Dynamics of Pitch

```
clc; close all; clear;
format long

A = 1.29*1e6; % Kg m^2
B = 9.68*1e6; % Kg m^2
C = 10.10*1e6; % Kg m^2
T_orb = 90*60; % Sec

Omega = 2*pi*(1/T_orb);

w3 = sqrt(3*Omega^2*(B-A)/C);
```

Dynamics of Roll and Yaw

X = [psi1 psi2 psi1_dot psi2_dot]

```
Sys_mat = [0 0 1 0;...
           0 0 0 1;...
           -(C-B)*Omega^2/A    0  0  -(C-B-A)*Omega/A;...
           0  -4*(C-A)*Omega^2/B  -(B+A-C)*Omega/B  0];

e = eig(Sys_mat);
w1 = imag(e(1))
w2 = imag(e(3))
w3
```

```
w1 =

     6.579426254356058e-04


w2 =

   0.002240238490951


w3 =

   0.001836821818276
```

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