



Student Satellite Project
Indian Institute of Technology, Bombay
Powai, Mumbai - 400076, INDIA



Website: www.aero.iitb.ac.in/satlab

Readme file for OrbitElements2TLE.py

Attitude Determination and Control Subsystem

Author: Sumit Agrawal

Date: 08 July 2018

This code creates Two Line Elements (TLE) from orbital elements.

Input: Orbital Elements {Inclination (degrees), Right ascension of the ascending node (degrees), Eccentricity, Argument of perigee (degrees), Mean Anomaly (degrees), Mean Motion (revolutions per day) }; First time derivative of mean motion; Second time derivative of mean motion; Bstar; Epoch year; Epoch and other parameter Satellite No., Class No., International designator

Output: Two Line Element.

A test code is written to check if the TLE is coming proper or not.

References:

https://en.wikipedia.org/wiki/Two-line_element_set

<https://www.celestrak.com/NORAD/documentation/tle-fmt.asp>

<https://celestrak.com/NORAD/documentation/spacetrk.pdf> page 81

One should be careful while assigning the variables of the code. As the TLE is specific about the total length, location of signs and spaces. One must check with the test code test_OrbitElements2TLE.py after editing this code (OrbitElements2TLE.py).

SGP is affected by only following parameters.

1. Mean Motion
2. Eccentricity
3. Inclination
4. Mean Anomaly
5. Argument of perigee
6. Right ascension of the ascending node
7. First time derivative of mean motion
8. Second time derivative of mean motion
9. BStar