Simulation of Uncontrolled Satellite in Eclipse

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1 Motivation

This simulation is performed to check whether it is necessary to continuously control the satellite's attitude in the eclipse phase. If not necessary then not controlling the satellite in eclipse will be helpful in following ways:

1. Power Consumption will be reduced
2. Control algorithm will become simple
3. No need to determine the attitude in eclipse phase

2 Objective

Assuming that just before entering the eclipse of an orbit, satellite's body frame is perfectly aligned with orbit frame and the instantaneous angular velocity of the body frame with respect to the orbit frame is zero.

Simulate the motion of the satellite in the presence of disturbance torques viz. Gravity gradient torque and Aerodynamic torque and in the absence of any control torque.

3 Simulation

Various simulations are performed for different Moment of Inertia matrices and different position of Centre of mass.