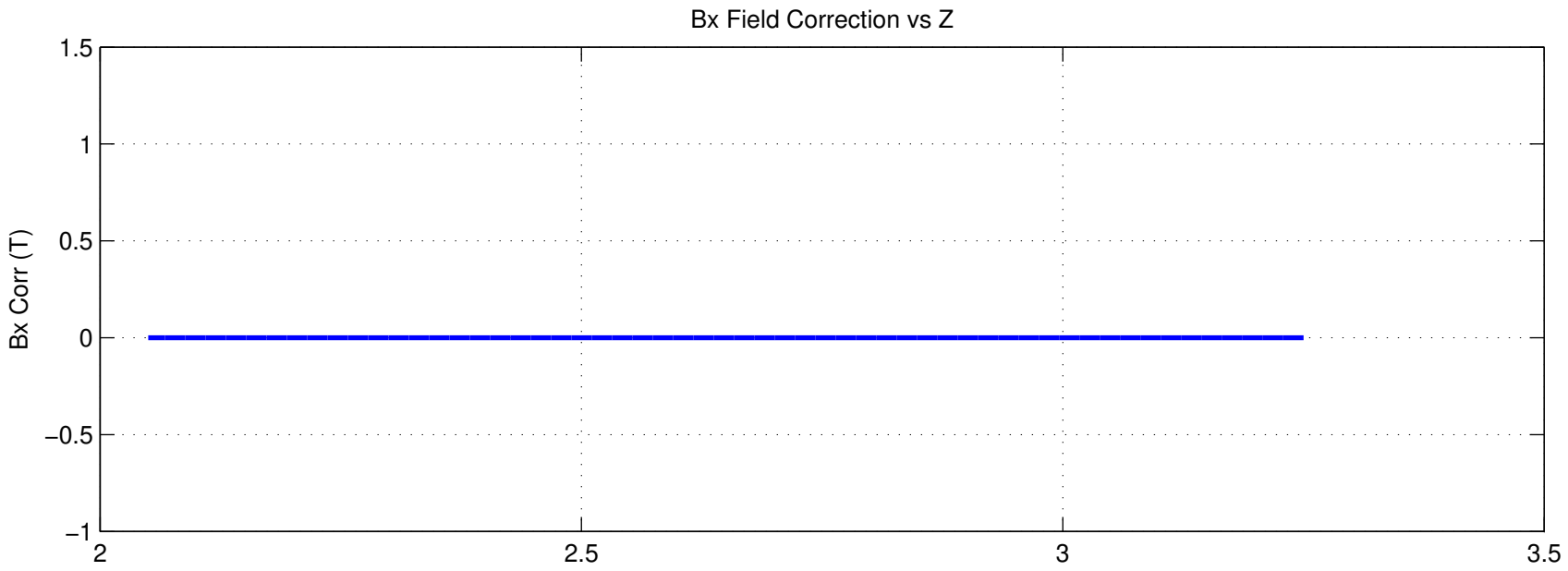
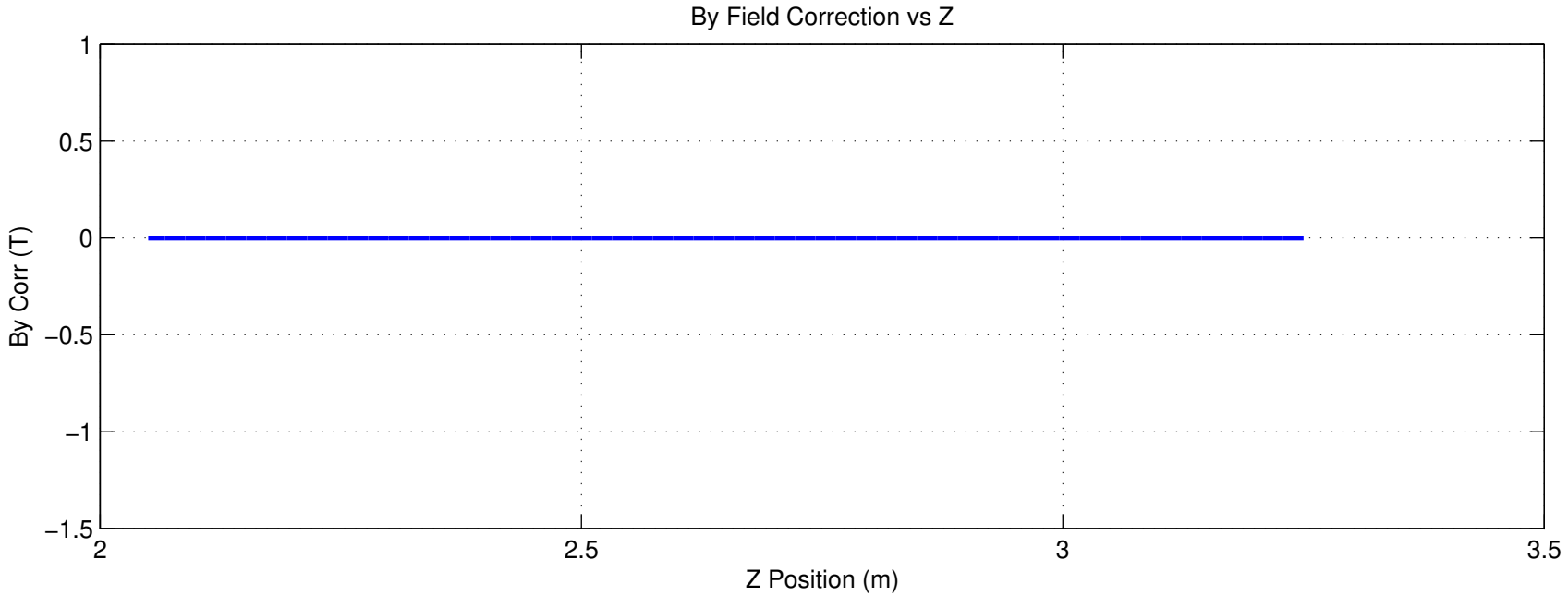
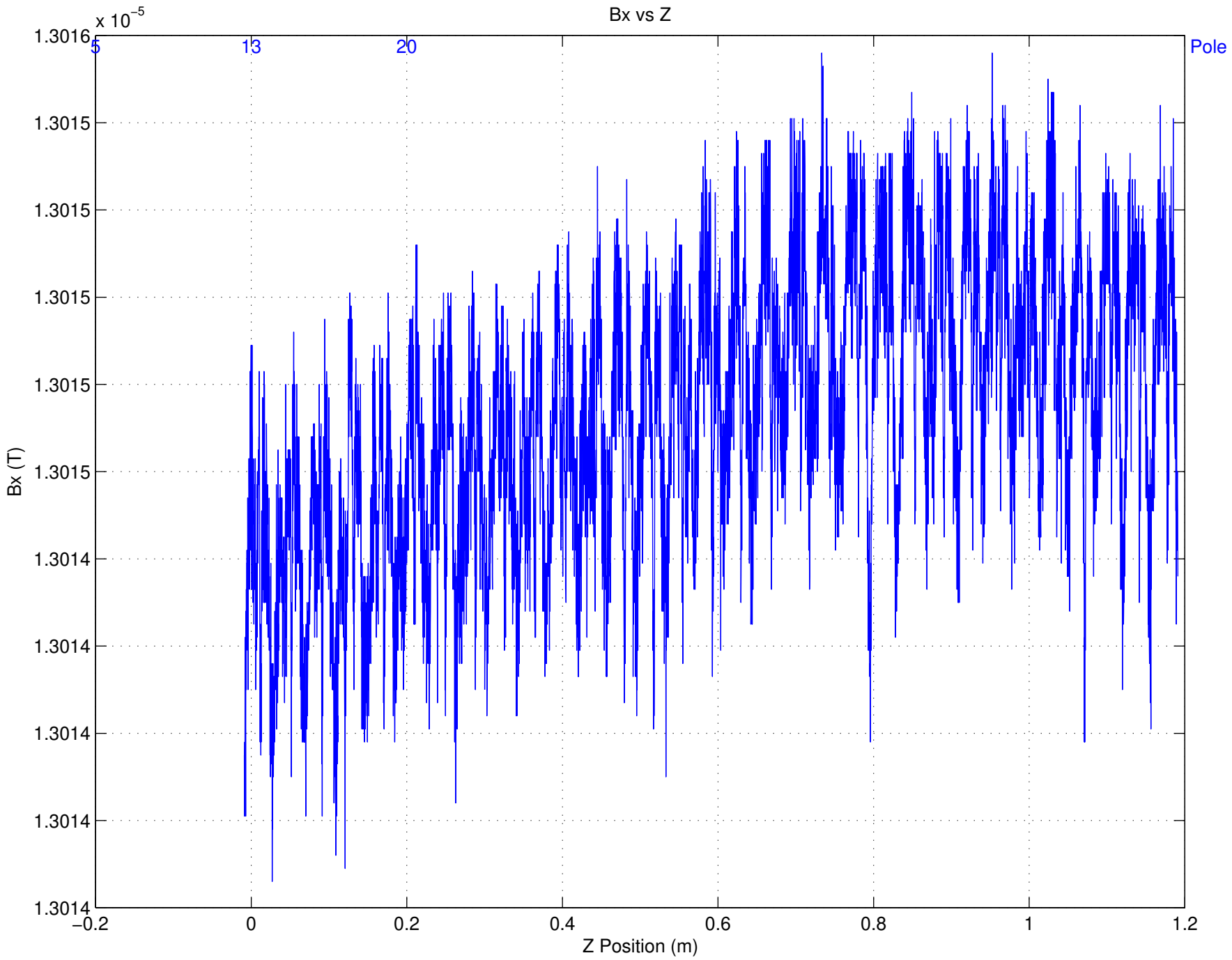
SLAC Magnetic Measurements

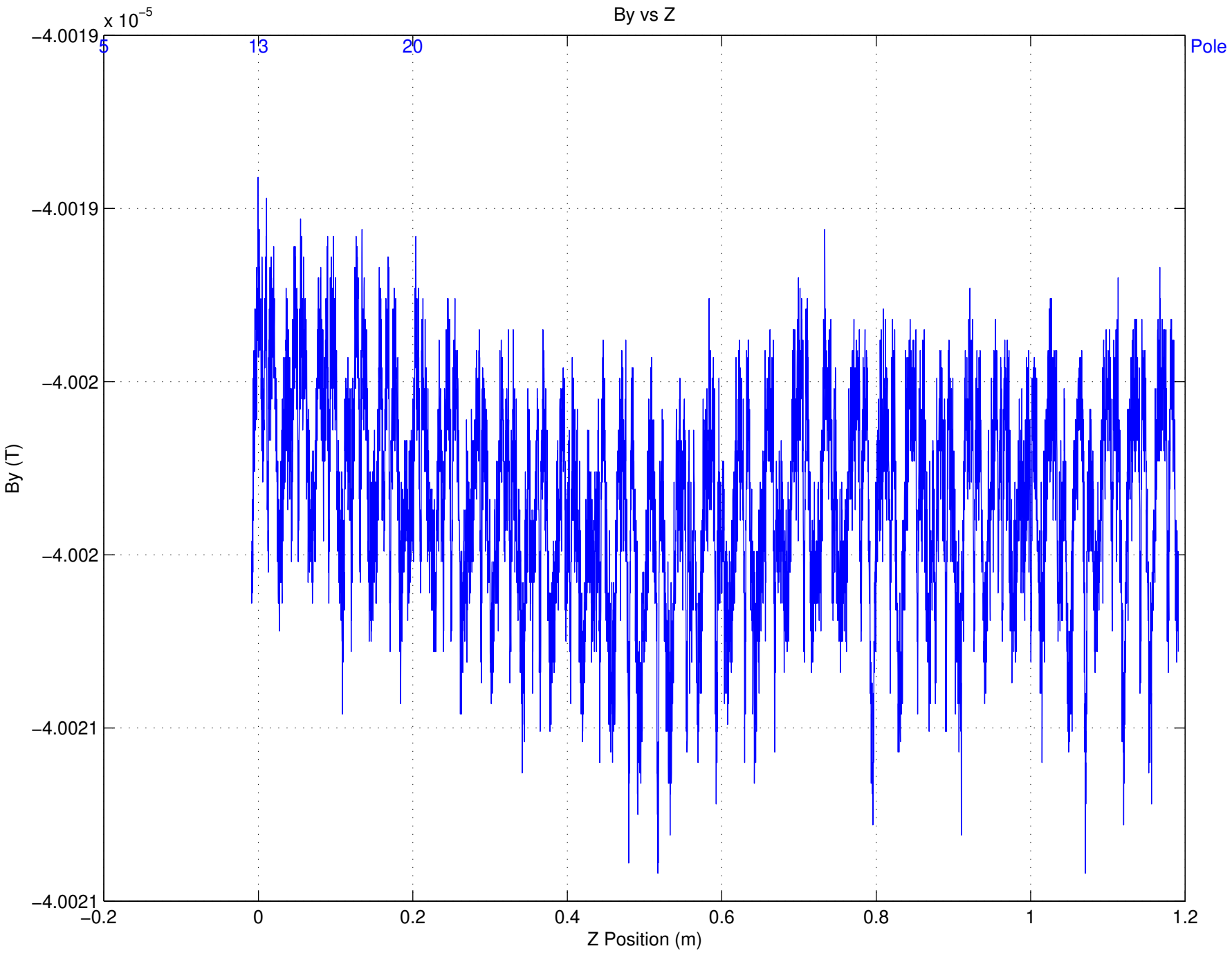
Trajectory Analysis

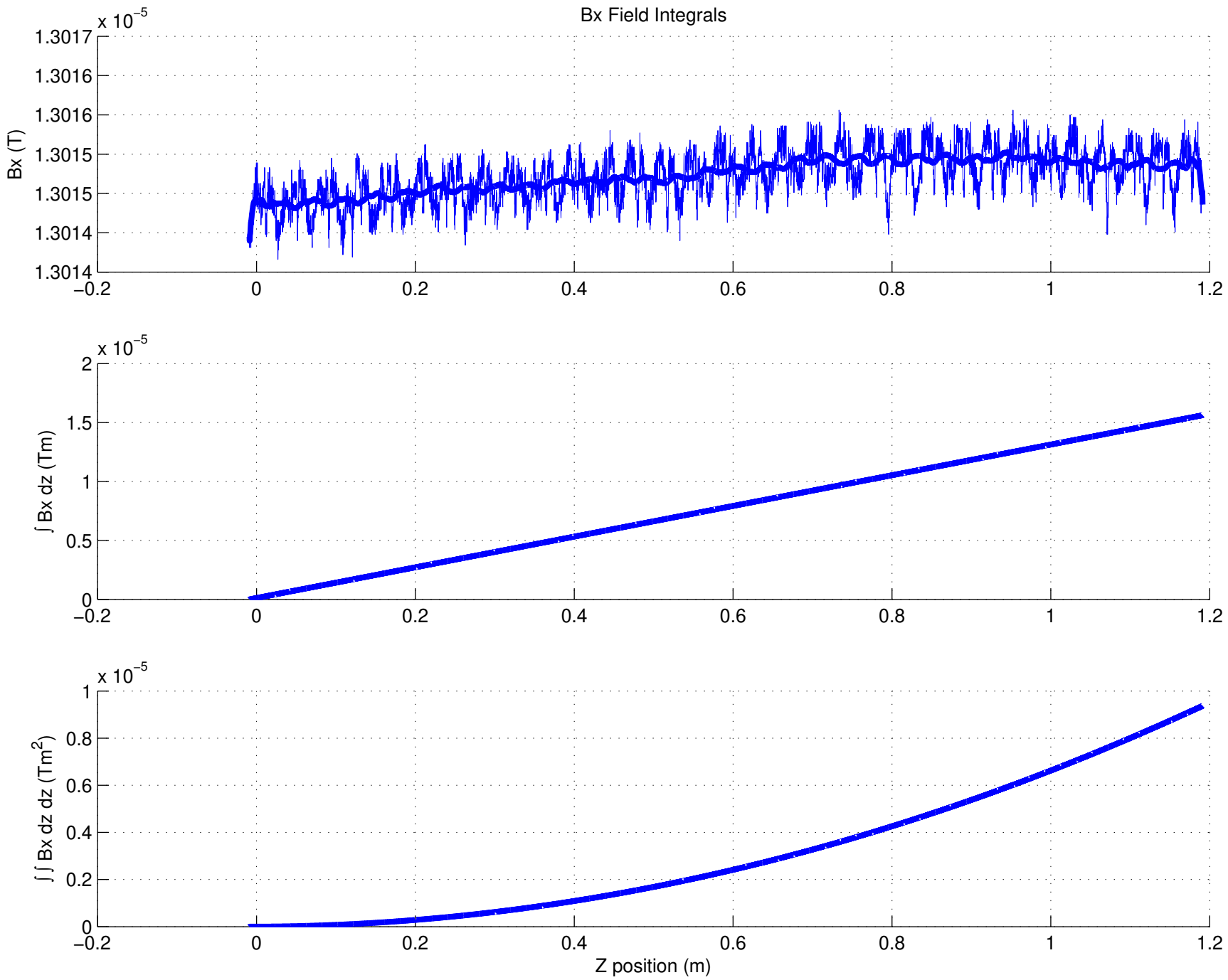
Parameters:
INPUT−FILE−DIR =S:\MagData\LCLS\Background−fields\Kugler−probe\
INPUT−FILE−NAME =earth−fields−bscanz.dat
INPUT−FILE−TYPE =CUSTOM
GAMMA =233
NOM−ZM−PROBE−AT−DEV−CTR =2.0589
NOM−LAMBDA−U =0.055
NUM−POLES =25
NOM−LAMBDA−R =1.5e−010

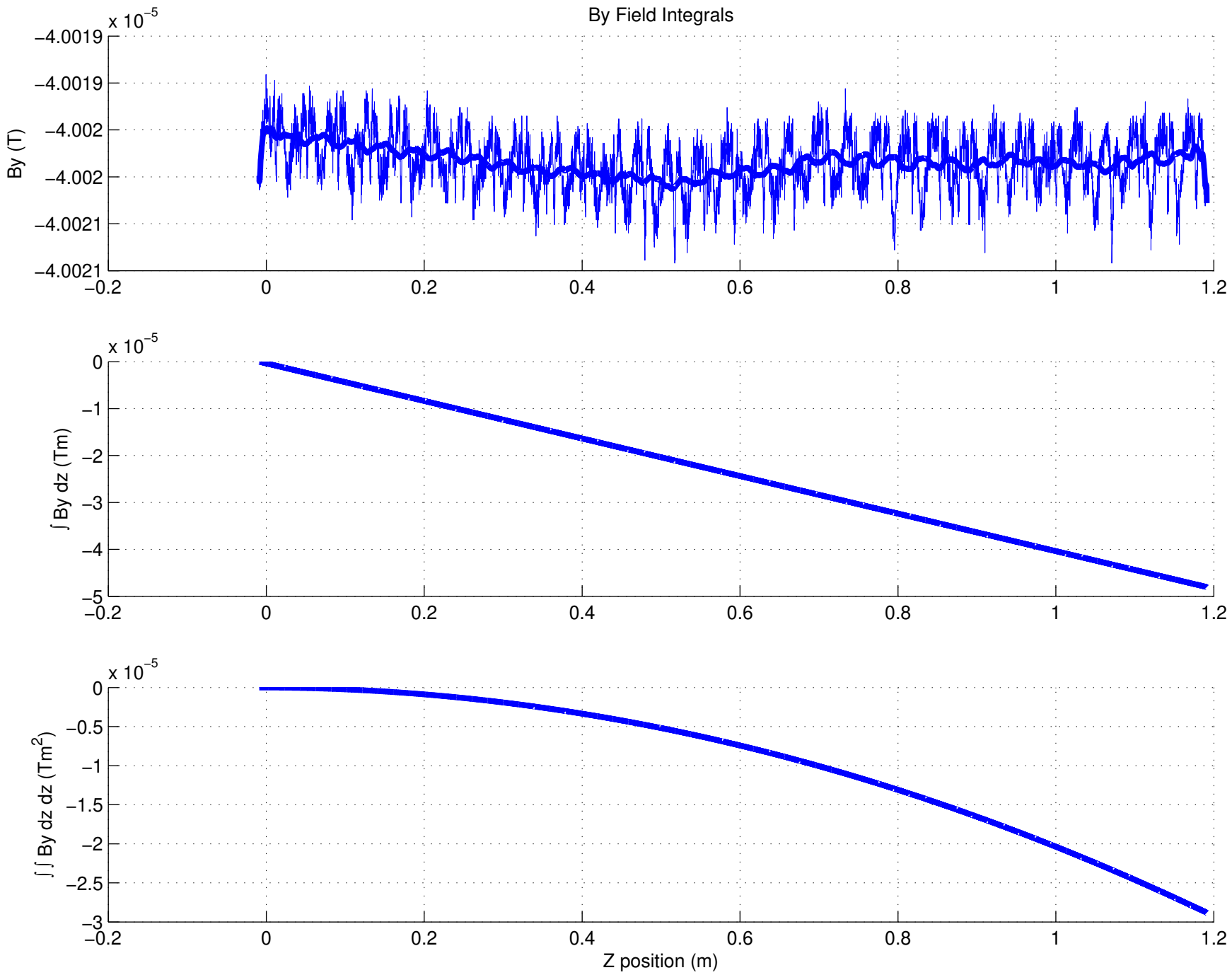

Bx Field Correction vs Z
Bx Corr (T)
1.5
1
0.5
0
−0.5
−1
2
2.5
3
3.5

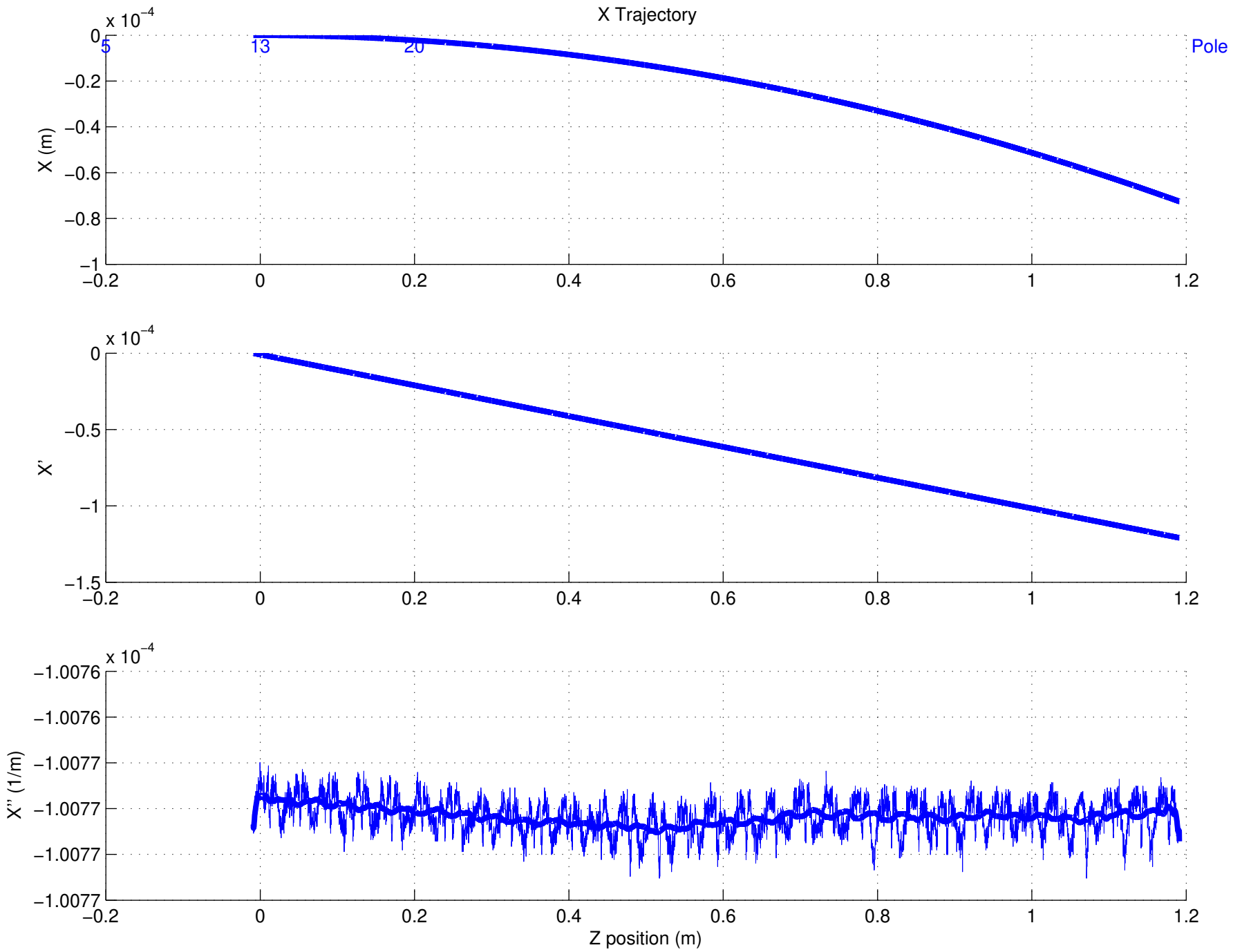

By Field Correction vs Z
By Corr (T)
1
0.5
0
−0.5
−1
−1.5
2
2.5
3
3.5
Z Position (m)

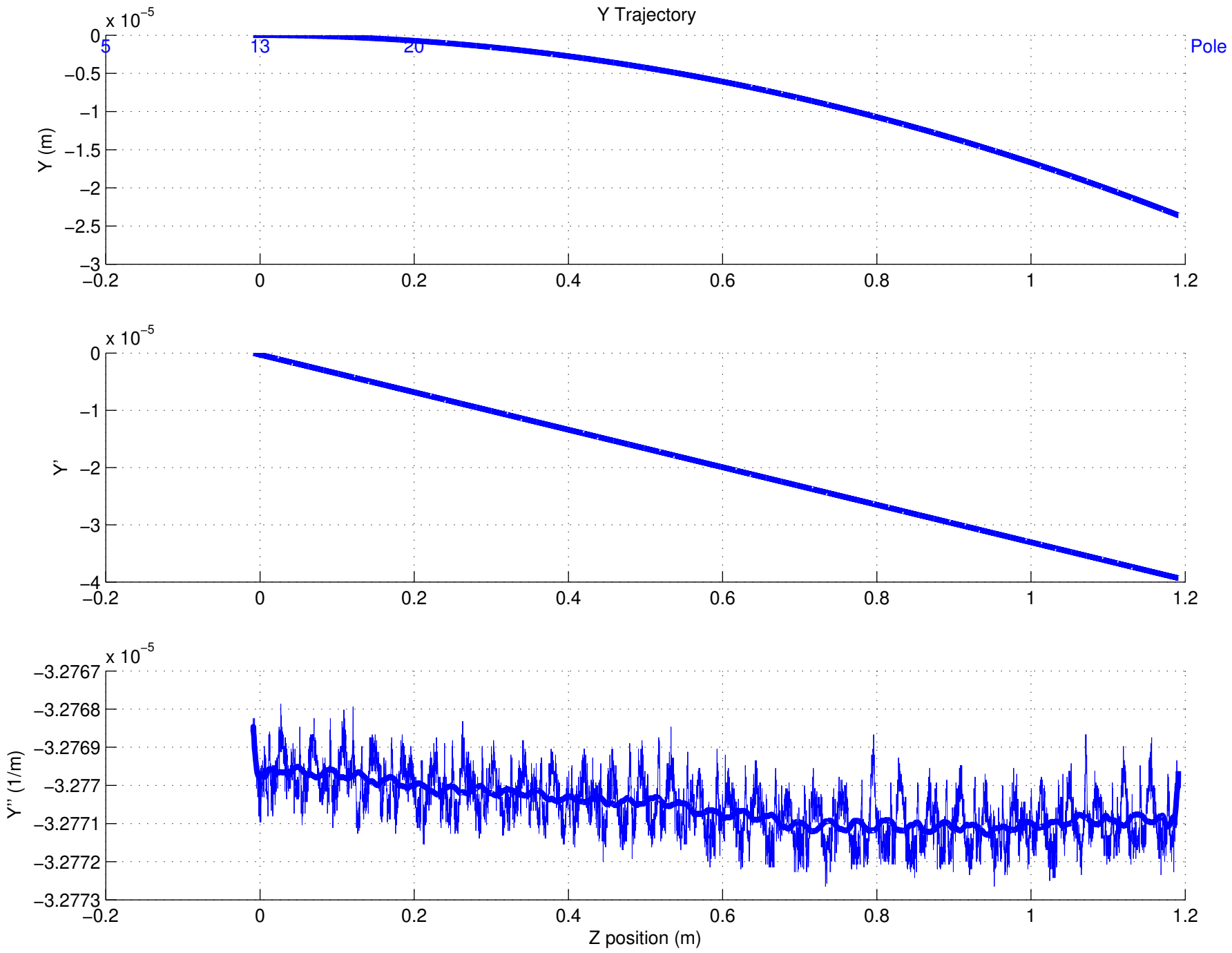

Bx vs Z
x 10^-5
1.3016
1.3015
1.3015
1.3015
1.3015
1.3015
1.3014
1.3014
1.3014
1.3014
Bx (T)
5
13
20
Pole
−0.2
0
0.2
0.4
0.6
0.8
1
1.2
Z Position (m)

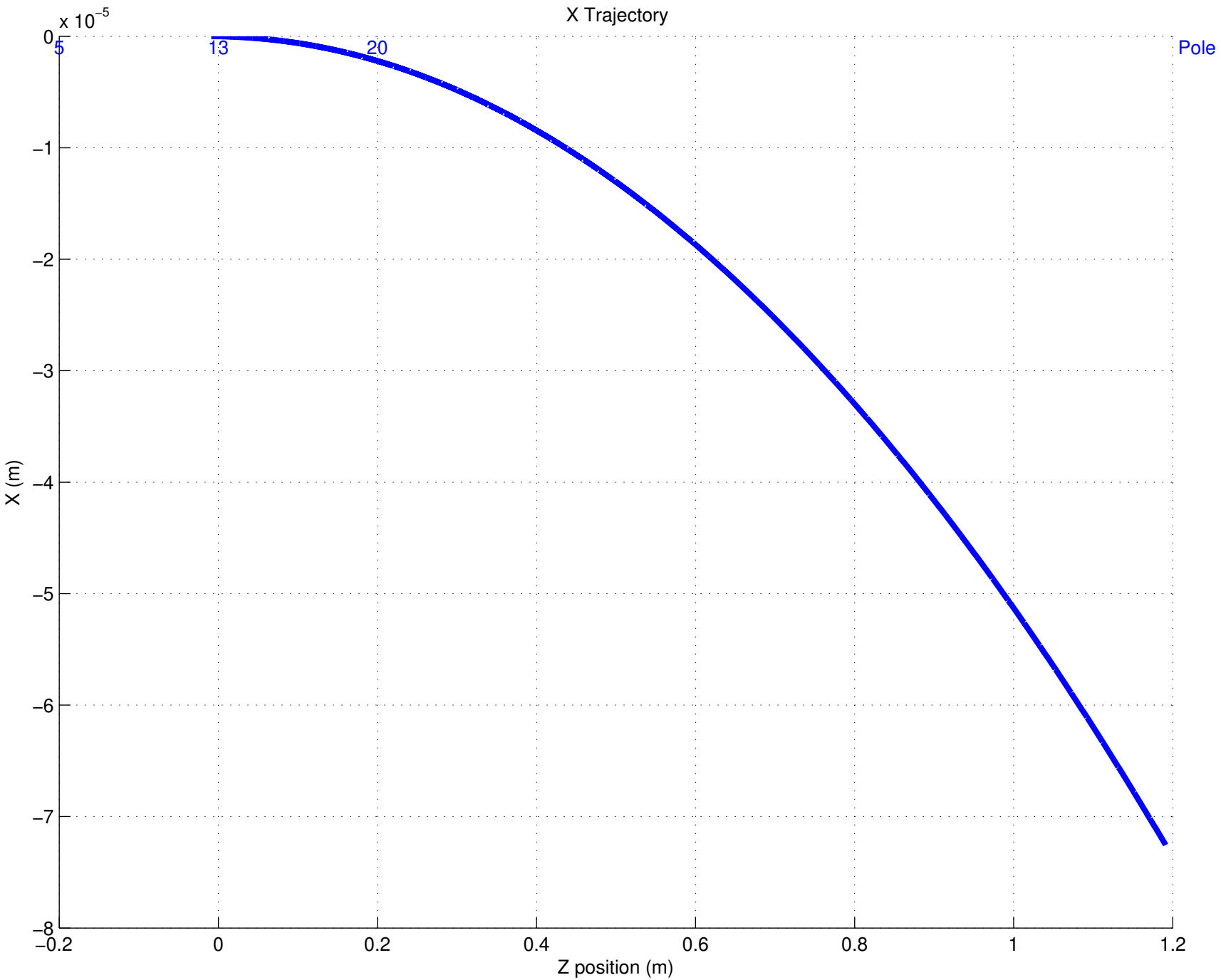

By vs Z
x 10^-5
−4.0019
−4.0019
−4.002
−4.002
−4.0021
−4.0021
5
13
20
Pole
By (T)
−0.2
0
0.2
0.4
0.6
0.8
1
1.2
Z Position (m)

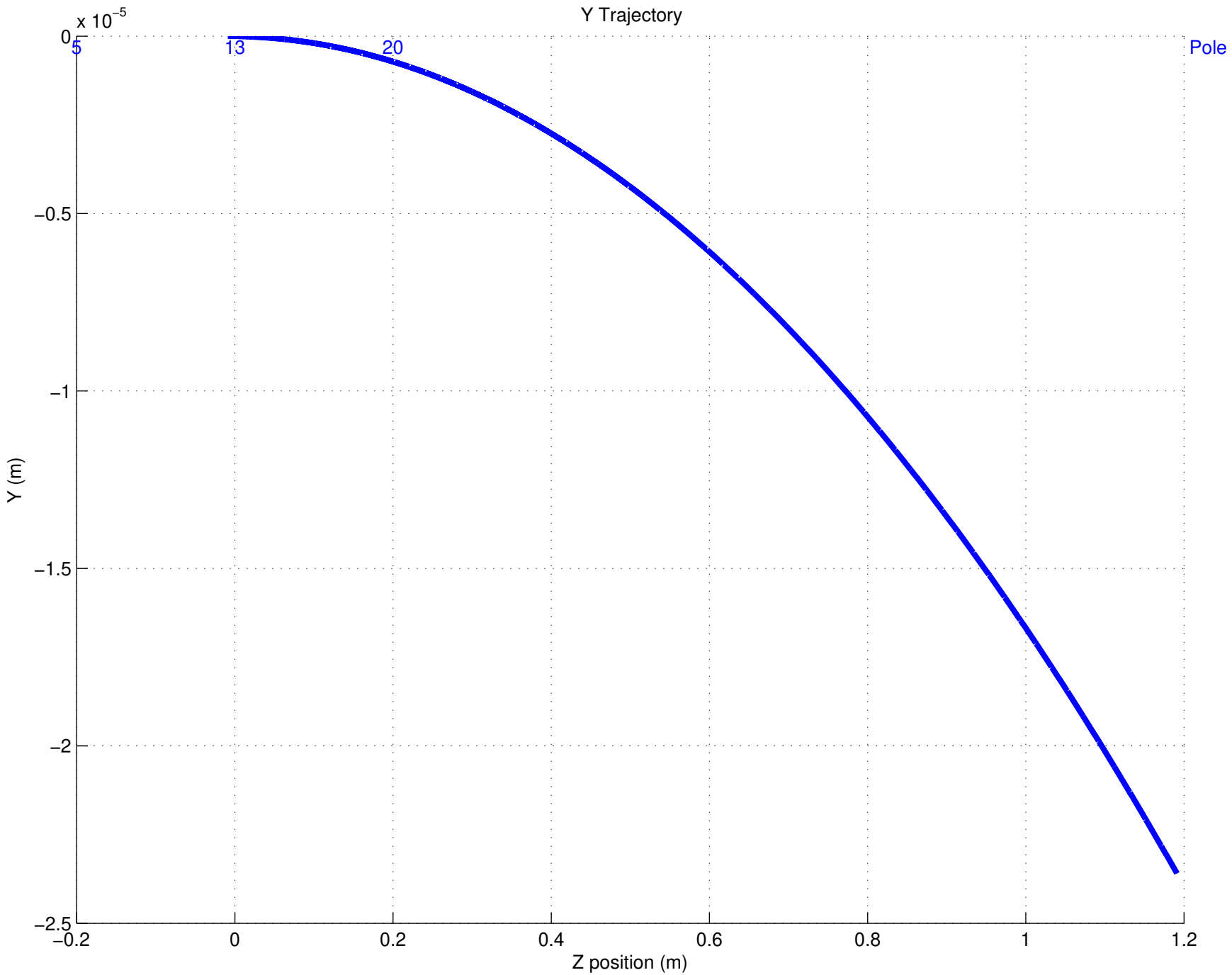

Bx Field Integrals
x 10^-5
1.3017
1.3016
1.3016
1.3015
1.3015
1.3014
1.3014
Bx (T)
−0.2
0
0.2
0.4
0.6
0.8
1
1.2
x 10^-5
2
1.5
1
0.5
0
∫ Bx dz (Tm)
x 10^-5
1
0.8
0.6
0.4
0.2
0
∫∫ Bx dz dz (Tm^2)
Z position (m)

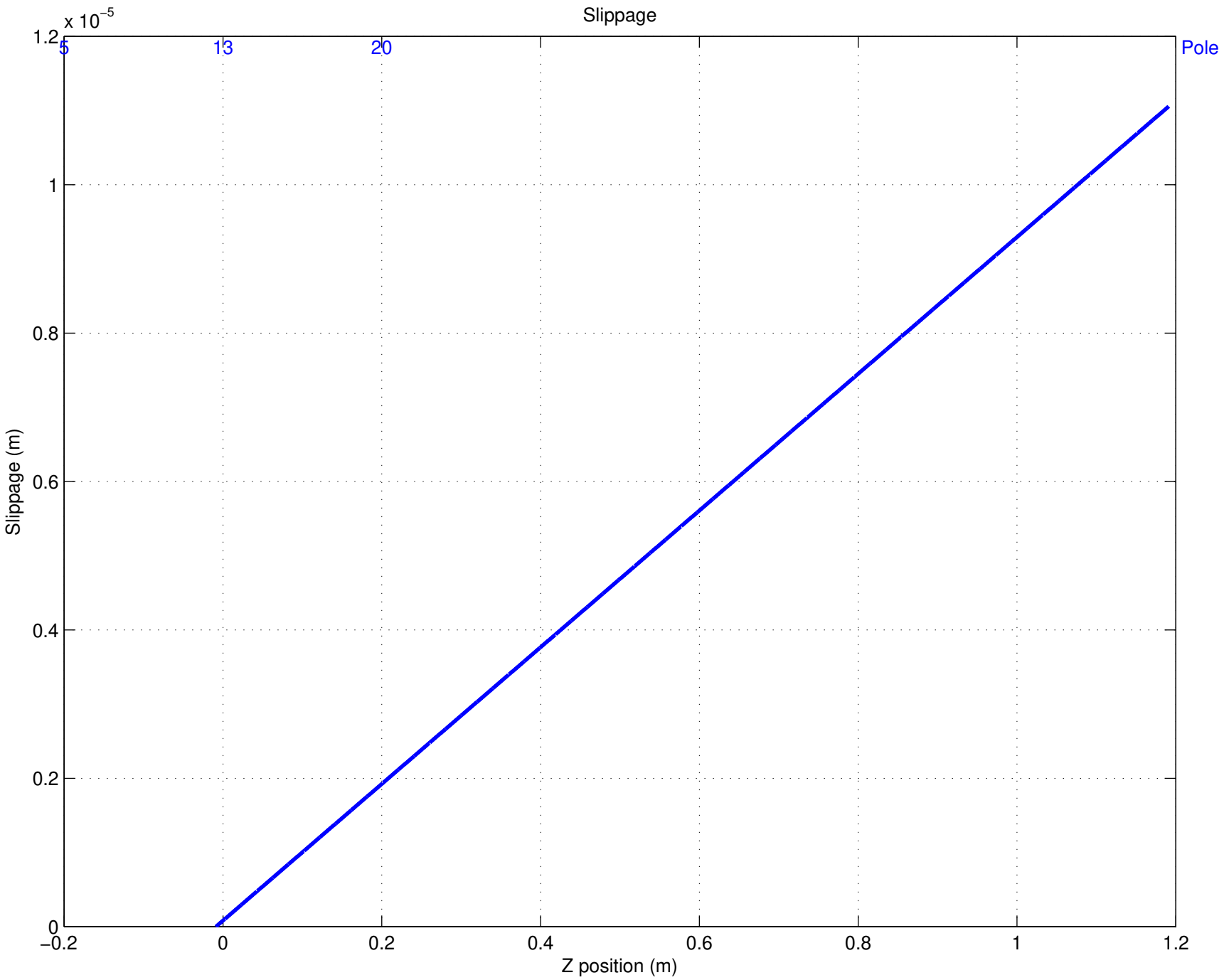

By Field Integrals
x 10^-5
−4.0019
−4.0019
−4.002
−4.002
−4.0021
−4.0021
By (T)
−0.2
0
0.2
0.4
0.6
0.8
1
1.2
x 10^-5
0
−1
−2
−3
−4
−5
∫ By dz (Tm)
x 10^-5
0
−0.5
−1
−1.5
−2
−2.5
−3
∫∫ By dz dz (Tm^2)
Z position (m)

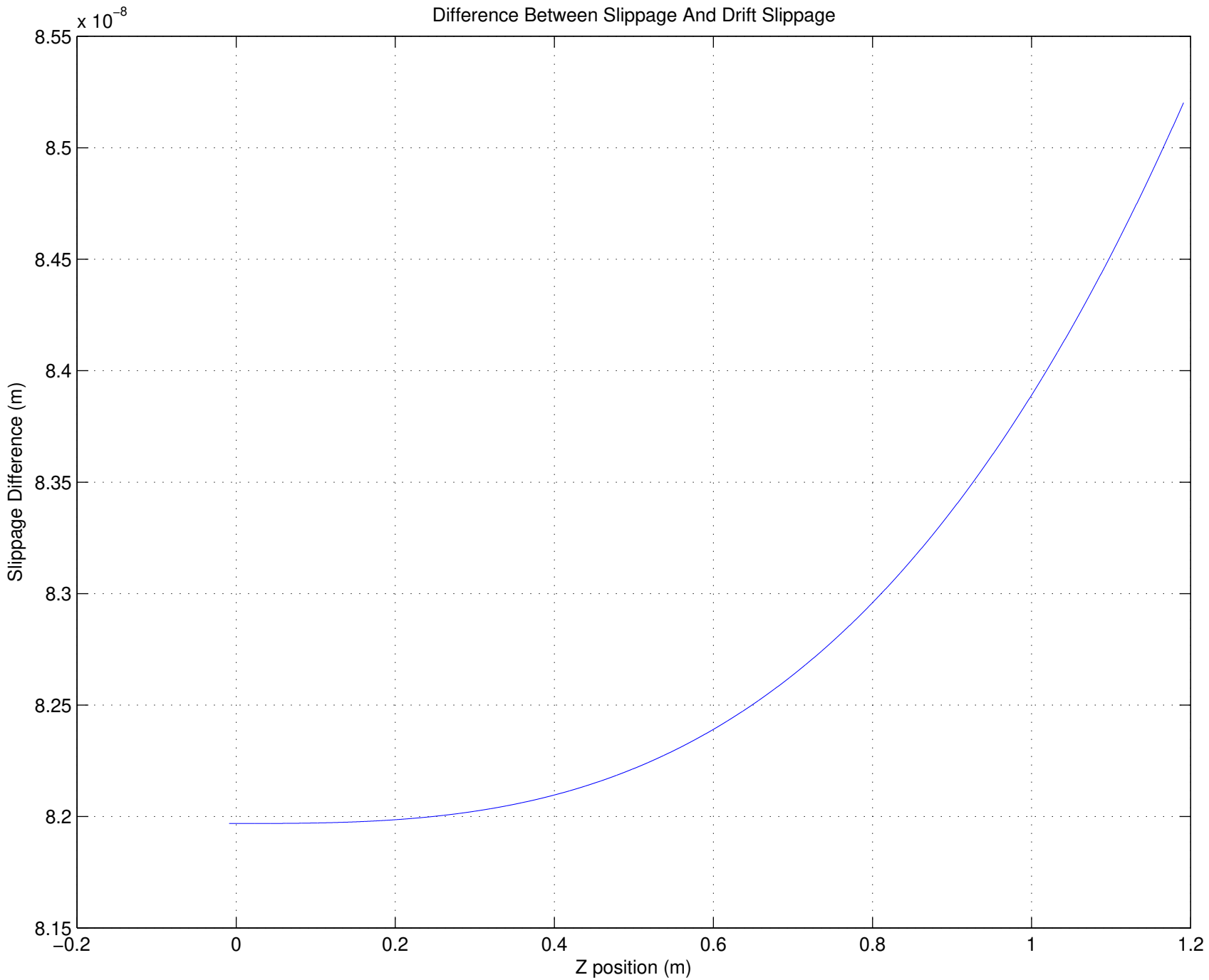

X Trajectory
x 10^-4
0
−0.2
−0.4
−0.6
−0.8
−1
X (m)
5
13
20
Pole
−0.2
0
0.2
0.4
0.6
0.8
1
1.2
x 10^-4
0
−0.5
−1
−1.5
X'
x 10^-4
−1.0076
−1.0076
−1.0077
−1.0077
−1.0077
X'' (1/m)
Z position (m)

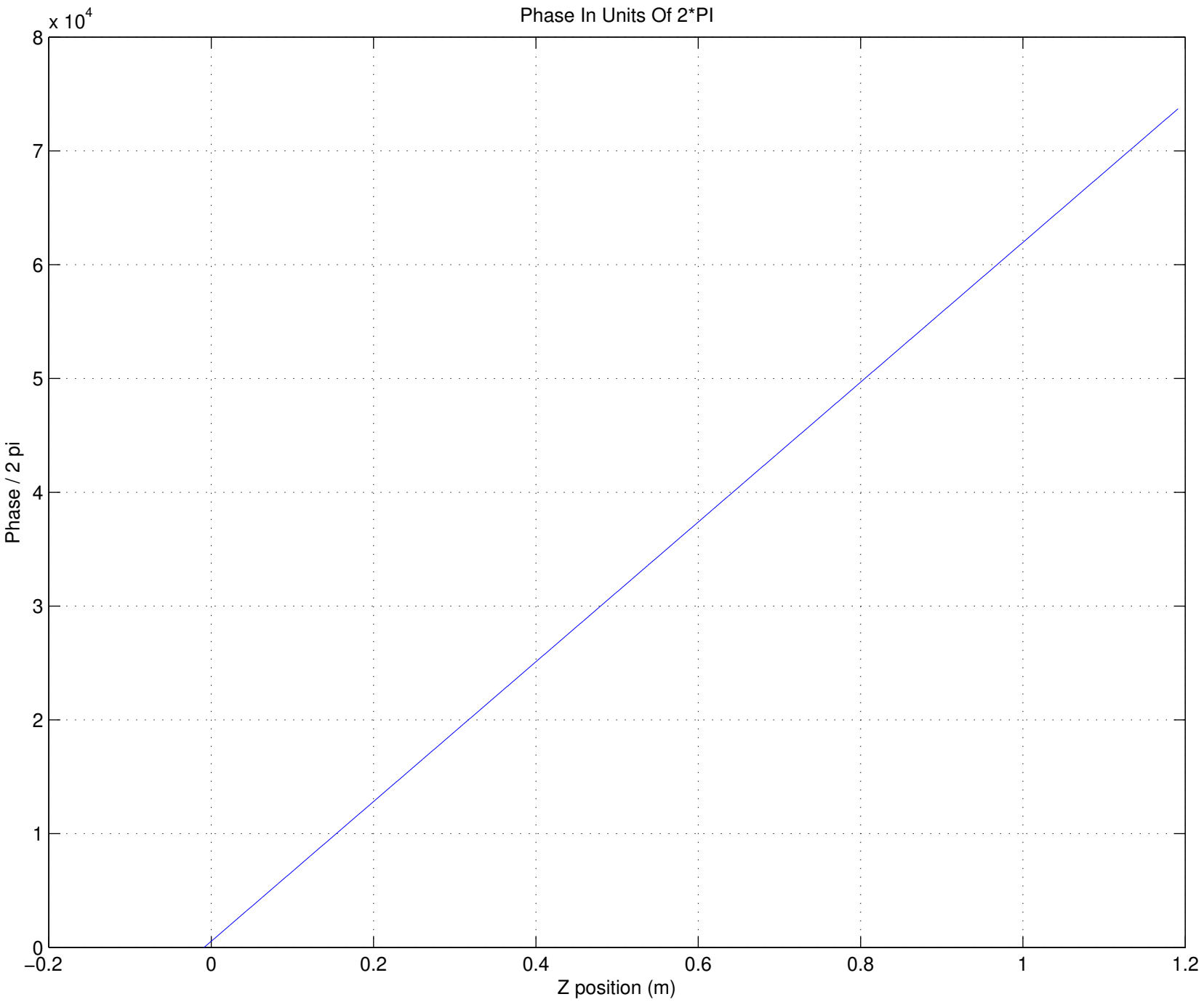

Y Trajectory
x 10^-5
0
−0.5
−1
−1.5
−2
−2.5
−3
Y (m)
5
13
20
Pole
−0.2
0
0.2
0.4
0.6
0.8
1
1.2
x 10^-5
0
−1
−2
−3
−4
Y'
−0.2
0
0.2
0.4
0.6
0.8
1
1.2
x 10^-5
−3.2767
−3.2768
−3.2769
−3.277
−3.2771
−3.2772
−3.2773
Y'' (1/m)
−0.2
0
0.2
0.4
0.6
0.8
1
1.2
Z position (m)

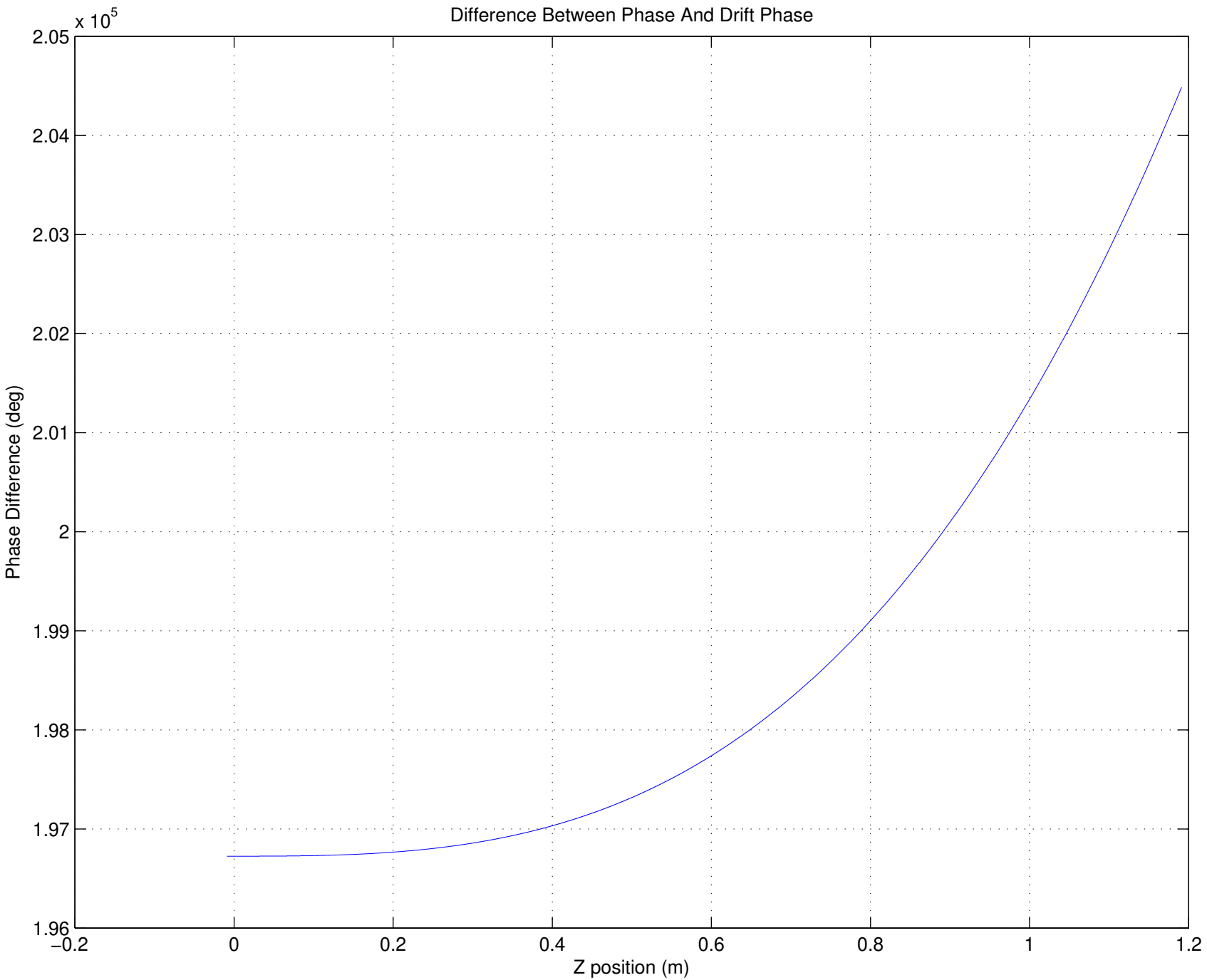

X Trajectory
x 10^-5
0
−1
−2
−3
−4
−5
−6
−7
−8
X (m)
5
13
20
Pole
−0.2
0
0.2
0.4
0.6
0.8
1
1.2
Z position (m)


Y Trajectory
x 10^-5
0
−0.5
−1
−1.5
−2
−2.5
Y (m)
5
13
20
Pole
−0.2
0
0.2
0.4
0.6
0.8
1
1.2
Z position (m)


Slippage
x 10^-5
1.2
1
0.8
0.6
0.4
0.2
0
5
13
20
Pole
Slippage (m)
−0.2
0
0.2
0.4
0.6
0.8
1
1.2
Z position (m)


Difference Between Slippage And Drift Slippage
x 10^-8
8.55
8.5
8.45
8.4
8.35
8.3
8.25
8.2
8.15
Slippage Difference (m)
−0.2
0
0.2
0.4
0.6
0.8
1
1.2
Z position (m)


Phase In Units Of 2*PI
x 10^4
8
7
6
5
4
3
2
1
0
Phase / 2 pi
–0.2
0
0.2
0.4
0.6
0.8
1
1.2
Z position (m)


Difference Between Phase And Drift Phase
x 10^5
2.05
2.04
2.03
2.02
2.01
2
1.99
1.98
1.97
1.96
Phase Difference (deg)
−0.2
0
0.2
0.4
0.6
0.8
1
1.2
Z position (m)