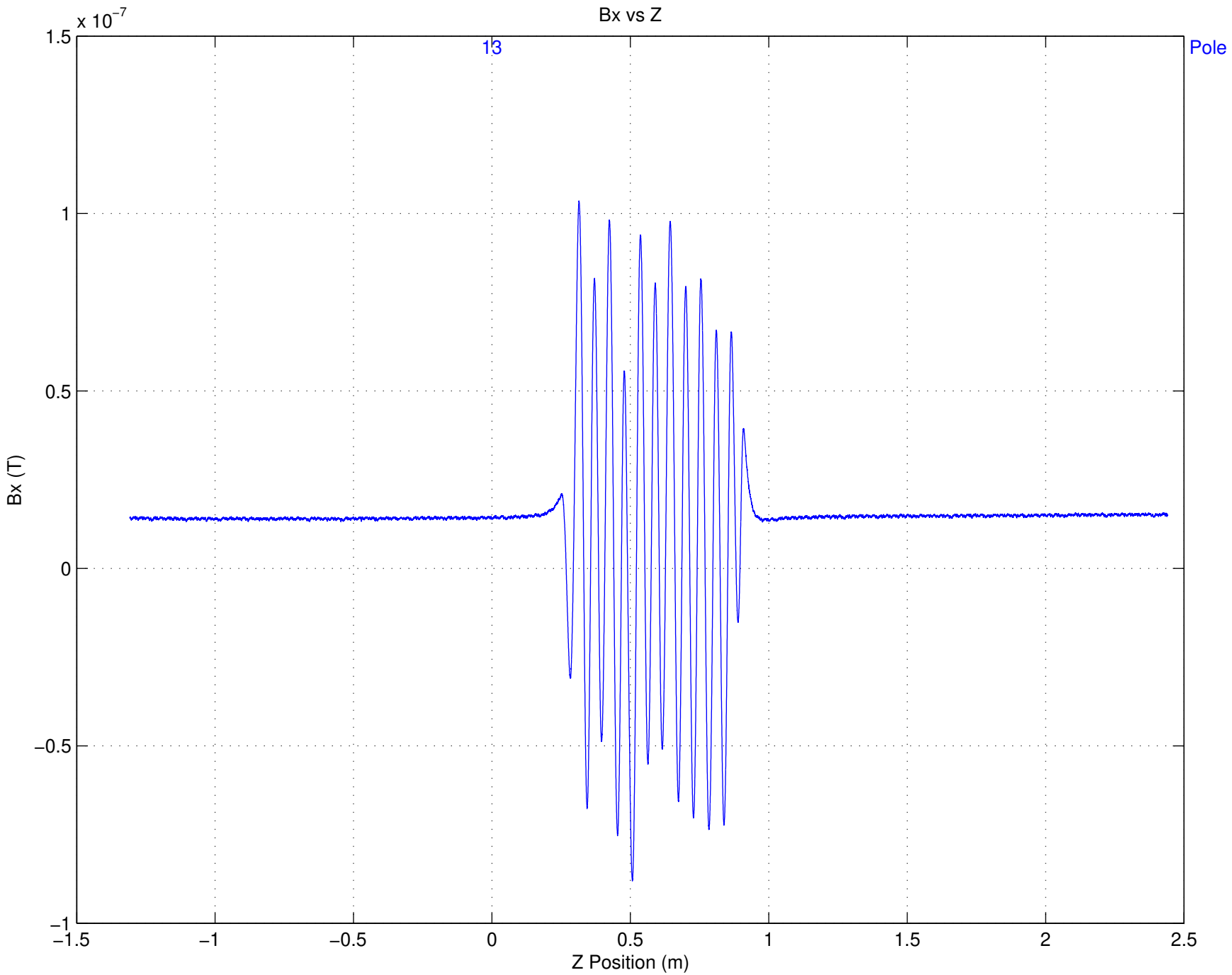
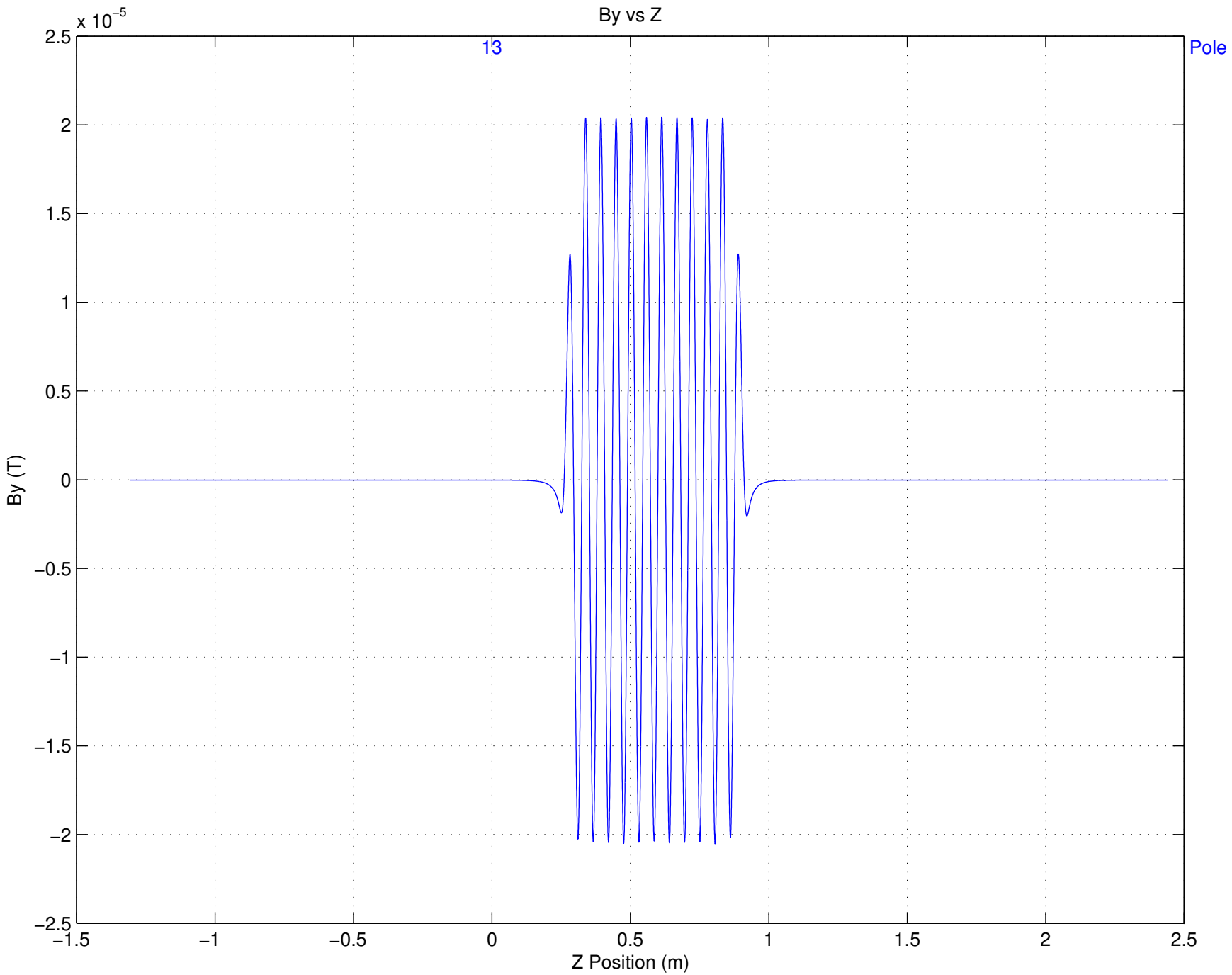
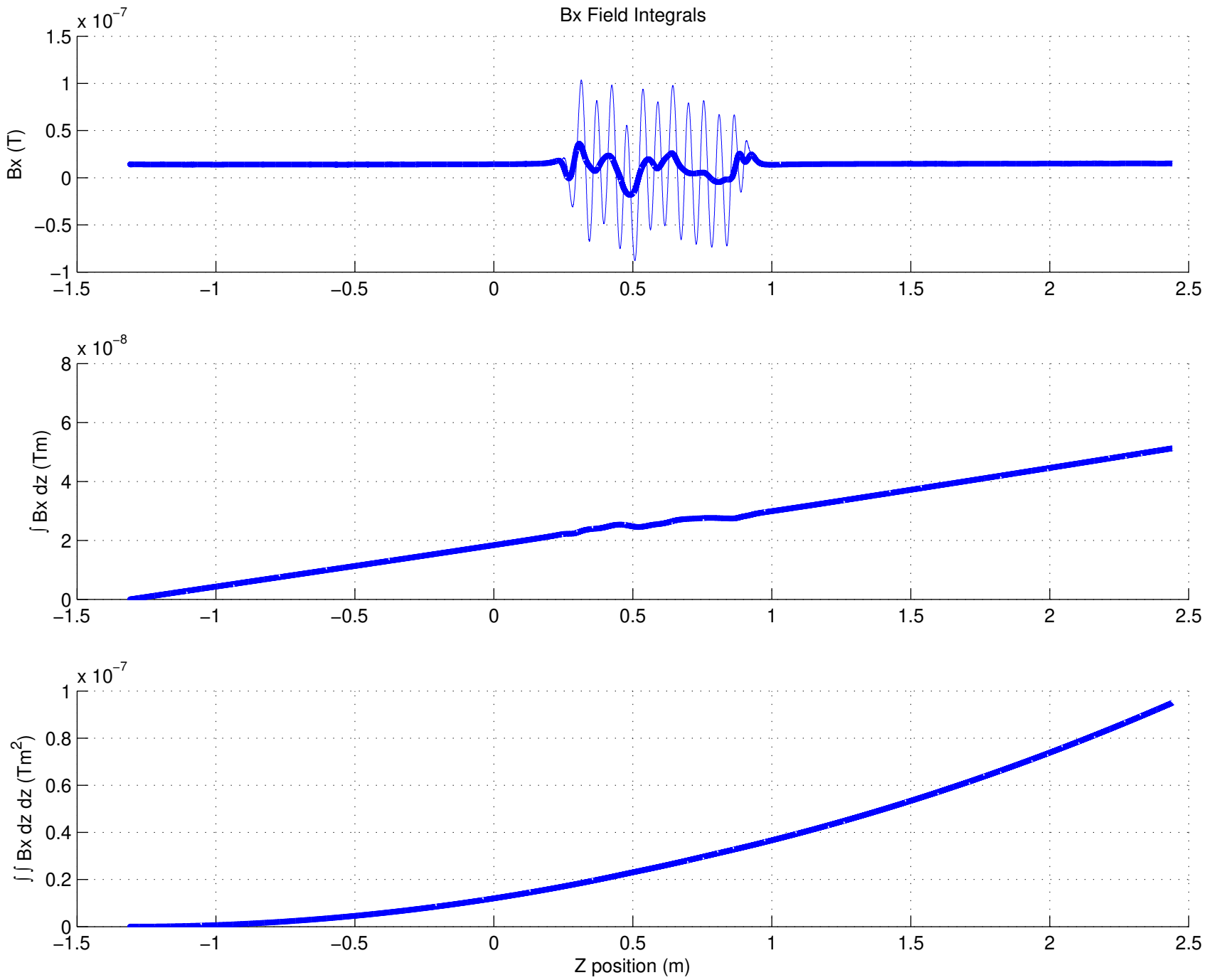
SLAC Magnetic Measurements

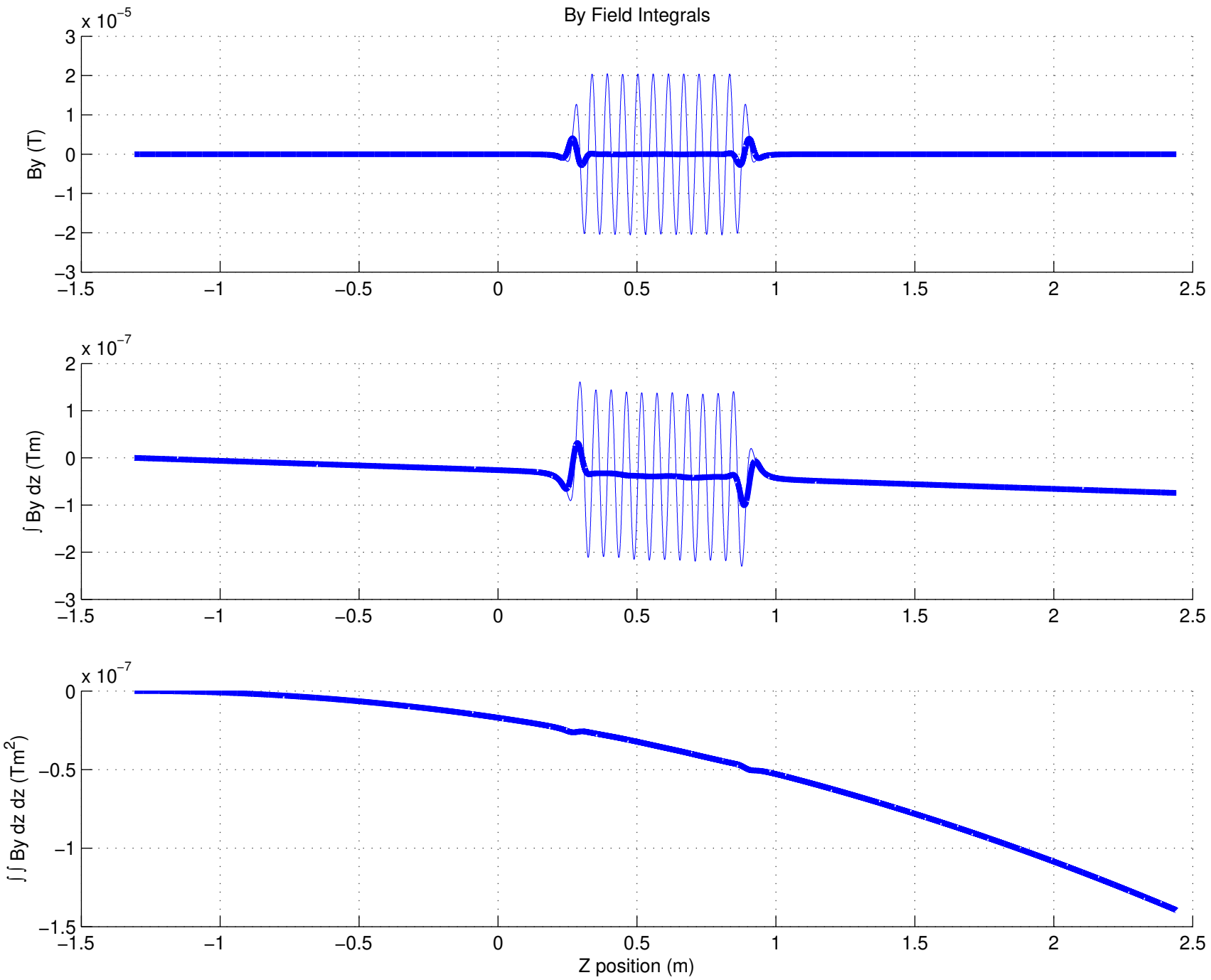
Trajectory Analysis

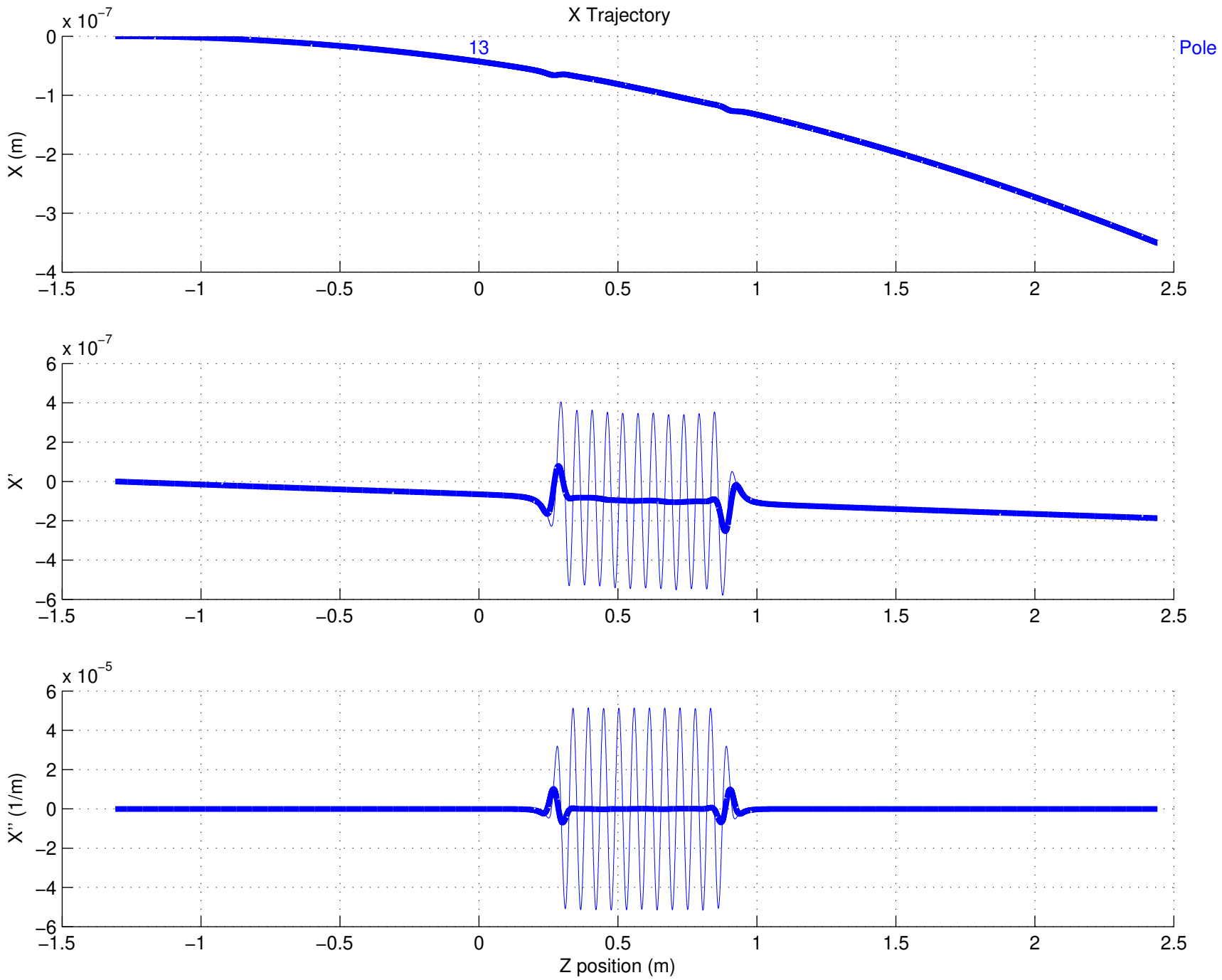
Parameters:
INPUT−FILE−DIR =S:\MagData\LCLS\Undulator\ECKO7−55\DATASET0001\Fine Tuning\Z Scans\Run 004\
INPUT−FILE−NAME =x+00000−y+000−bscanz.dat
INPUT−FILE−TYPE =CUSTOM
GAMMA =233.32
NOM−ZM−PROBE−AT−DEV−CTR =2.0589
NOM−LAMBDA−U =0.055
NUM−POLES =25
NOM−LAMBDA−R =1.5e−010

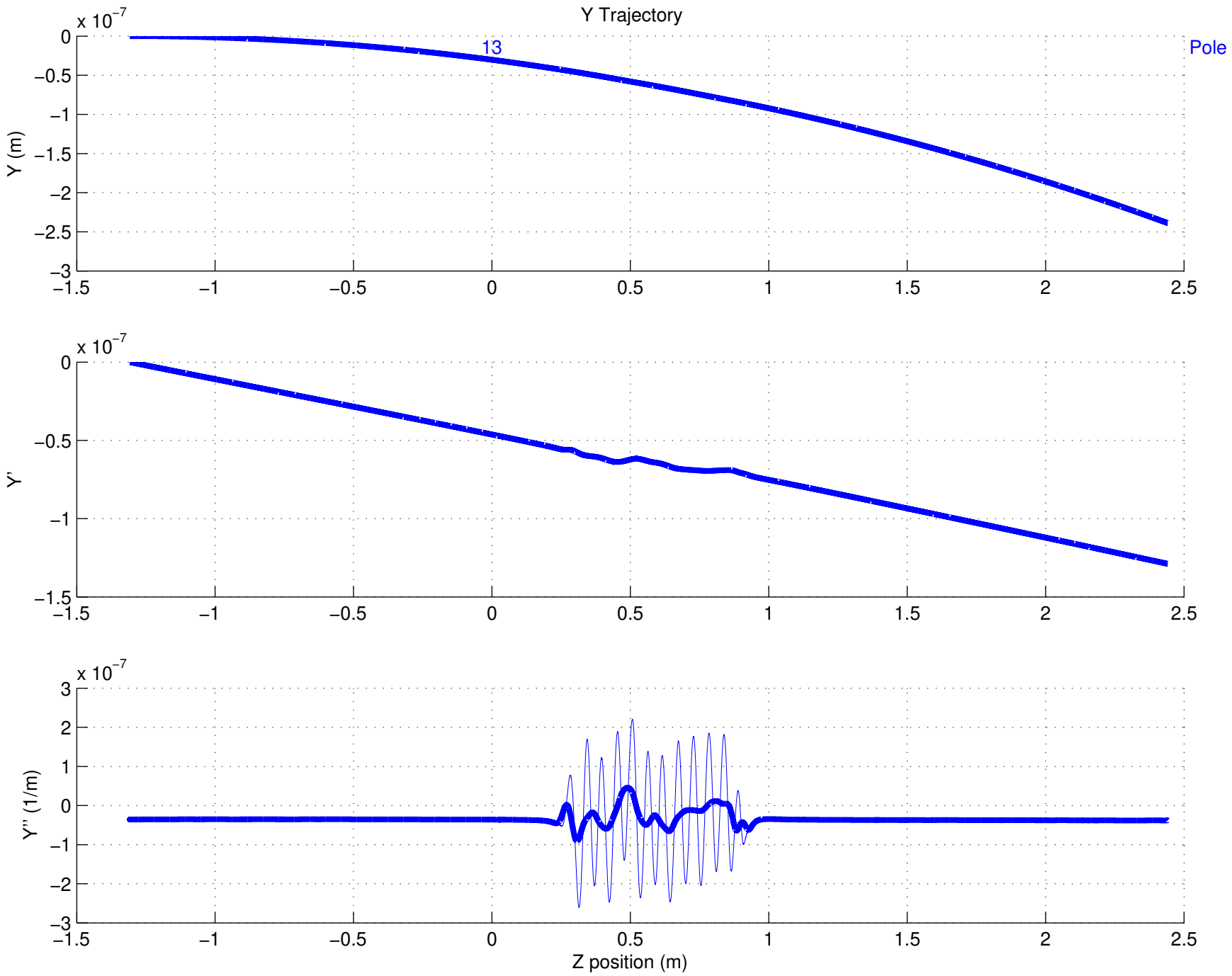

Bx vs Z
x 10^-7
1.5
1
0.5
0
−0.5
−1
Bx (T)
13
Pole
−1.5
−1
−0.5
0
0.5
1
1.5
2
2.5
Z Position (m)

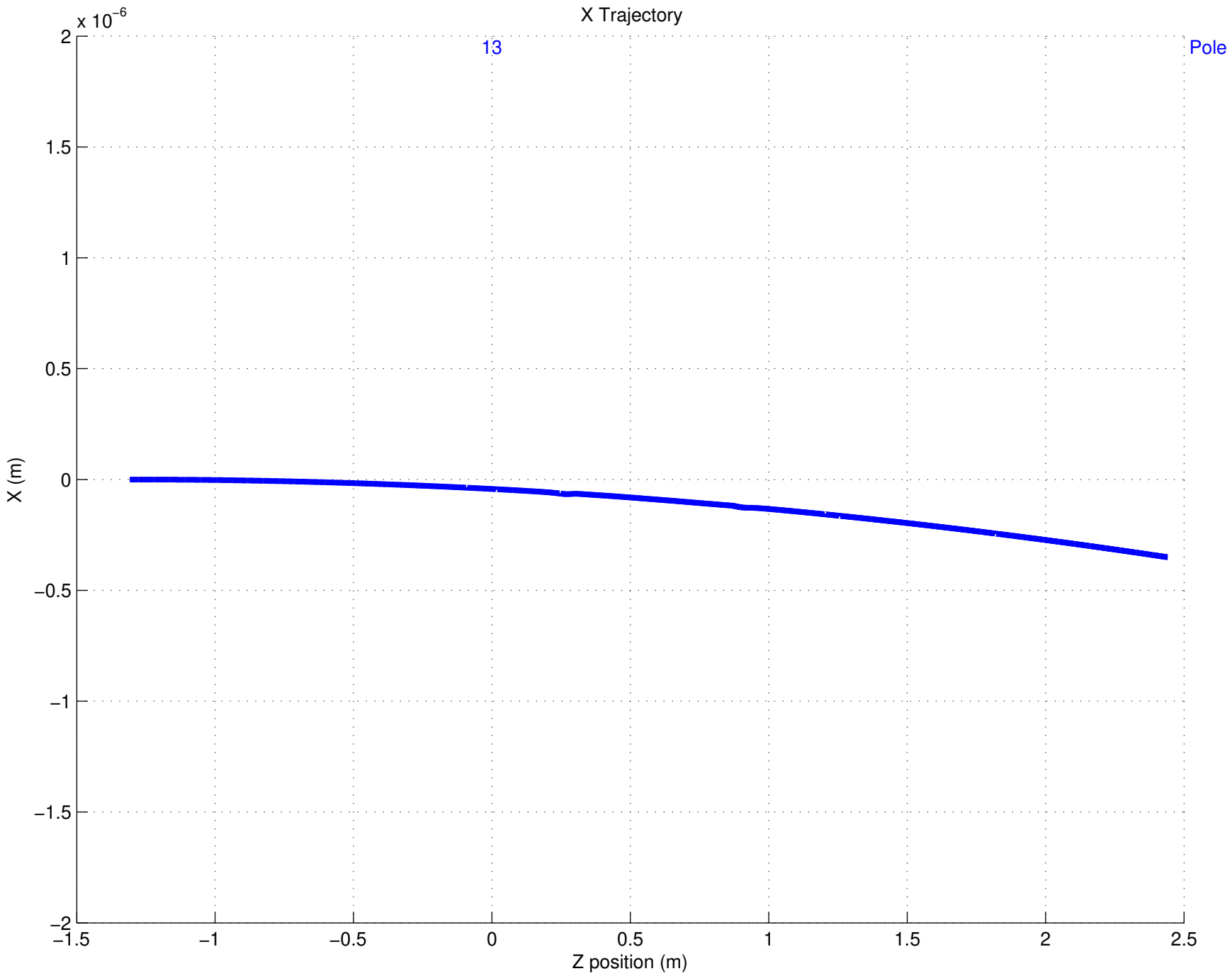

By vs Z
x 10^-5
13
Pole
2.5
2
1.5
1
0.5
0
−0.5
−1
−1.5
−2
−2.5
By (T)
−1.5
−1
−0.5
0
0.5
1
1.5
2
2.5
Z Position (m)

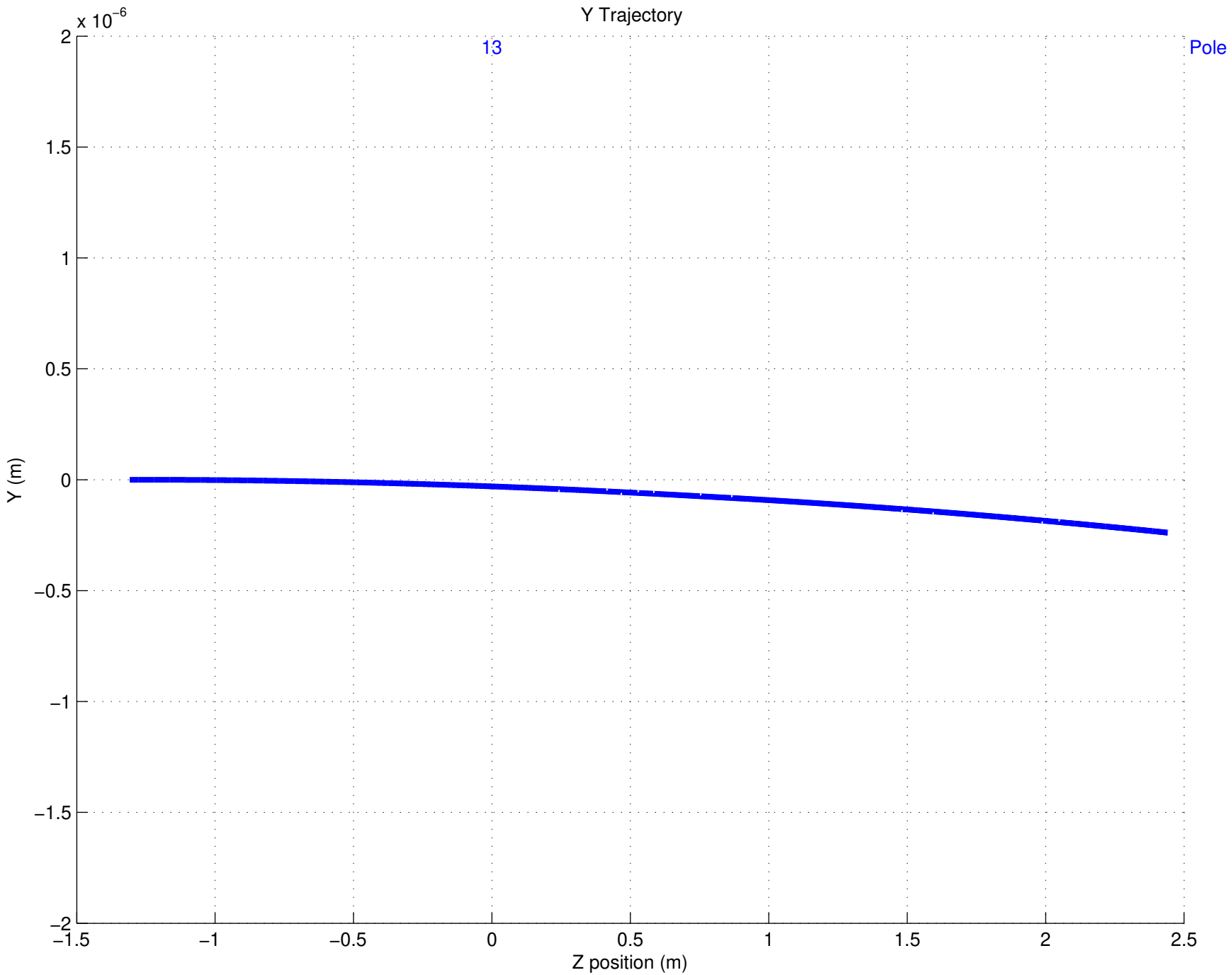

Bx Field Integrals
x 10^-7
Bx (T)
1.5
1
0.5
0
−0.5
−1
−1.5
−1
−0.5
0
0.5
1
1.5
2
2.5
x 10^-8
∫ Bx dz (Tm)
8
6
4
2
0
x 10^-7
∫∫ Bx dz dz (Tm^2)
1
0.8
0.6
0.4
0.2
0
Z position (m)

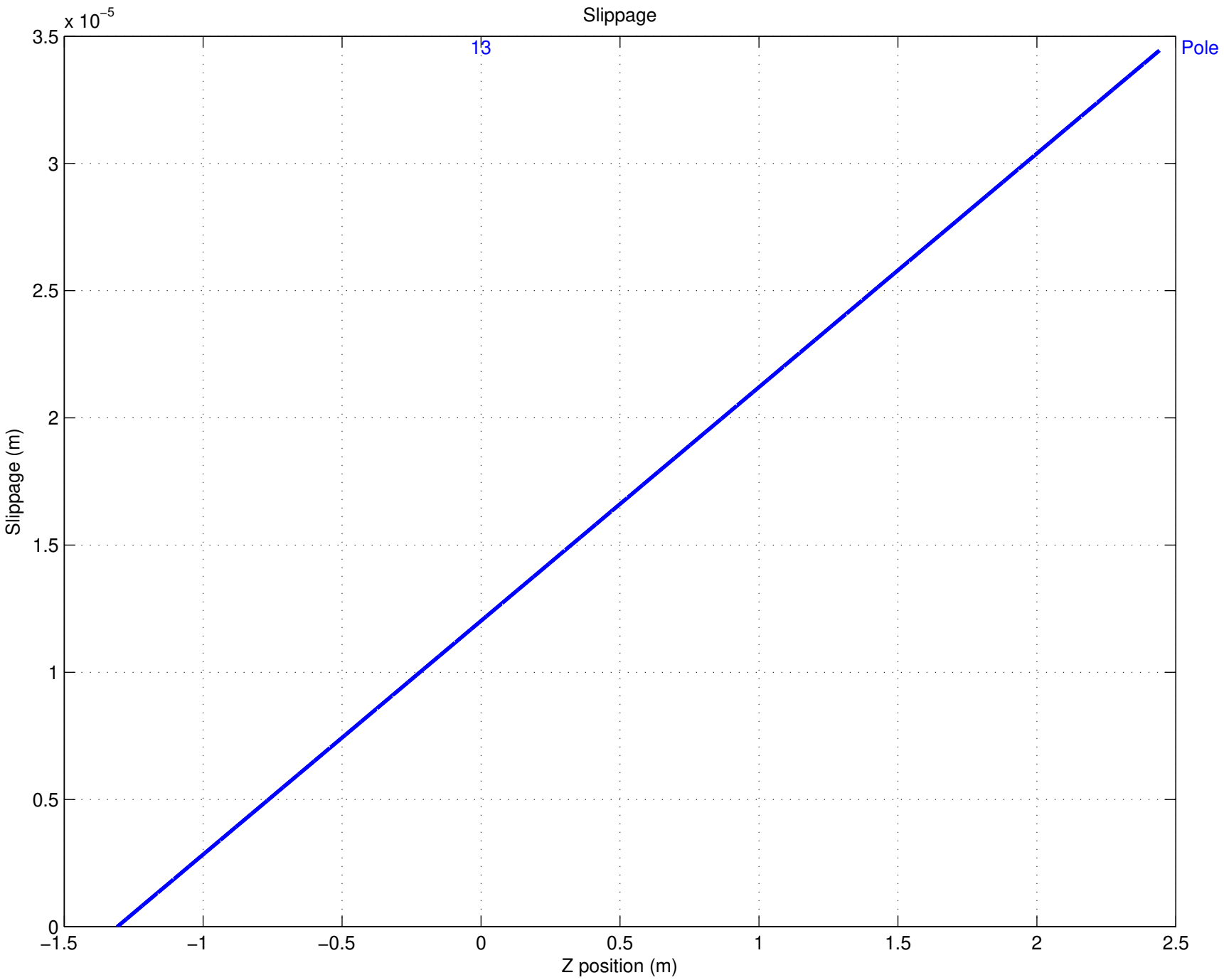

By Field Integrals
x 10^-5
By (T)
3
2
1
0
−1
−2
−3
−1.5
−1
−0.5
0
0.5
1
1.5
2
2.5
x 10^-7
∫ By dz (Tm)
2
1
0
−1
−2
−3
x 10^-7
∫ ∫ By dz dz (Tm^2)
0
−0.5
−1
−1.5
Z position (m)

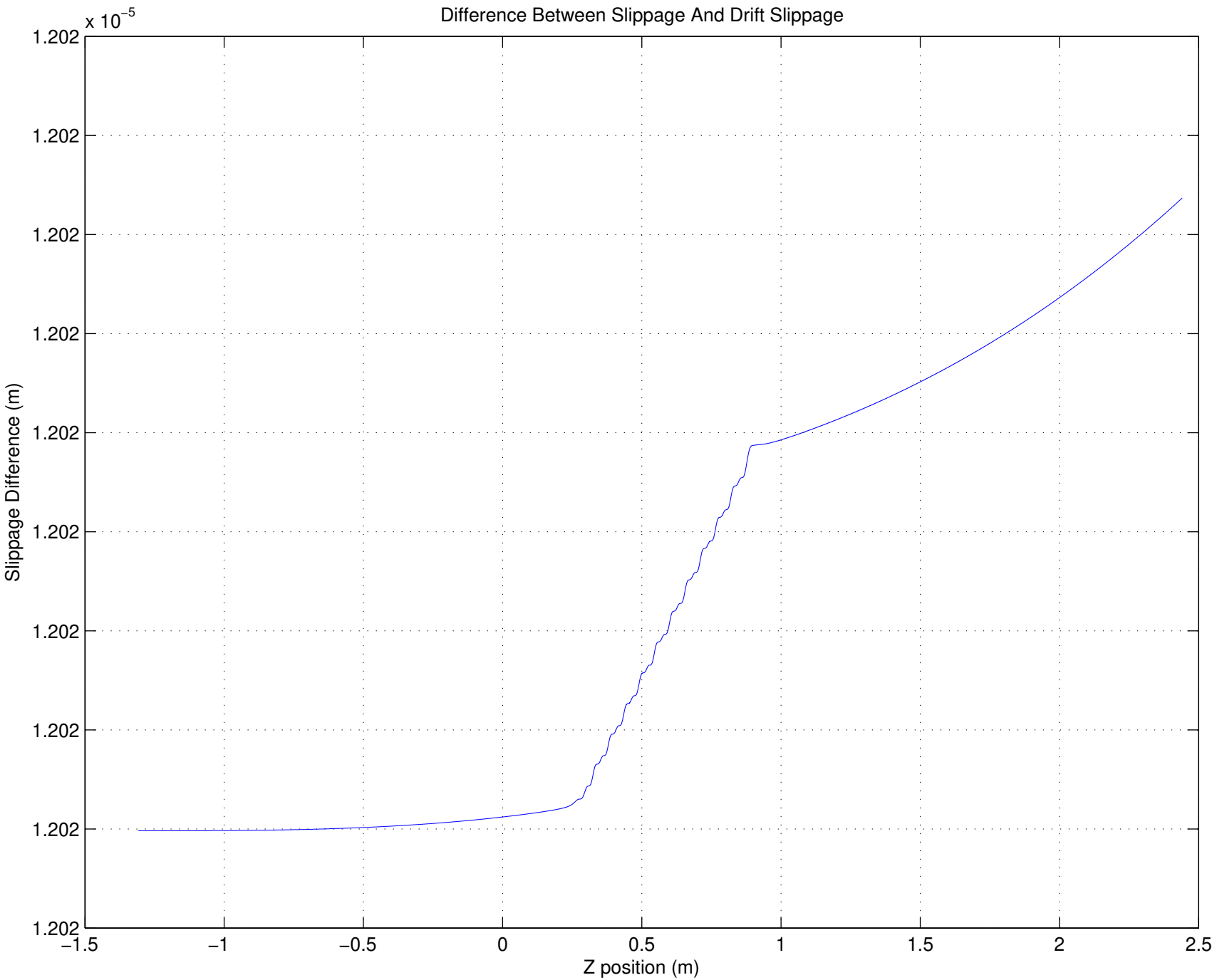

X Trajectory
x 10^-7
X (m)
13
Pole
x 10^-7
X'
x 10^-5
X'' (1/m)
Z position (m)

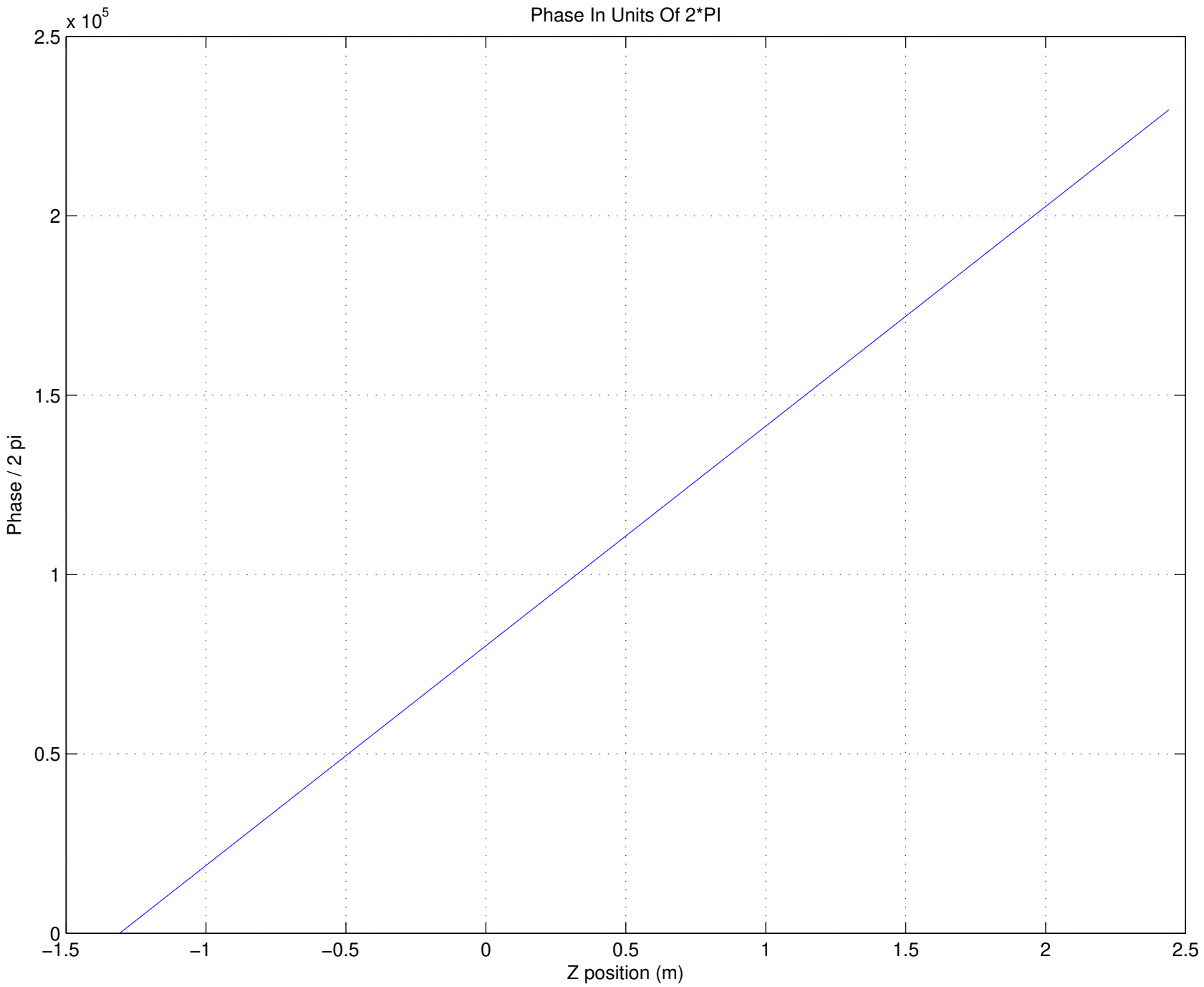

Y Trajectory
x 10^-7
13
Pole
Y (m)
Y'
Y'' (1/m)
Z position (m)

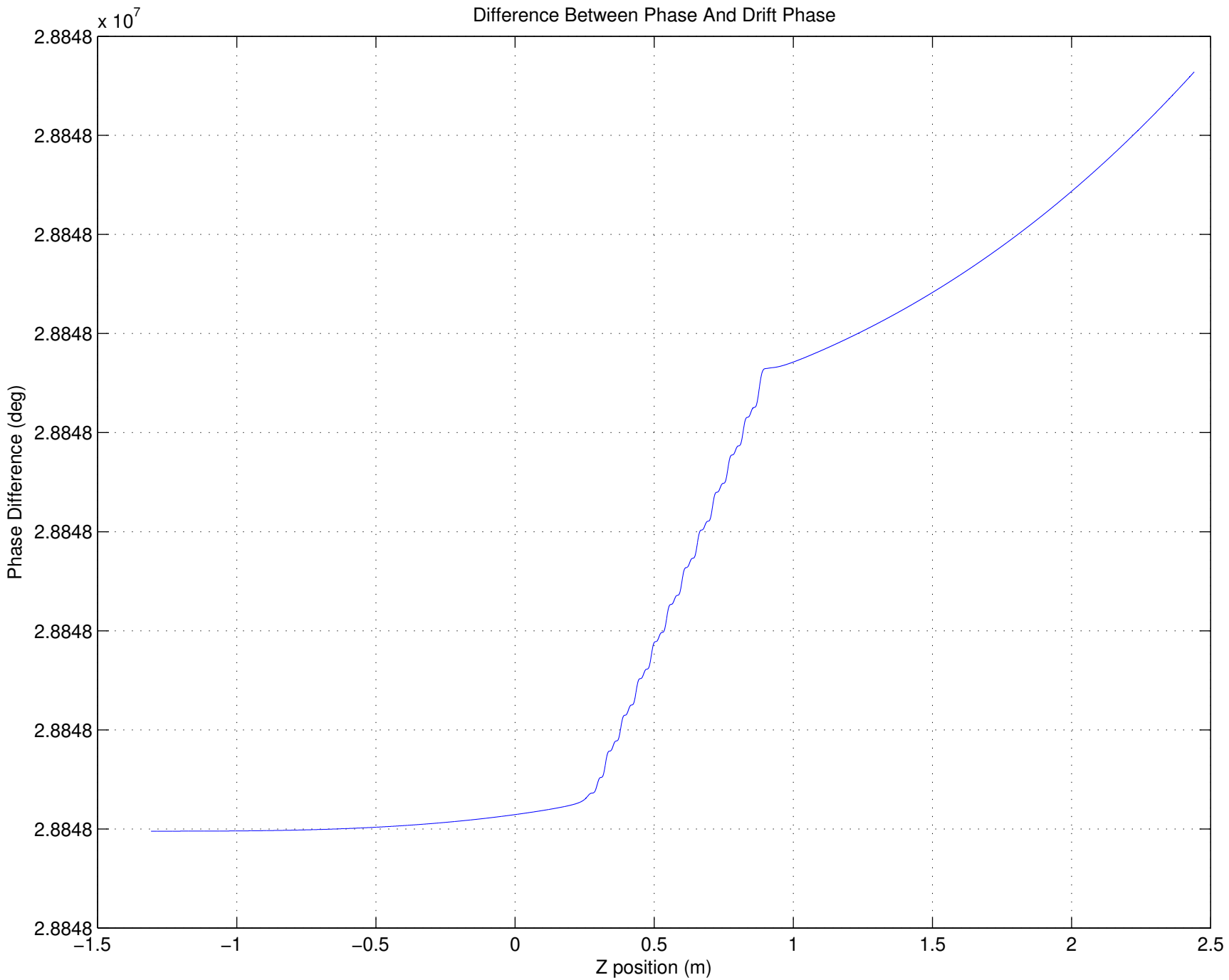

X Trajectory
x 10^-6
13
Pole
2
1.5
1
0.5
0
−0.5
−1
−1.5
−2
X (m)
−1.5
−1
−0.5
0
0.5
1
1.5
2
2.5
Z position (m)


Y Trajectory
x 10^-6
13
Pole
2
1.5
1
0.5
0
−0.5
−1
−1.5
−2
Y (m)
−1.5
−1
−0.5
0
0.5
1
1.5
2
2.5
Z position (m)


Slippage
x 10^-5
3.5
3
2.5
2
1.5
1
0.5
0
Slippage (m)
13
Pole
−1.5
−1
−0.5
0
0.5
1
1.5
2
2.5
Z position (m)


Difference Between Slippage And Drift Slippage
x 10^-5
1.202
1.202
1.202
1.202
1.202
1.202
1.202
1.202
1.202
Slippage Difference (m)
−1.5
−1
−0.5
0
0.5
1
1.5
2
2.5
Z position (m)


Phase In Units Of 2*PI
x 10^5
2.5
2
1.5
1
0.5
0
Phase / 2 pi
−1.5
−1
−0.5
0
0.5
1
1.5
2
2.5
Z position (m)


Difference Between Phase And Drift Phase
x 10^7
2.8848
2.8848
2.8848
2.8848
2.8848
2.8848
2.8848
2.8848
2.8848
Phase Difference (deg)
−1.5
−1
−0.5
0
0.5
1
1.5
2
2.5
Z position (m)