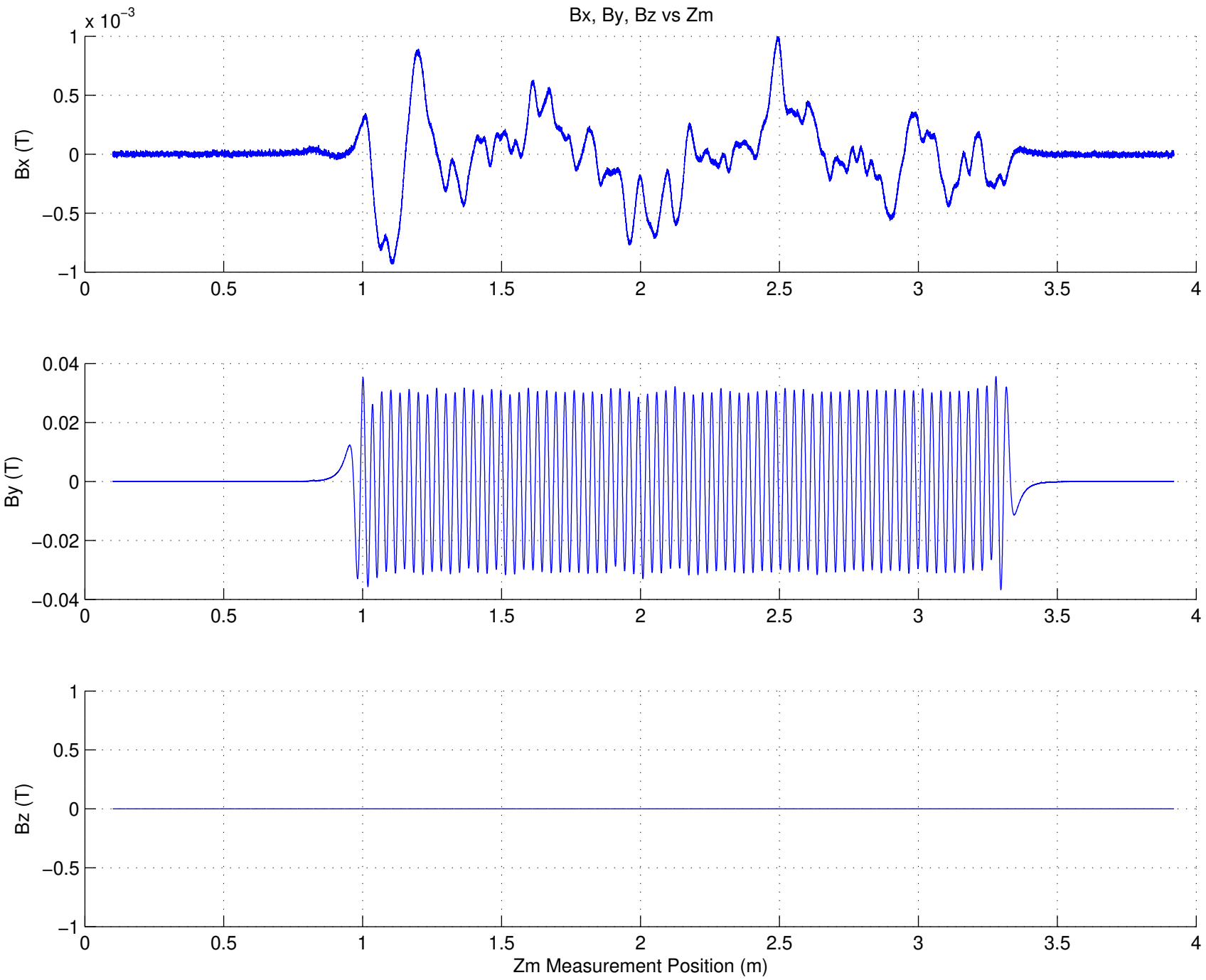
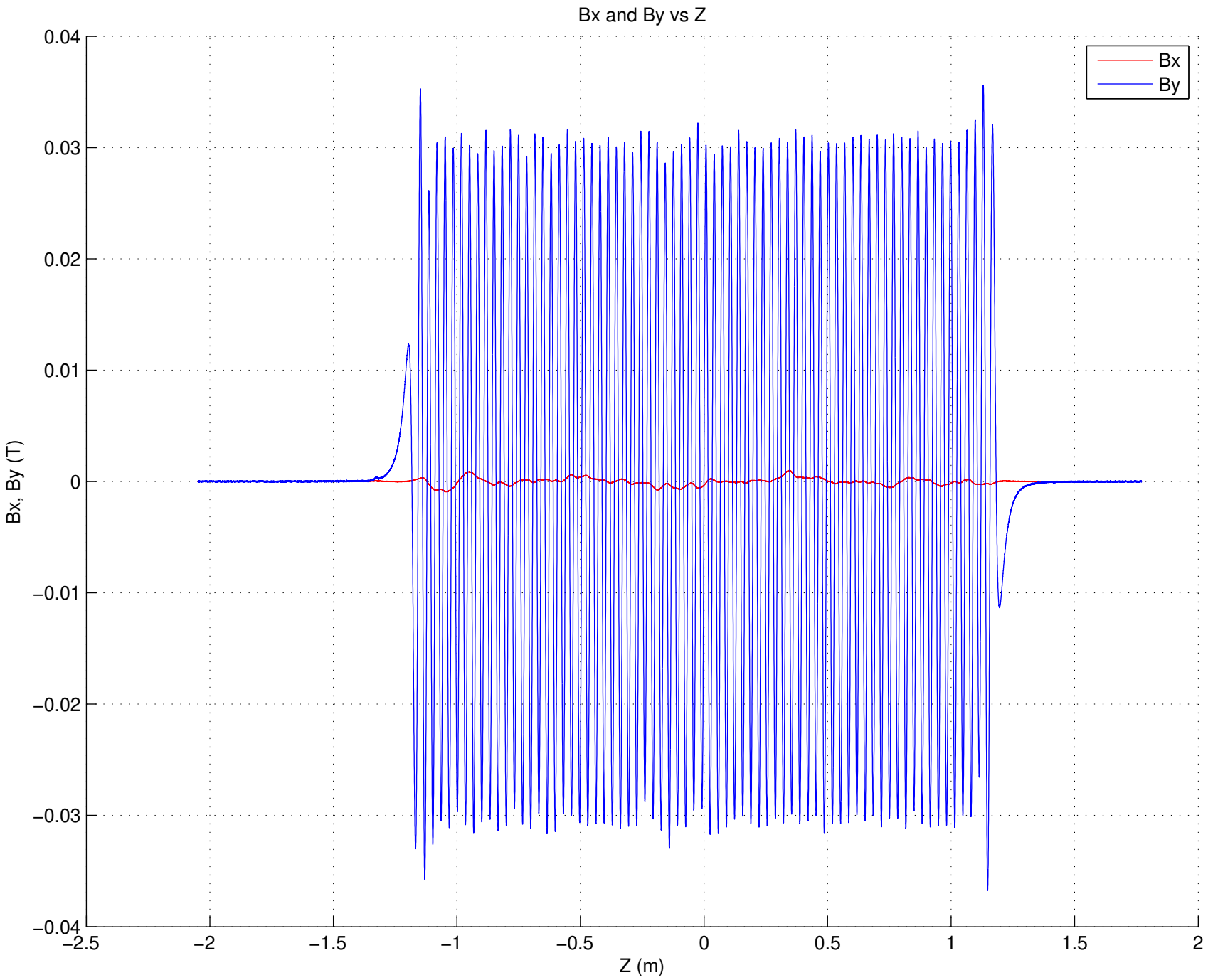
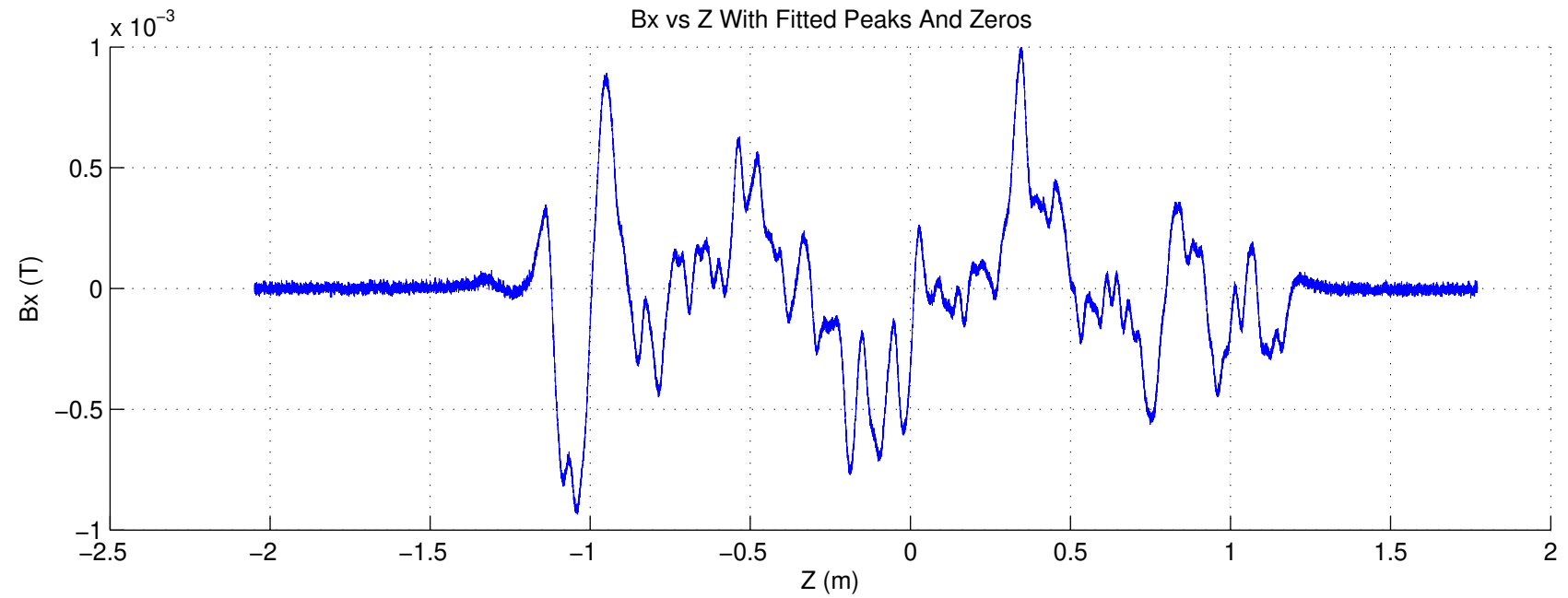
SLAC Magnetic Measurements

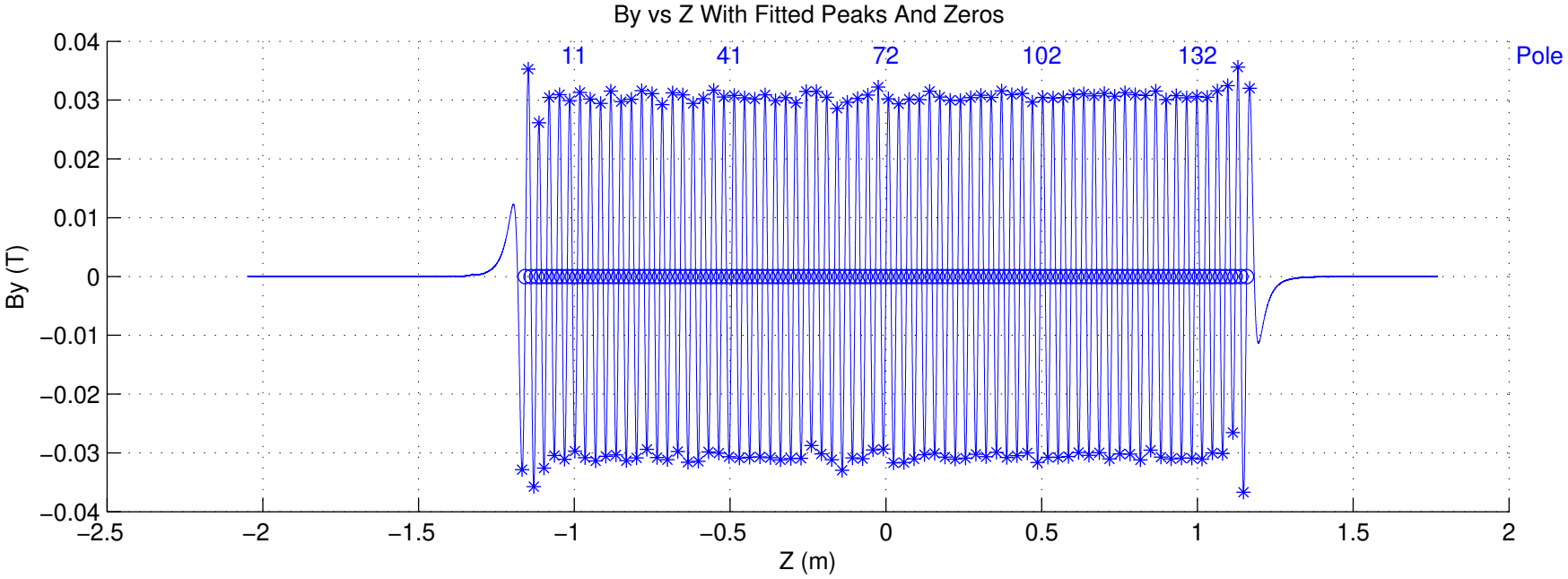
Trajectory Analysis
−−−−−−−−−−−−−−−−−−

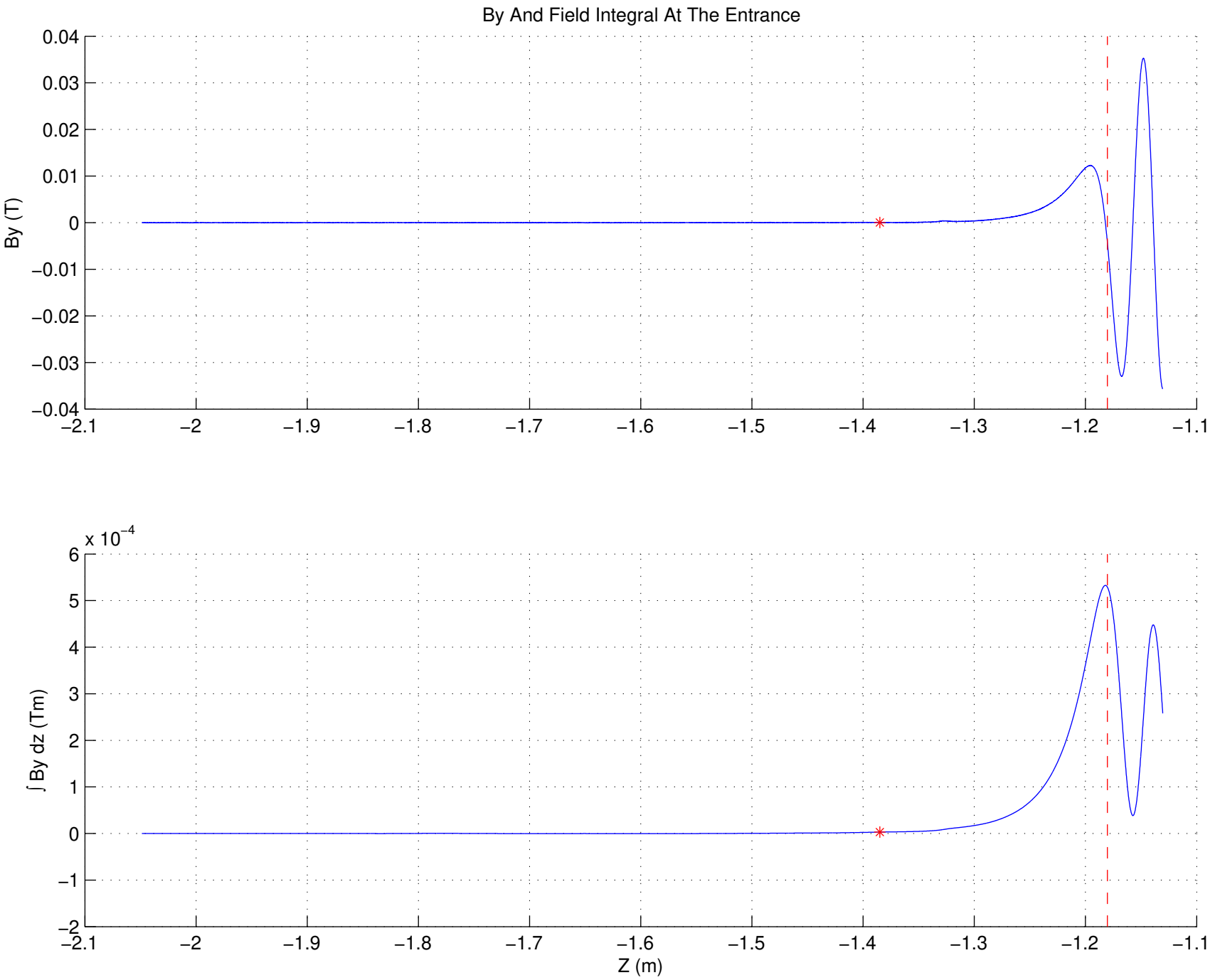
Parameters:
INPUT−FILE−DIR =S:\MagData\LCLS\Undulator\A1−ANL\DATASET0003\Rough Tuning\Z Scans\Run 033\
INPUT−FILE−NAME =x+00000−y+000−bscanz.dat
INPUT−FILE−TYPE =ZVXYBXYH
CORR−REQUIRED =0
GAMMA =26627.1
DEVICE CENTER POSITION ZM =2.1491 m
DEVICE ENTRANCE POSITION ZM =0.9688 m
DEVICE EXIT POSITION ZM =3.3294 m
NOM−LAMBDA−R =1.5e−010 m

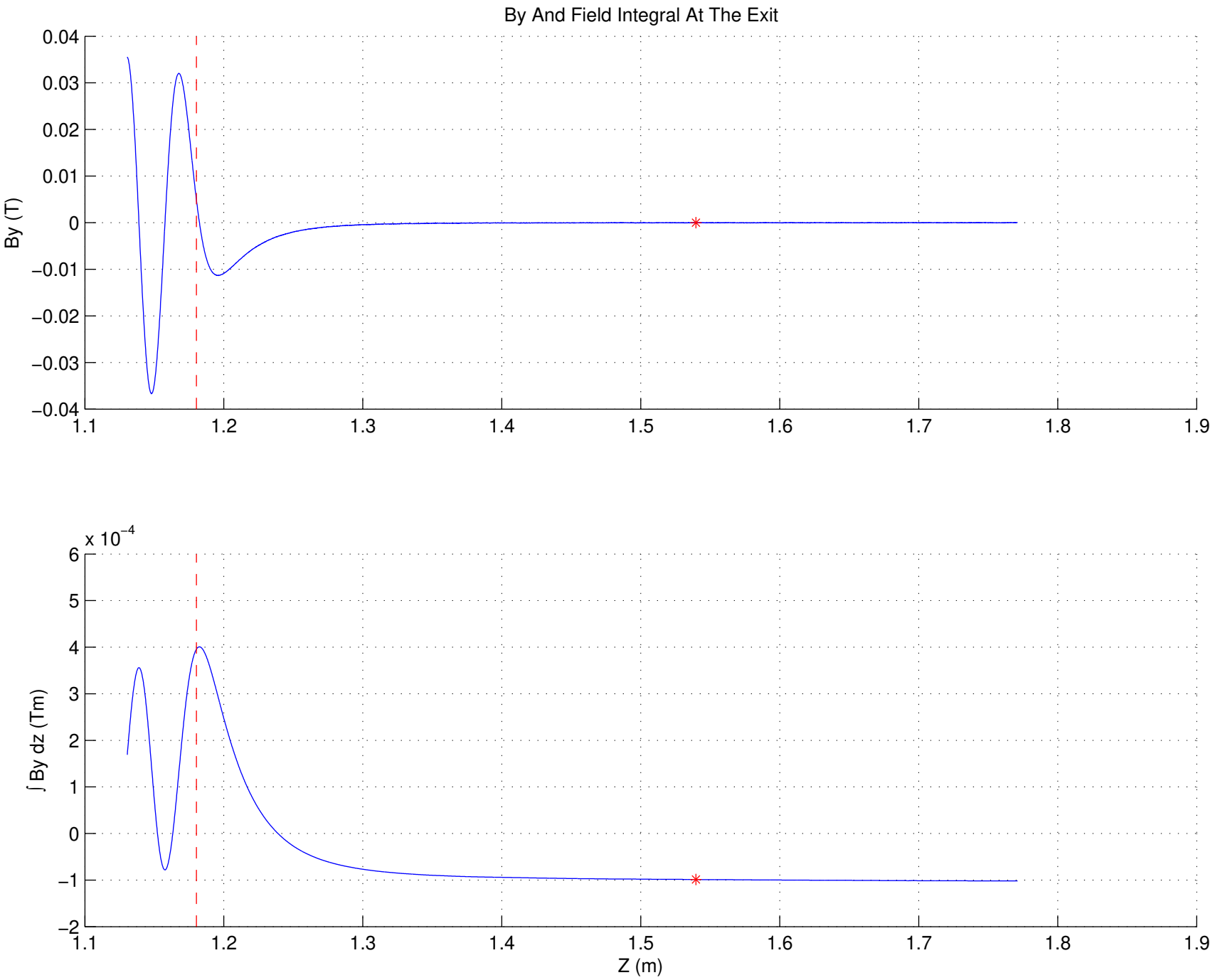

Bx, By, Bz vs Zm
x 10^-3
Bx (T)
By (T)
Bz (T)
Zm Measurement Position (m)
1
0.5
0
−0.5
−1
0.04
0.02
−0.02
−0.04
0
0.5
1
1.5
2
2.5
3
3.5
4

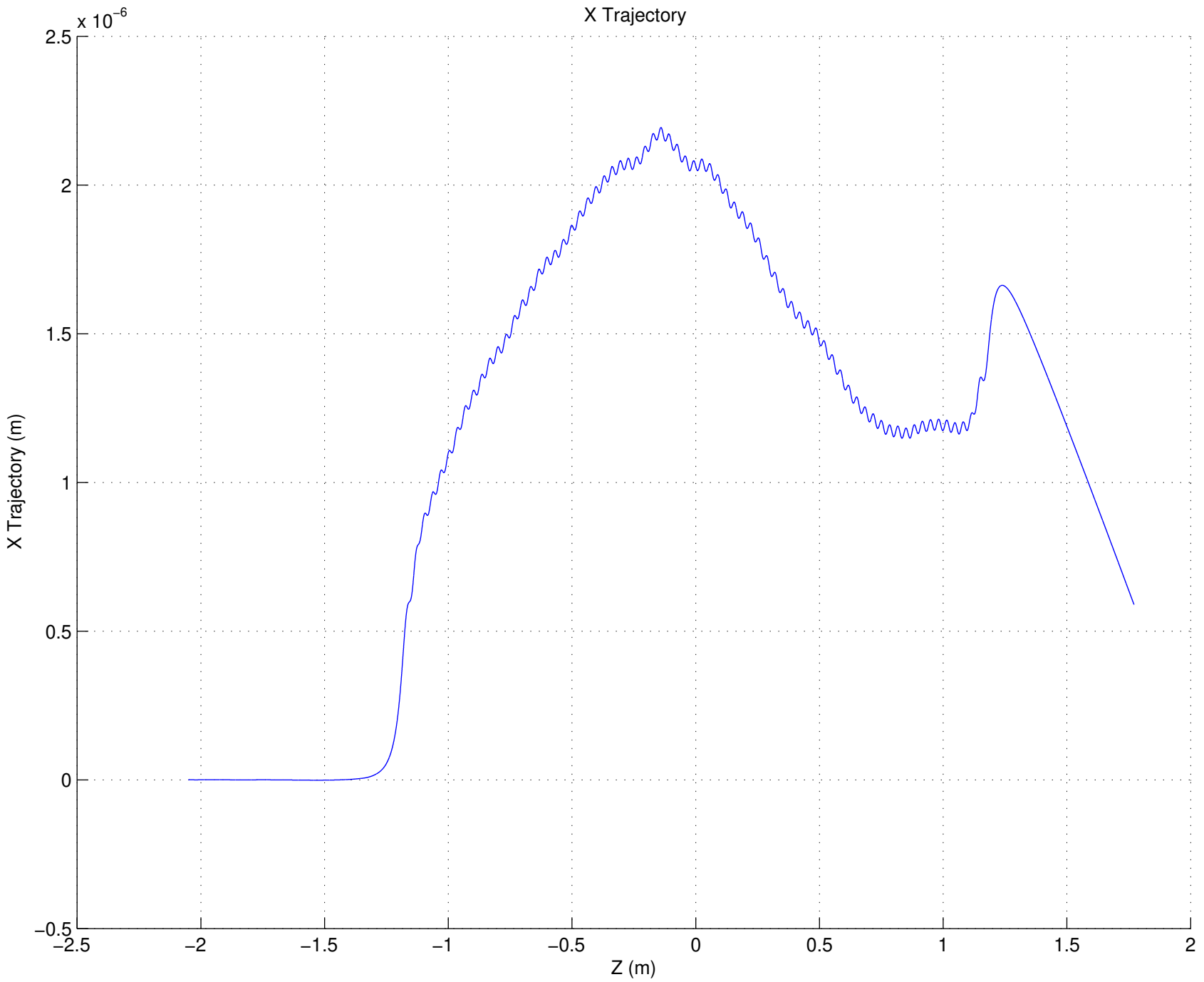

Bx and By vs Z
Bx
By
Bx, By (T)
Z (m)
0.04
0.03
0.02
0.01
0
−0.01
−0.02
−0.03
−0.04
−2.5
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2

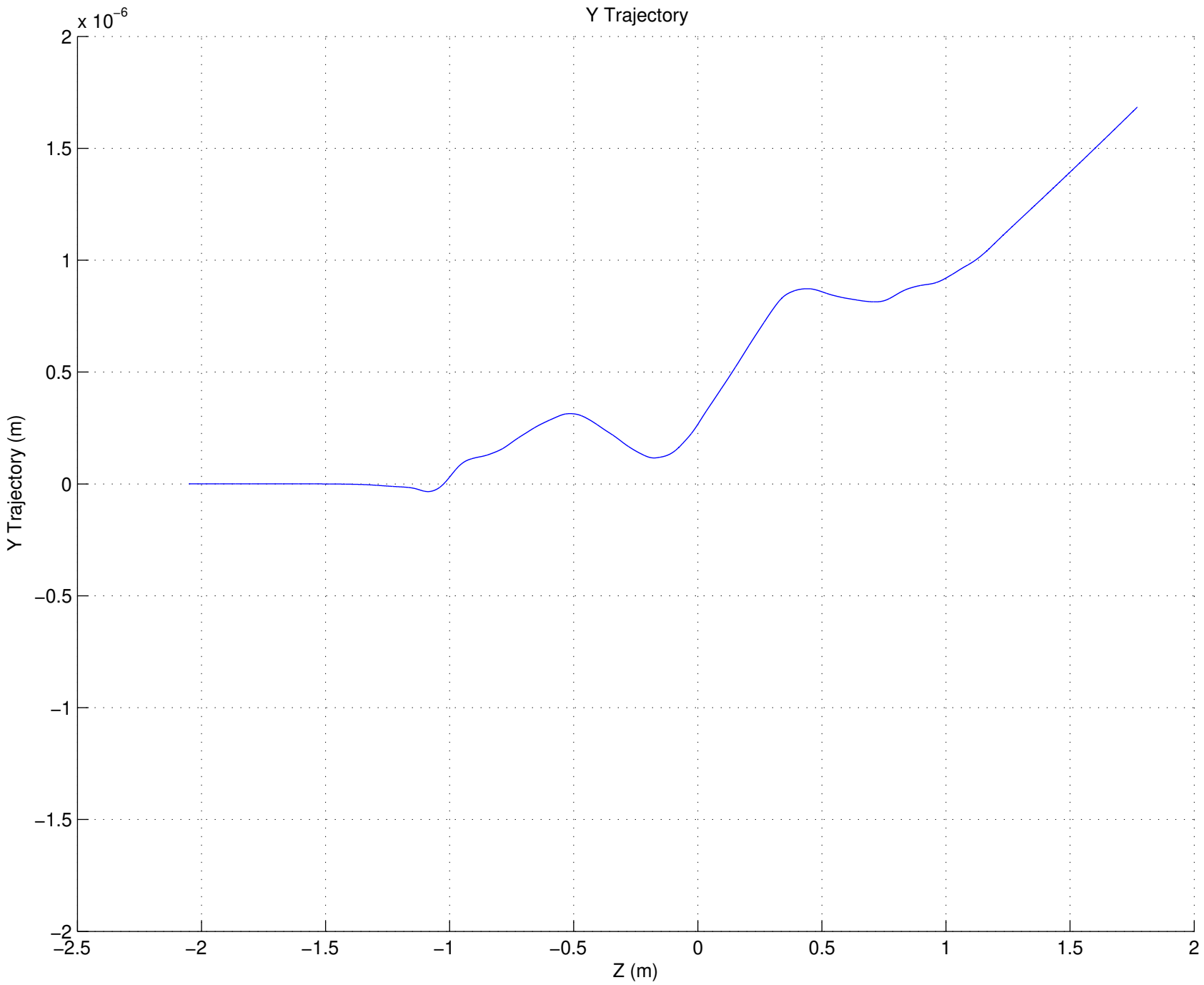

Bx vs Z With Fitted Peaks And Zeros
x 10^-3
Bx (T)
Z (m)
1
0.5
0
−0.5
−1
−2.5
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2

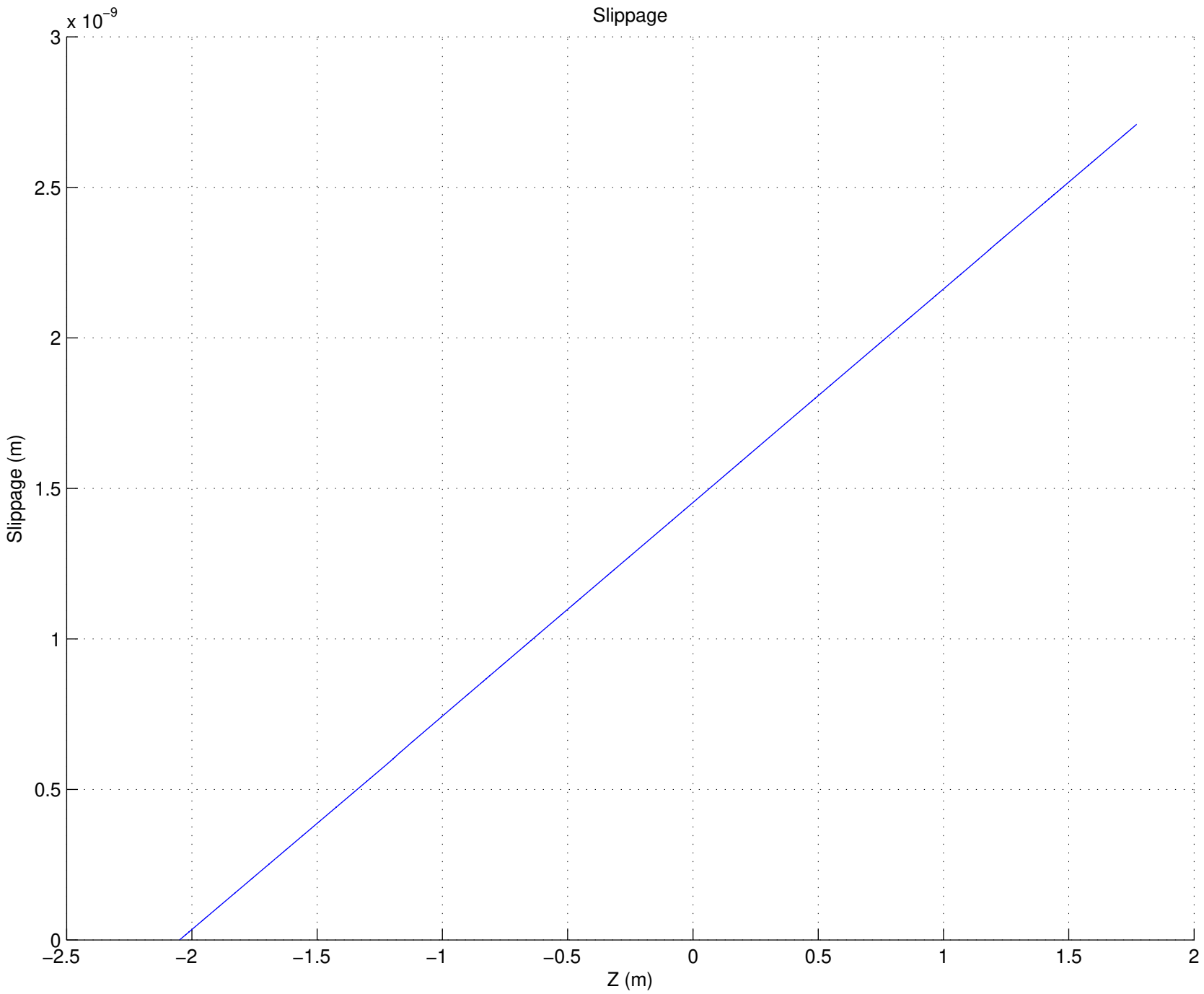

By vs Z With Fitted Peaks And Zeros
11
41
72
102
132
Pole
By (T)
Z (m)
0.04
0.03
0.02
0.01
0
−0.01
−0.02
−0.03
−0.04
−2.5
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2

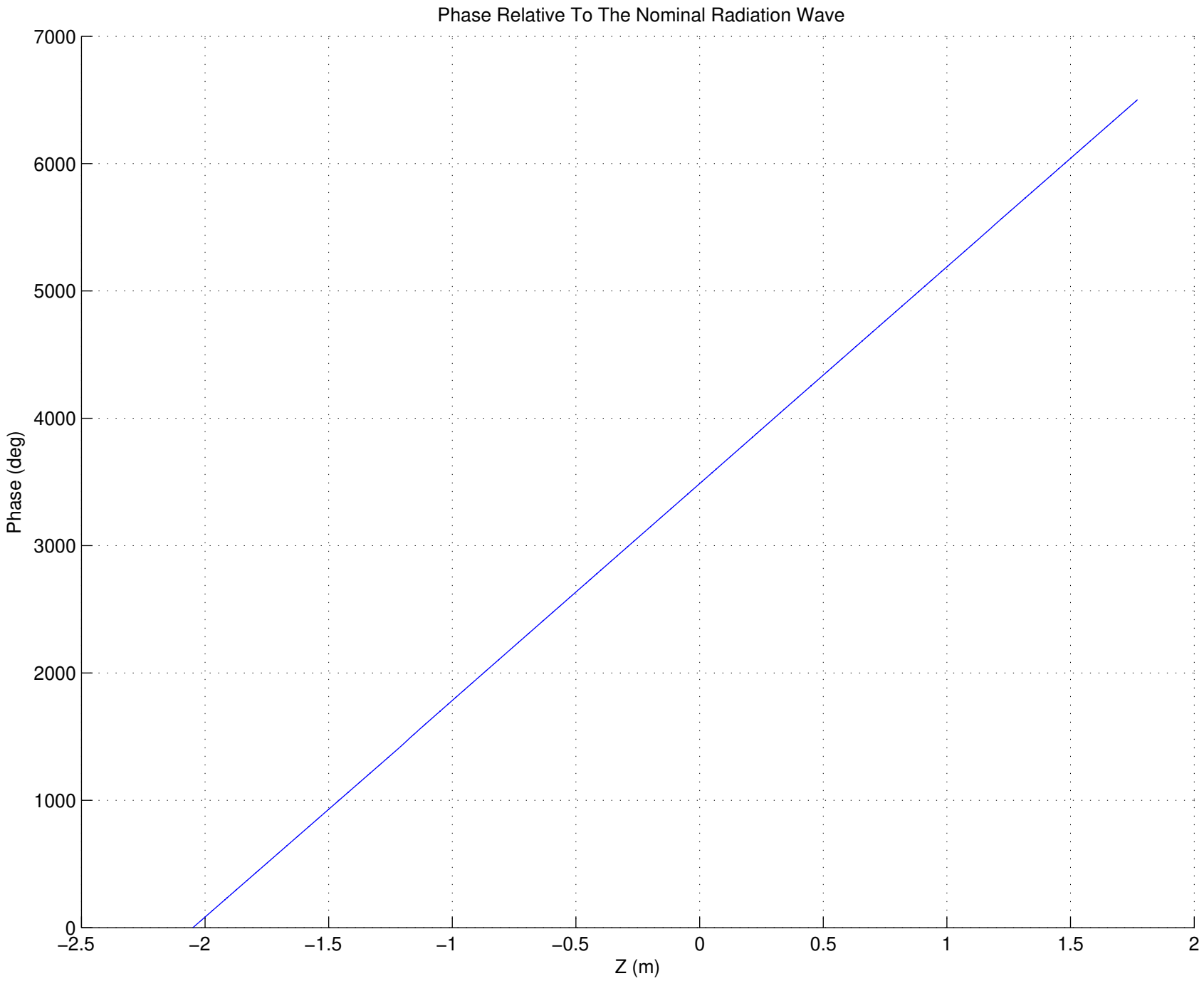

By And Field Integral At The Entrance
By (T)
0.04
0.03
0.02
0.01
0
−0.01
−0.02
−0.03
−0.04
−2.1
−2
−1.9
−1.8
−1.7
−1.6
−1.5
−1.4
−1.3
−1.2
−1.1
x 10^−4
∫ By dz (Tm)
6
5
4
3
2
1
0
−1
−2
Z (m)


By And Field Integral At The Exit
By (T)
0.04
0.03
0.02
0.01
0
−0.01
−0.02
−0.03
−0.04
1.1
1.2
1.3
1.4
1.5
1.6
1.7
1.8
1.9
x 10^−4
∫ By dz (Tm)
6
5
4
3
2
1
0
−1
−2
Z (m)


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


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


Slippage
x 10^-9
3
2.5
2
1.5
1
0.5
0
Slippage (m)
−2.5
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
Z (m)


Phase Relative To The Nominal Radiation Wave
Phase (deg)
Z (m)
7000
6000
5000
4000
3000
2000
1000
0
−2.5
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2