Fit
0.5
1
1.5
2
2.5
3
3.5
4
Z (m)


Gap Height Relative To The Reference Pole, No Ends
x 10^-4
29
62
95
129
162
195
Pole
Ave Height = 0.00010939 m
Taper = 7.8191e-007 m / m
Gap Height (m)
Z (m)
1.6
1.5
1.4
1.3
1.2
1.1
1
0.9
0.8
0.7
0.5
1
1.5
2
2.5
3
3.5
4
Gap Height
Linear Fit



Cant Angle Relative To The Reference Pole
x 10^-3
29
62
95
129
162
195
Pole
Ave Cant Angle = 0.0053325 rad
Taper = 3.0175e−005 rad / m
6
5.5
5
4.5
4
3.5
Cant Angle (rad)
0.5
1
1.5
2
2.5
3
3.5
4
Z (m)
Cant Angle
Linear Fit



Cant Angle Relative To The Reference Pole, No Ends
x 10^-3
29
62
95
129
162
195
Pole
Ave Cant Angle = 0.0053529 rad
Taper = 2.2874e-005 rad / m
5.8
5.6
5.4
5.2
5
4.8
4.6
Cant Angle (rad)
0.5
1
1.5
2
2.5
3
3.5
4
Z (m)
Cant Angle
Linear Fit