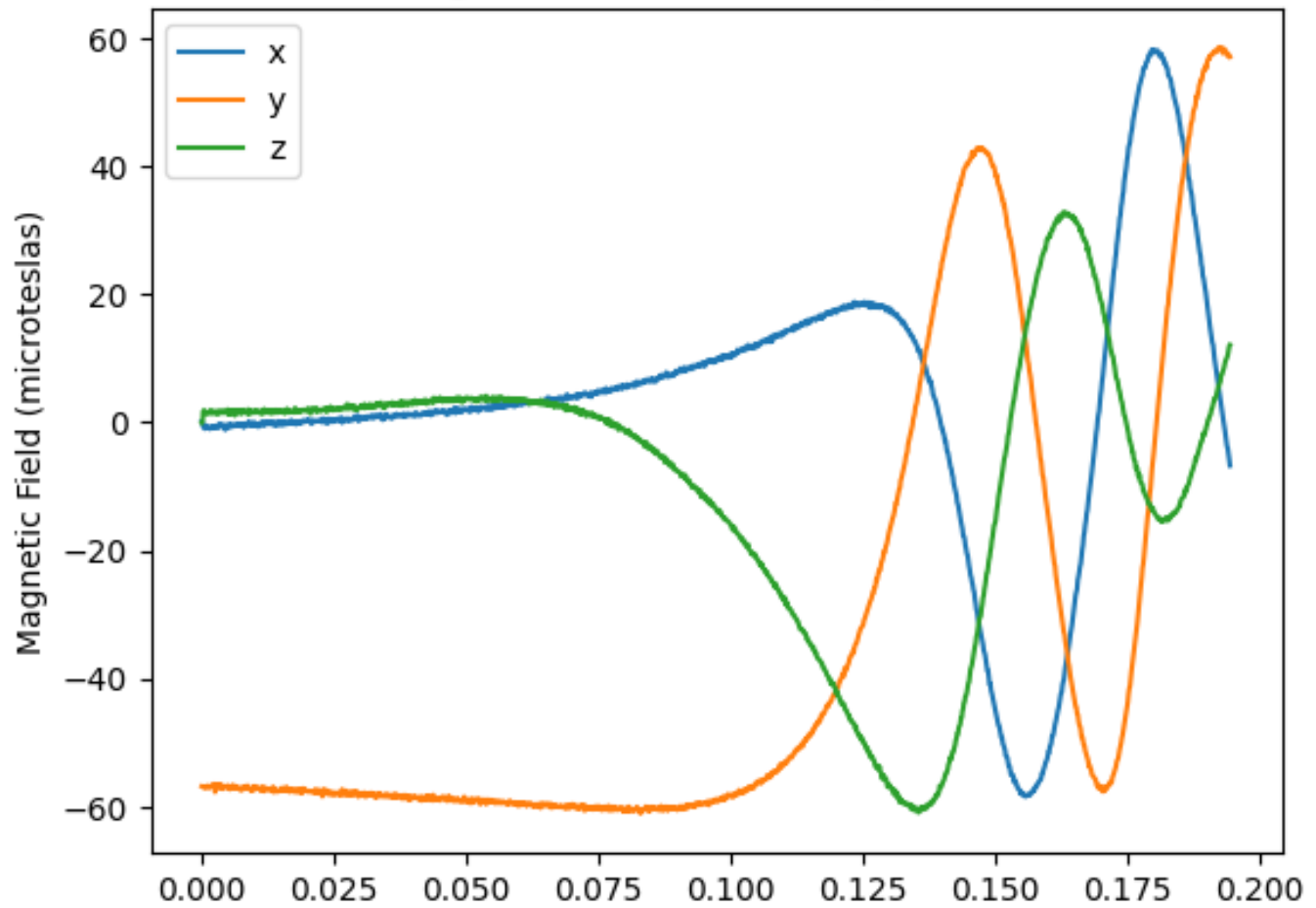# Detumbling Simulation Report
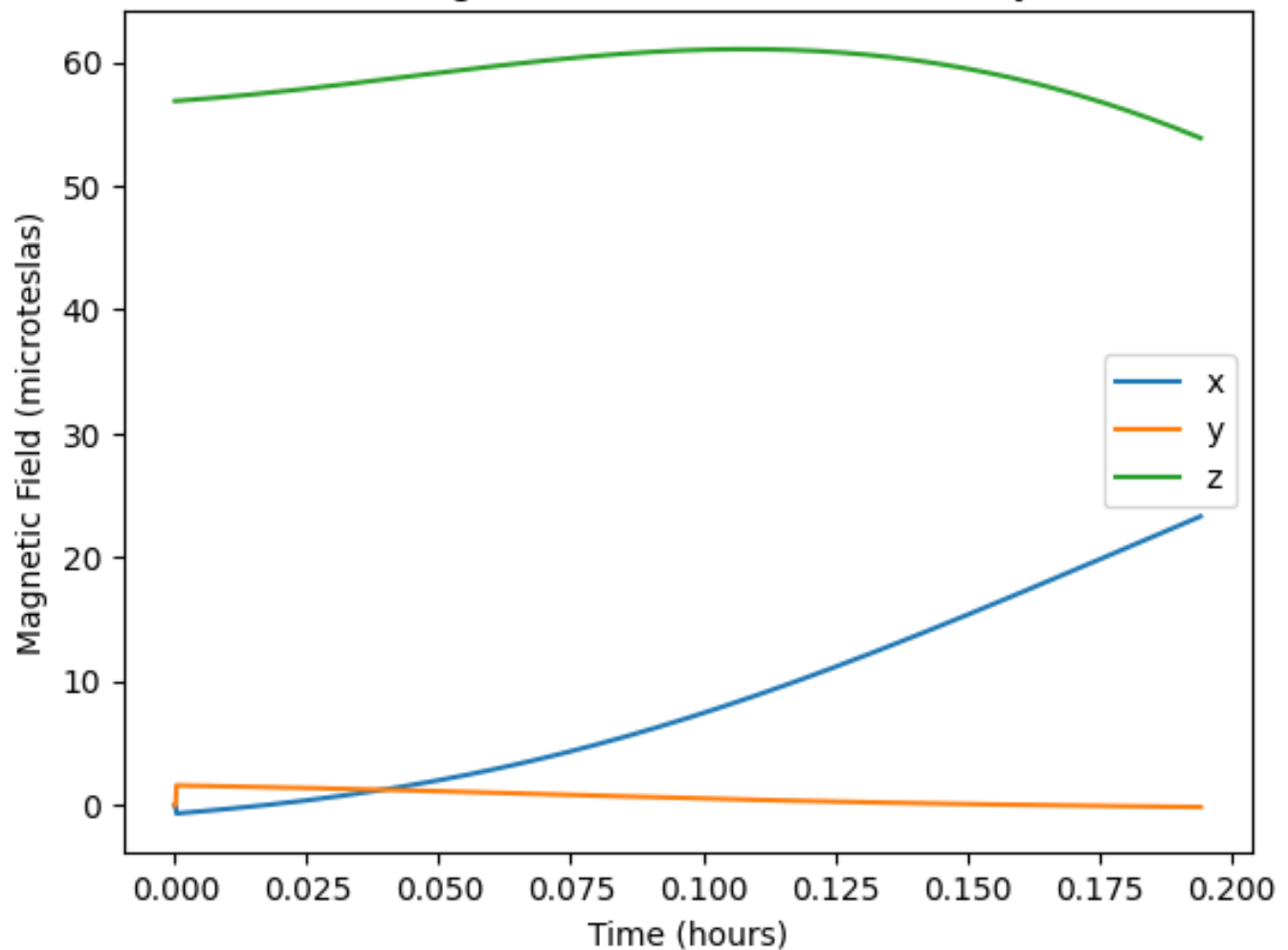
Magnetometer Data (Body Frame)
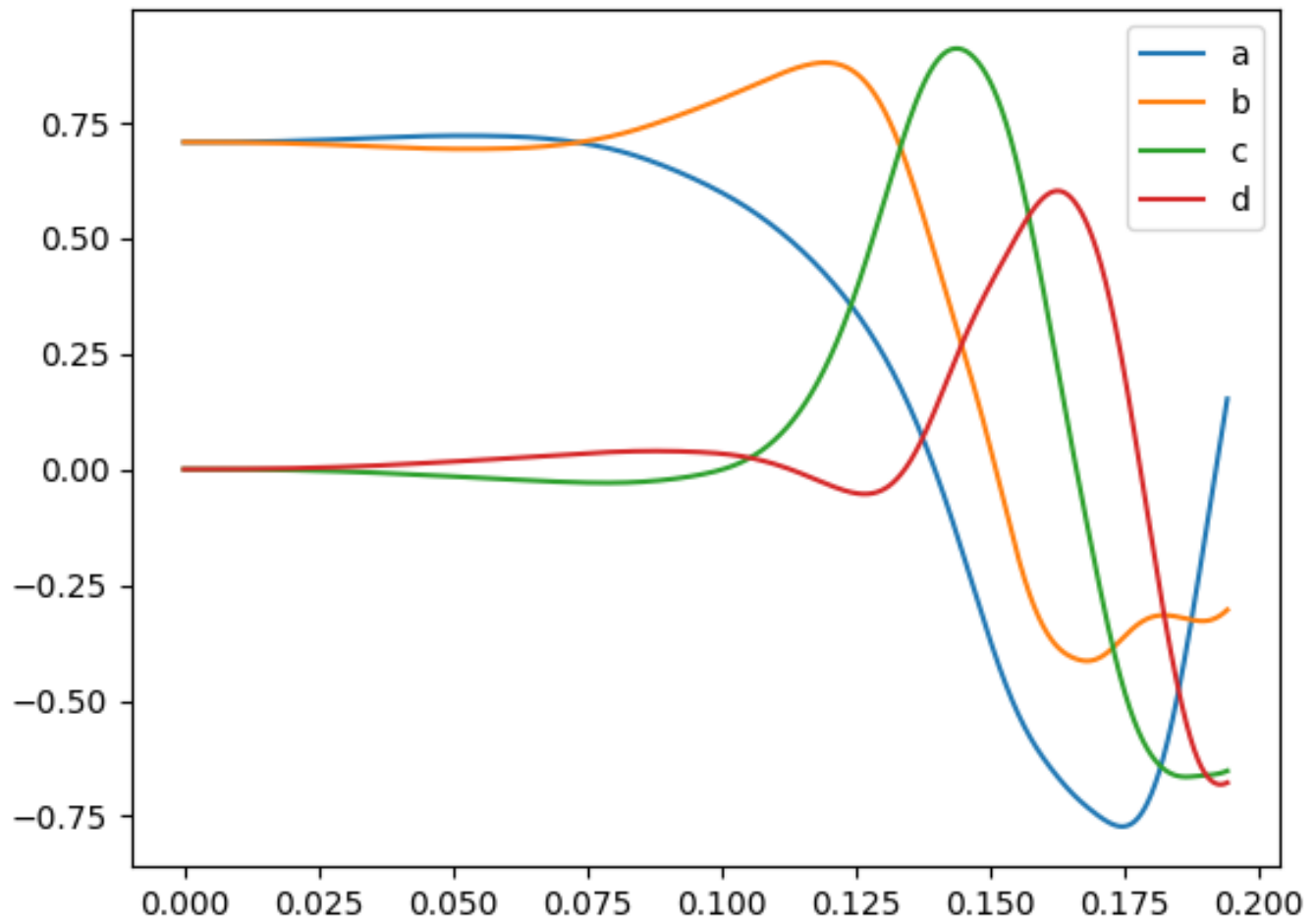

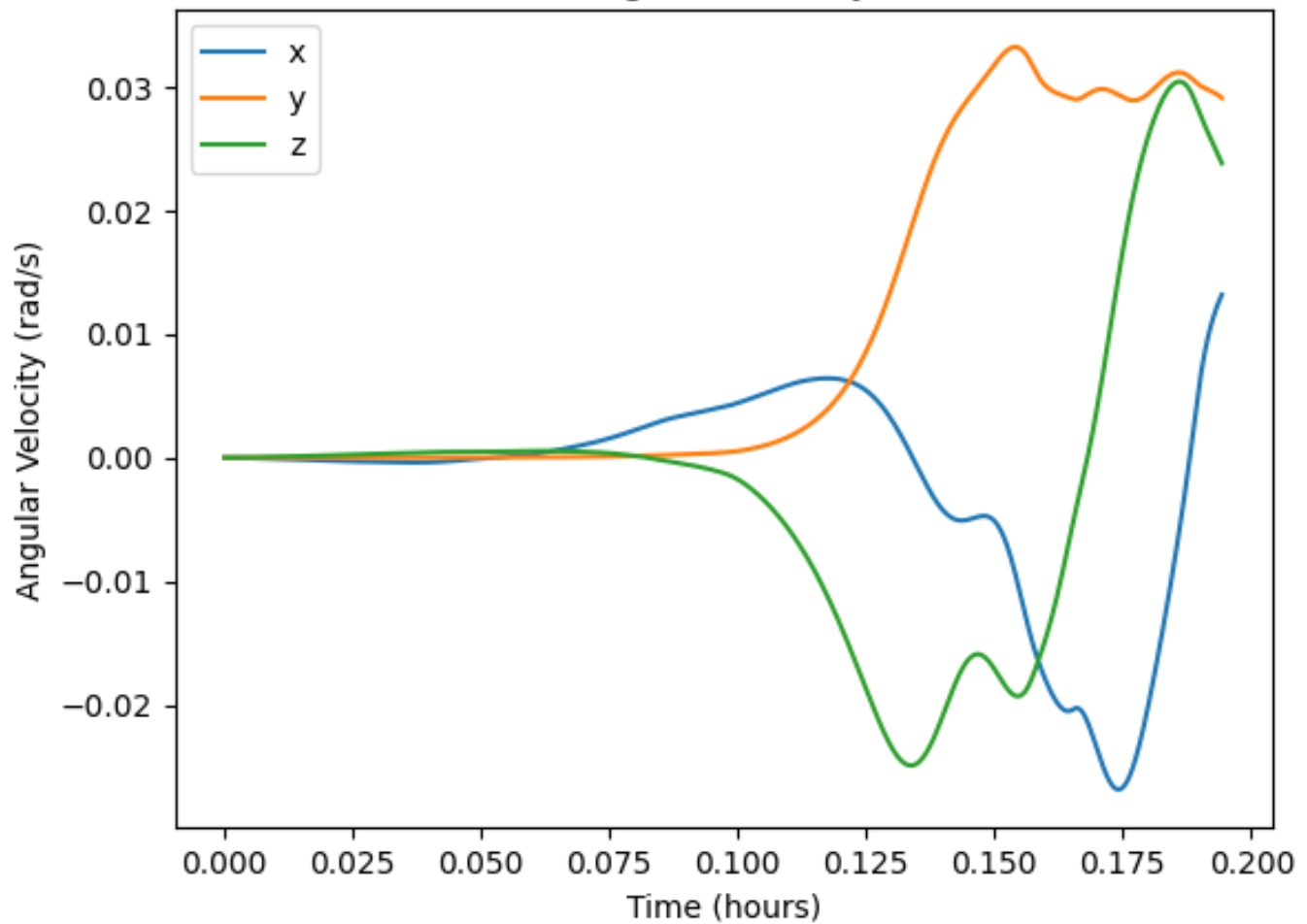## Earth's Magnetic Field (ECI frame from PySOL)

Orientation and Angular Velocity
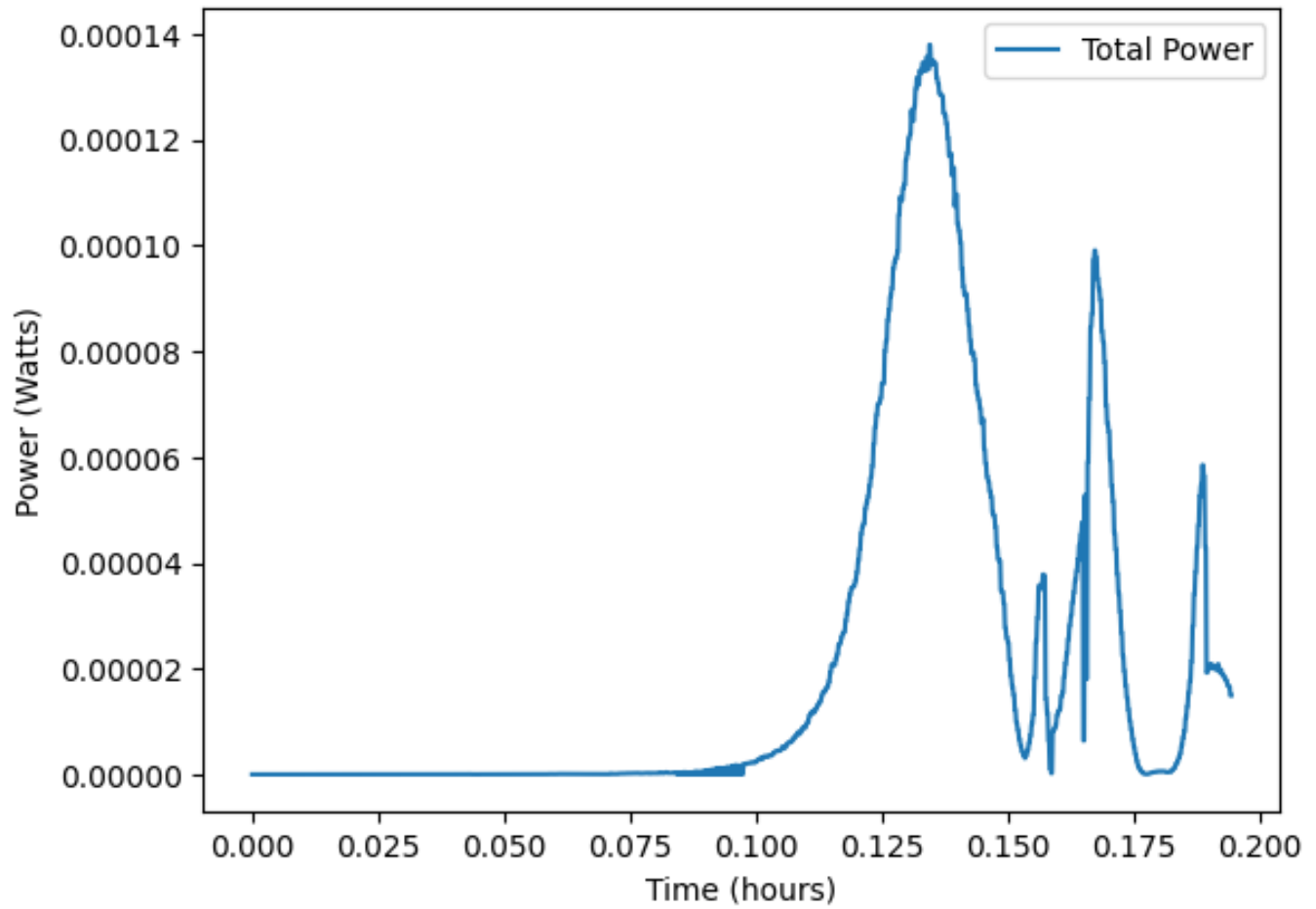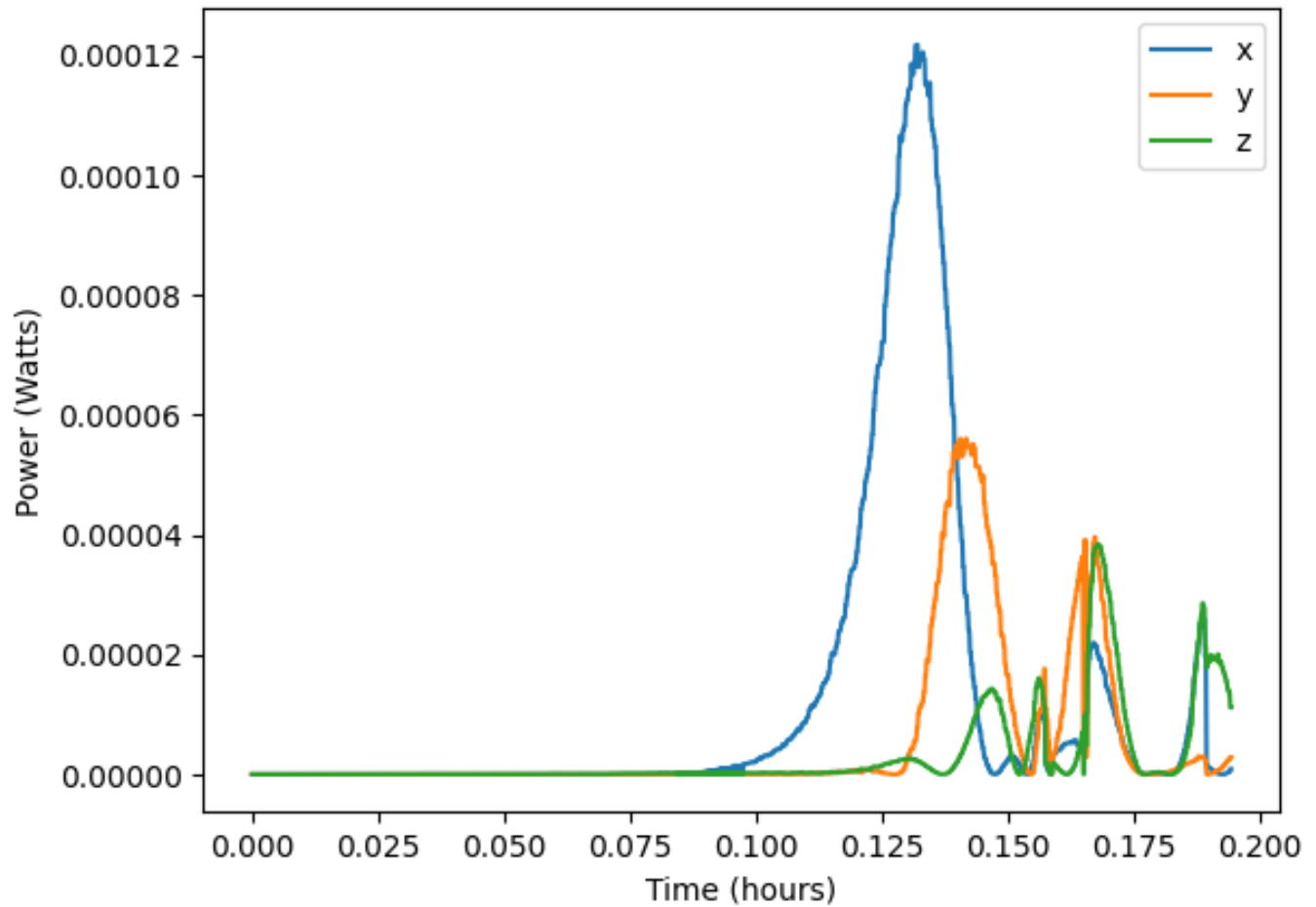
Quaternion

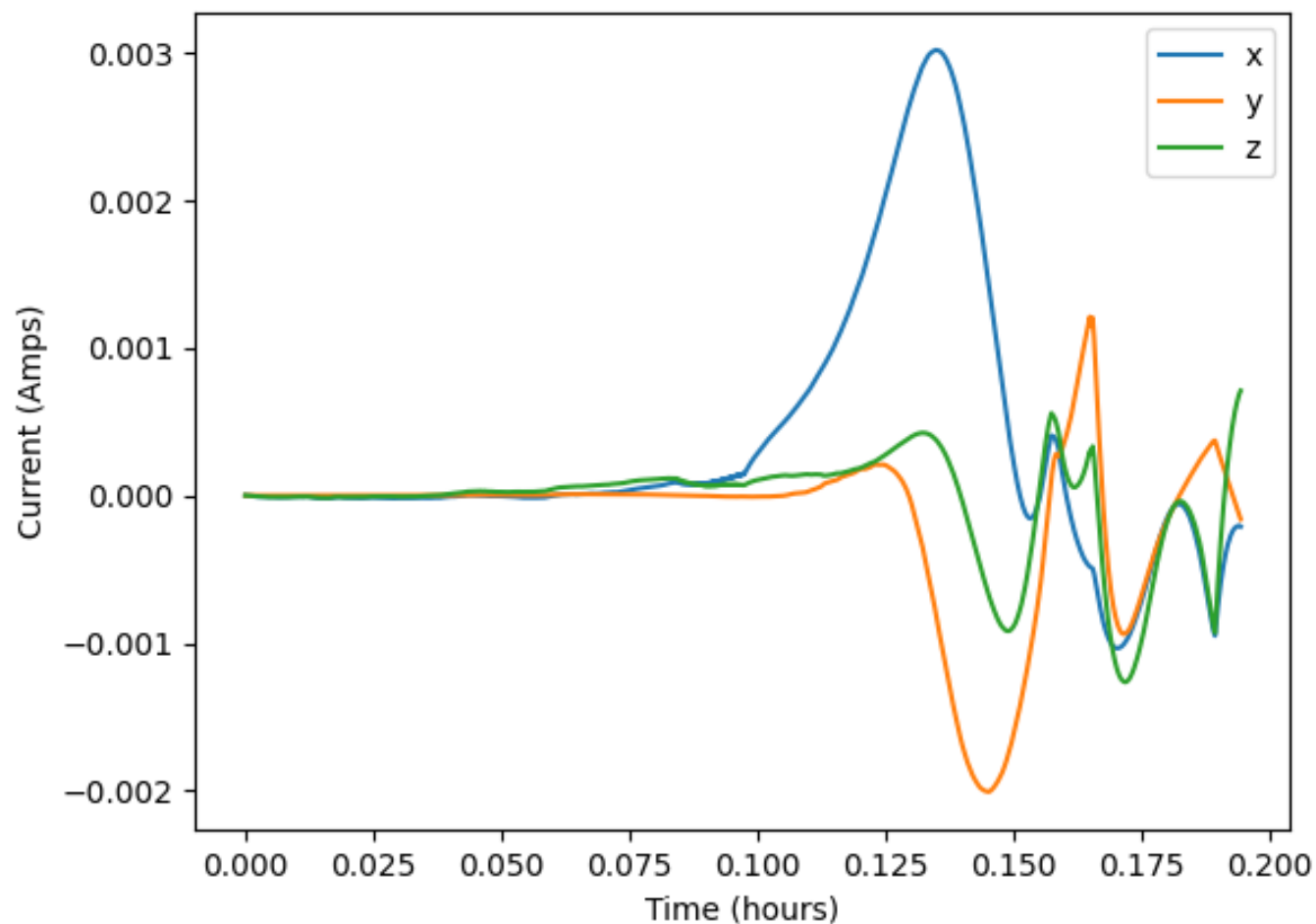## Angular Velocity

Magnetorquer Information
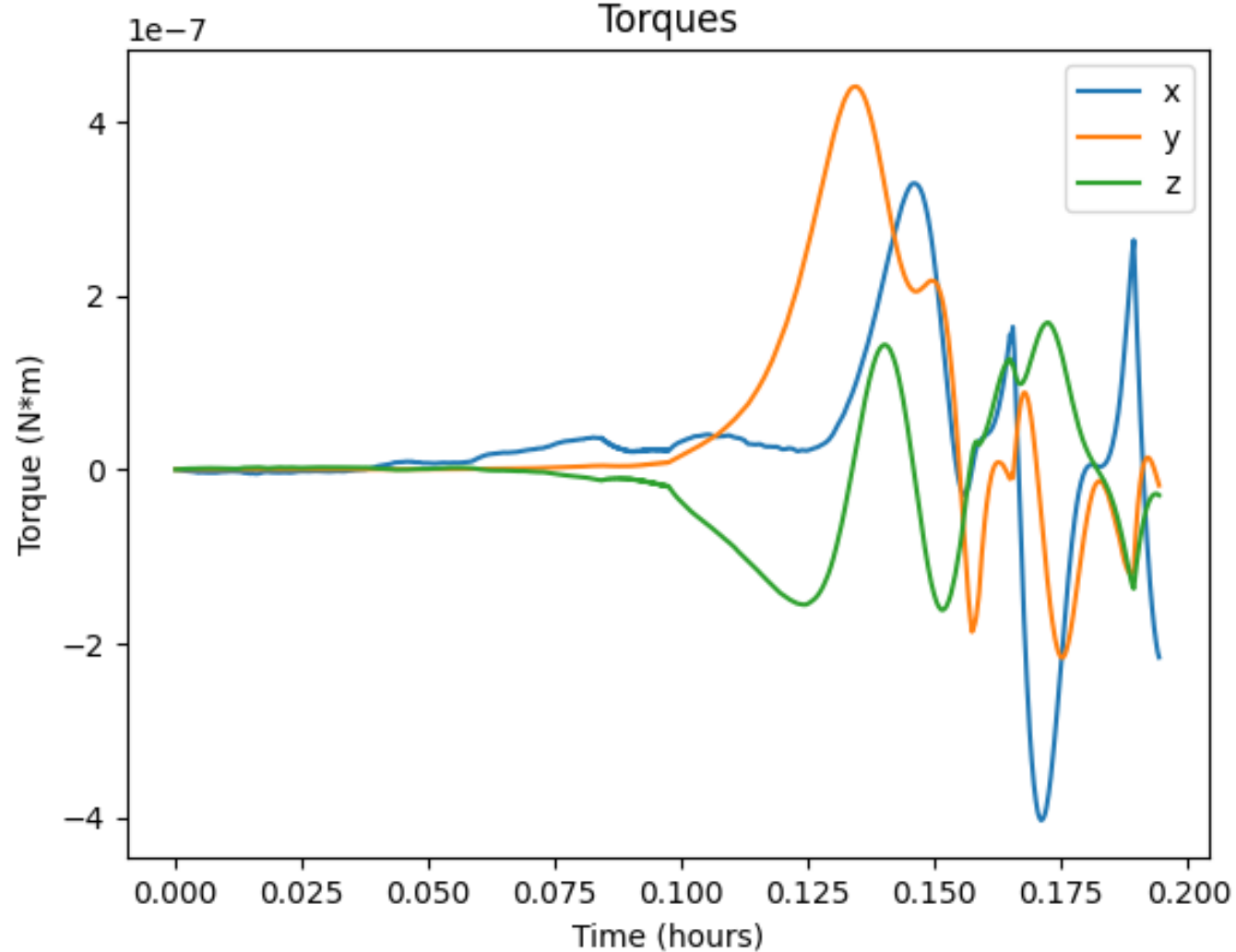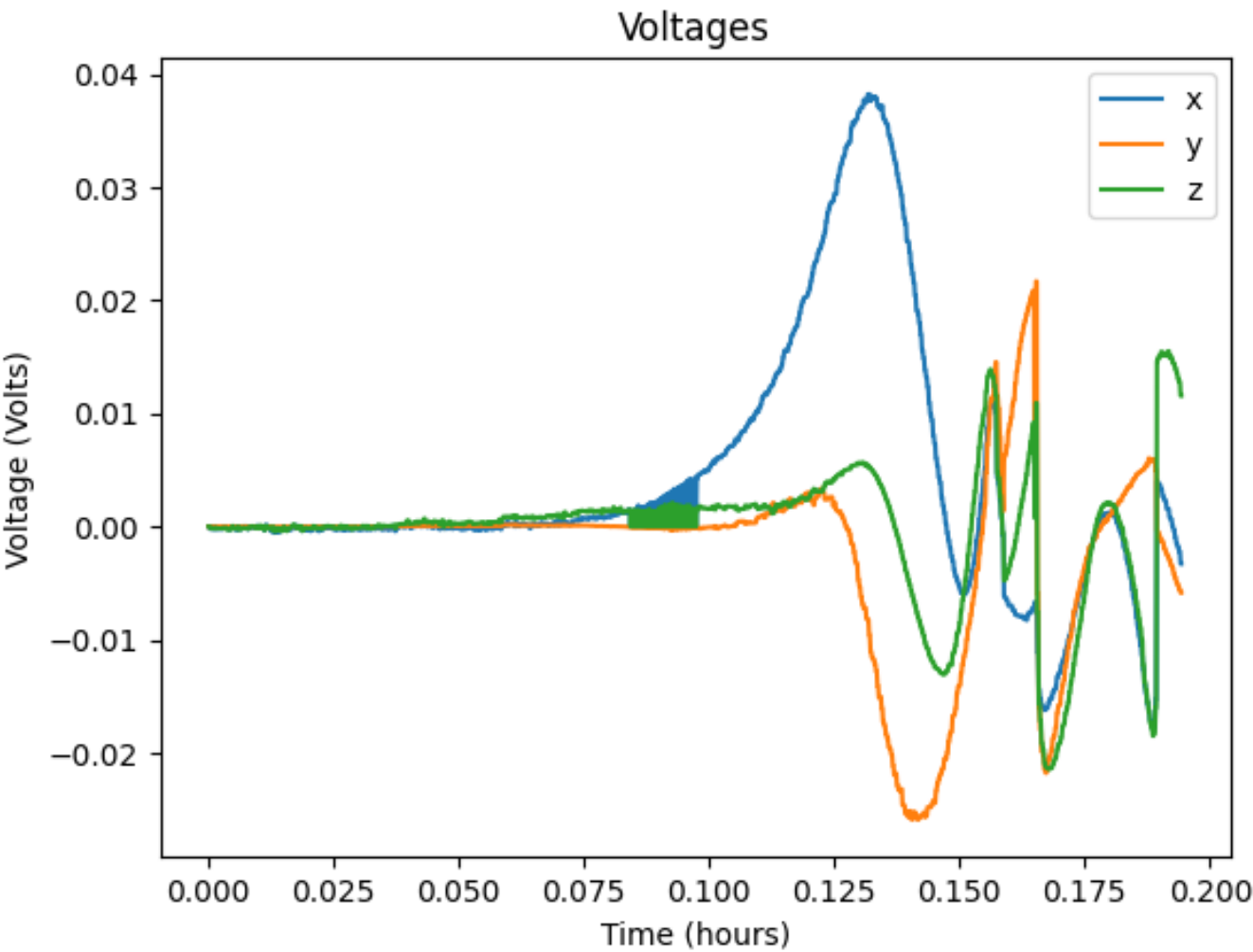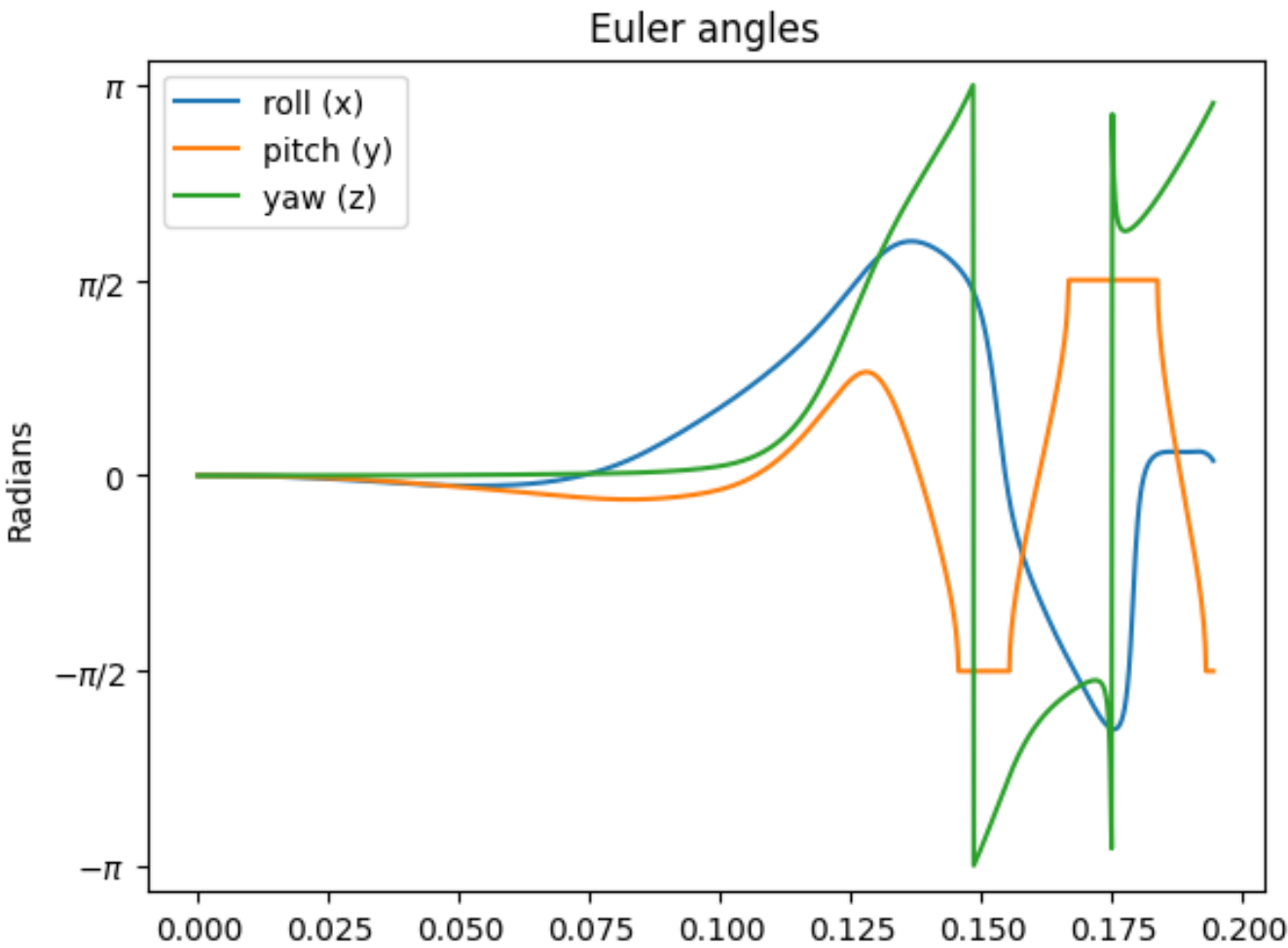
Total Power Output

Power Usage

Currents

Torques

Our filtered orientation represented by Euler Angles (counterclockwise rotation about x, y, z). Can bug out sometimes. Near 180 degrees (pi) is the same as zero.

Euler angles

Voltages

General Info

Starting speed: [0   0   0   ] degrees/s.

Total simulation time: 0.19444444444444445 hours

Orbits completed during simulation: 0.1247 orbits.

Hours to detumble: -0.0003 hours.

Orbits to detumble: -0.0002 orbits.

Power consumed to detumble (Total Energy): 0 Jules

Orbital elments: [0, 6828, 9.22e-05, 90, 90, 0]
   These define our simulated orbit (see sol_sim.py in PySOL for more info)

B-dot proportional gain: k = 1e-05

Bang-Bang proportional gain: kp = 300.0
Bang-Bang derivative gain: kd = 300.0

Satellite info:

Ferro Magnetorquer:
   Number of turns = 1845
   Area = 3.216990877275948e-05 m^2
   k = 1e-05
   Magnitizing factor = 38.3370626305719

Ferro Magnetorquer:
   Number of turns = 1845
   Area = 3.216990877275948e-05 m^2
   k = 1e-05
   Magnitizing factor = 38.3370626305719

Air Magnetorquer:
   Number of turns = 654
   Area = 0.008 m^2
   k = 1e-05