 

Sneyd Model

%% Varriable constants

malpha = 0; % Ip3 Dynamics turned off.

mdelta = 1; % Delta is 0 means it is a closed cell model

%% Constants

K\_a = 0.227;

K\_p = 0.3;

K\_s = 0.1;

K\_pm = 0.12;

K\_PLC = 0.16;

K\_i = 0.1;

K\_IPR = 2;

K = 2.13e-5;

V\_s = 0.9;

V\_pm = 0.01;

V\_PLC = 2;

V\_deg = 0.66;

mgamma = 0.185;

tou\_h = 12.5;

v\_0 = 0.004; %%%%%%%%% RUA EDIT

v\_1 = mbeta\*0.004;%\*0 + 0.045;

%% Calculations

c\_e = (Ct-C)/mgamma;

h\_inf = (K\_i.^2./(K\_i.^2 + C.^2));

%% Fluxes

J\_ipr = K\_IPR\*(C.^3./(K\_a^3 + C.^3)).\*(P.^2./(K\_p^2 + P.^2)).\*H;

J\_serca = V\_s\* (C.^2 - K\*c\_e.^2)./(K\_s^2+C.^2);

J\_in = v\_0+v\_1.\*P ;

J\_pm = V\_pm\*(C.^2./(K\_pm^2+C.^2));

%% Differential Equations

L\_C = (c\_e-C).\*J\_ipr - J\_serca + mdelta\*(J\_in - J\_pm);

L\_Ct = mdelta\*(J\_in - J\_pm);

L\_P = V\_PLC\*((1-malpha)\*K\_PLC^2 + C.^2)./(K\_PLC^2 + C.^2) - V\_deg\*P;

% L\_H = (1/tou\_h).\*(h\_inf-H)./(h\_inf);

L\_H = (1/tou\_h).\*(h\_inf-H);