parameter	description
M = 0.3	mass of top in kg
R = 0.025	top is a disk with radius R in meters
L = 0.005	width of disk in m
arm = 0.01	location of center of mass of top from origin in meters
counter weight = 0.05	mass doesn't spin along symmetry axis
counter weight location from origin = 0.1	location from origin
Ix,Iy,Iz	moment of inertia, calculated from above parameters, see end docs
g = 9.8	gravity constant m/s^2
freq = 20	top revolution speed in hertz, along symmetric axis
tn=1.3	end of simulation time
t0=0.0	start of time zero
samplerate = 2000	rate of iteration in Hz
classical case = 1	selection of four typical nutation and precession motions: 1,2,3,4
orien = np.array([-np.pi/3,0,0])	starting orientation vector of top from lab xyz