

**ALL YOU WANT TO KNOW ABOUT HEART VI1-
VOLUME 2 EDITION 2016-Extrait**

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A Program elearning cardiac simulator with Matlab by NDao

For escardio community-repertoire escardio-scam sa france

ISBN :979-10-90848- 17-7

ISBN :9782952865319

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Plan Tutorial Transmission 2017- à 2020

PRESENTATION

When I am accepted member WG11 of Escardio, European Society of cardiology I have plan to make buzz about my cardiac simulator with Matlab R2007a. What is a cardiac simulator? A serial connexions of 3 relaxation oscillators, the Sinus S, the Atrial A and the Ventricular V and behind the delay of His. Each modele VI1, VI1-S, VI1-A, VI1-V are stimulated by a sinusoidal current with amplitude $A_s=1$, $A_a=1$, and $A_v=1$, and cardiac frequencies, F_s , F_a , and F_v .

The heart VI1 has 52 parameters. I set investigation varying the stimulated cardiac frequency and responses signals cases $(W_s, 0, 0)$ only W_s get variation, $(0, W_a, 0)$, $(0, 0, W_v)$, $(W_s, W_a, 0)$, $(W_s, 0, W_v)$, $(0, W_a, W_v)$, (W_s, W_a, W_v) varying

The 3 stimulated electrical current at S, A and V.

Le signal V_s sinus est vert, et le signal oreille V_a est rouge, Et le signal ventricule est bleu. Mes remerciements Pr Bara Ibrahima Diop, Pr Moustapha Sarr, Pr Fallou Cisse, Pr Samb, Pr lamine gueye et Dr gora seck de leur accueil 1997 CES Cardio hopital Dantec dakar.

CHAPTER 1

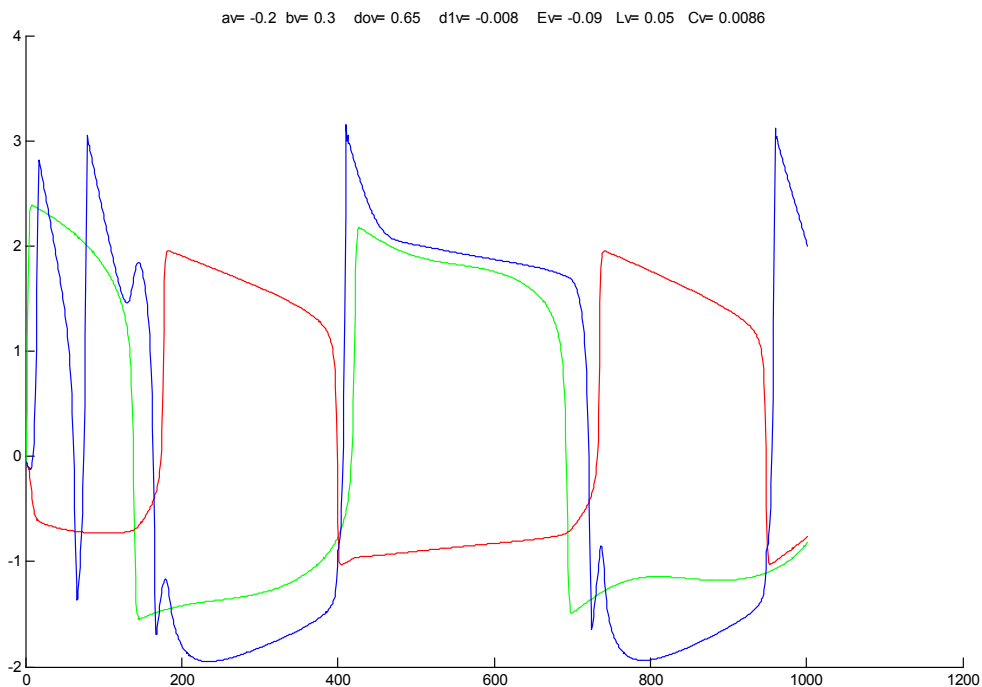
CASE (Ws,0,0) only Sinus S give variation-eSimulation

1-1-Fs=0.1 Hz Fa=0 Fv= 0 Aa=Av=0

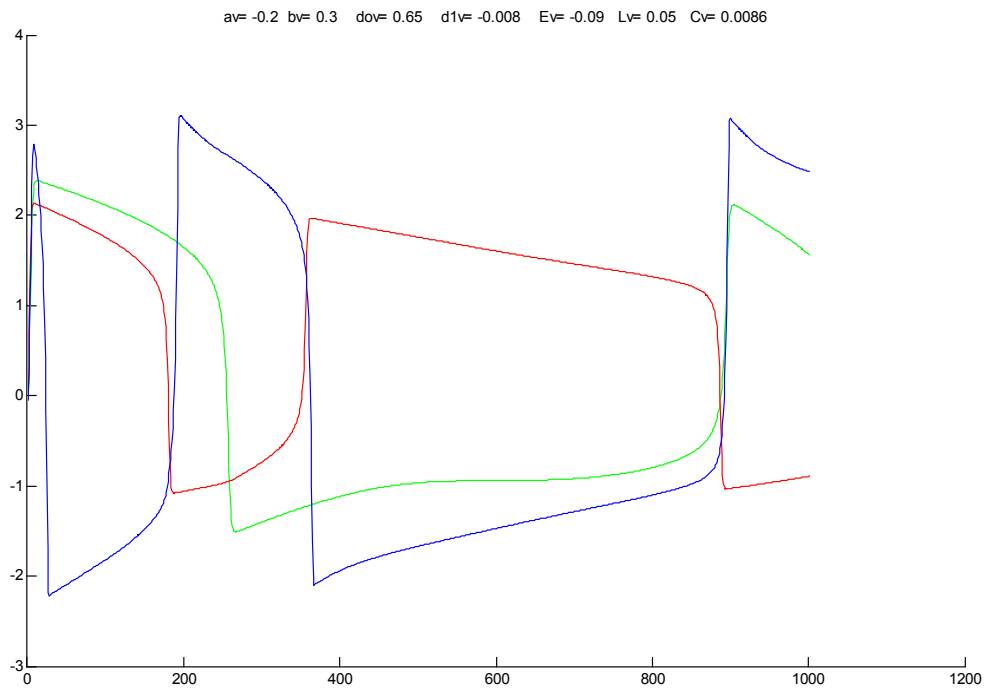
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aa=-0.6;ba=0.8;doa=0.65;d1a=0.0008;Ea=-90e-3;Ra=0.4;La=600e-3;Ca=7600e-6;
av=-0.2;bv=0.3;dov=0.65;d1v=-0.008;Ev=-90e-3;Rv=0.4;Lv=50e-3;Cv=8600e-6;
Ksa=0.5;Kav=0.5;T1=1e-3;Th=2e-3;Ios=0;Ioa=0;Iov=0;As=1;K=3.14/3;Fs=0.3;Aa=0;Fa=0;Av=0;Fv=0;
% INITIAL CONDITIONS
Vs(1)=-0.05;I1s(1)=-0.0096;Va(1)=-0.05;I1a(1)=-0.0096;Vh(1)=-0.05;Vv(1)=-0.05;I1v(1)=-0.0096;
%TIME COMPUTING AND STEP
```

Signal Vs(t) sinus vert,signal oreillte Va(t) est rouge et signal Vv(t)

bleu.



1-2- $F_s=0.2$ Hz $F_a=F_v=0$

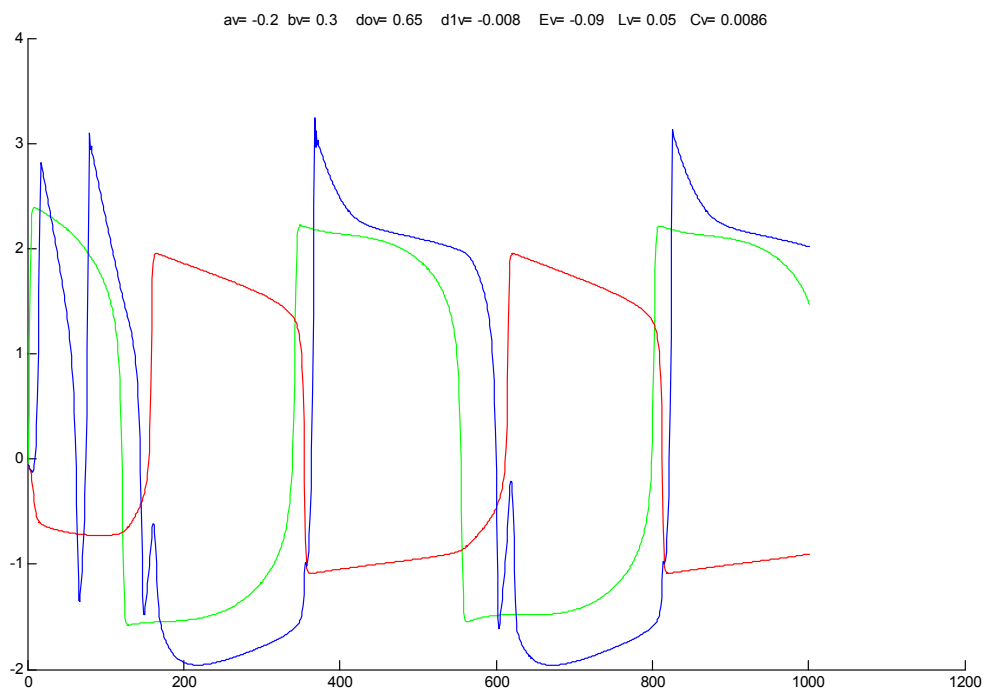


1-3- $F_s=0.4$ HZ

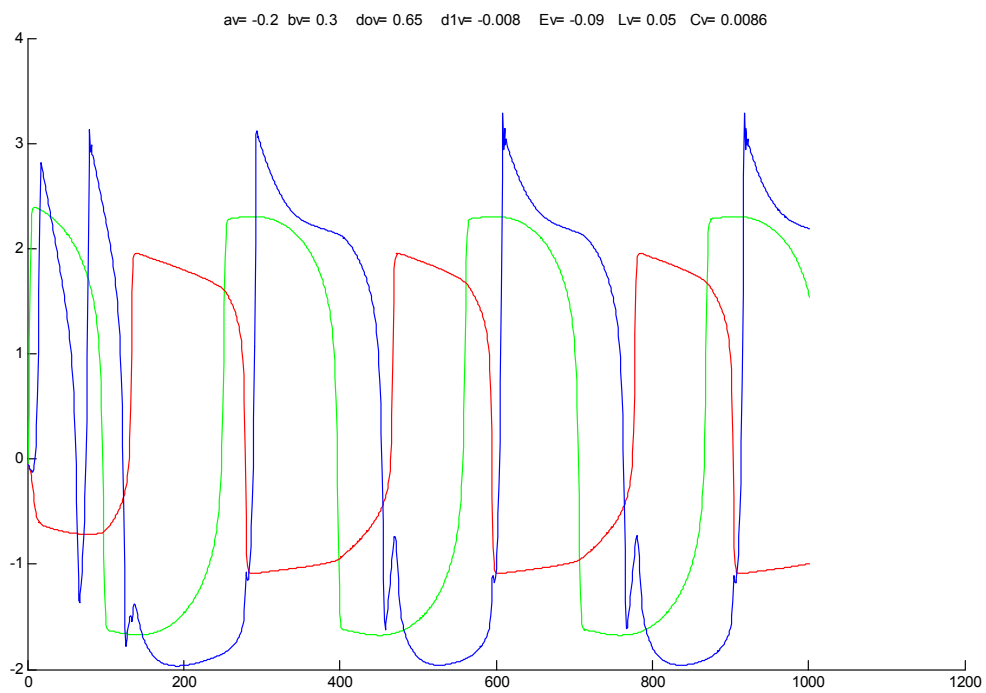
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aa=-0.6;ba=0.8;doa=0.65;d1a=0.0008;Ea=-90e-3;Ra=0.4;La=600e-3;Ca=7600e-6;
av=-0.2;bv=0.3;dov=0.65;d1v=-0.008;Ev=-90e-3;Rv=0.4;Lv=50e-3;Cv=8600e-6;
Ksa=0.5;Kav=0.5;T1=1e-3;Th=2e-
3;Ios=0;Ioa=0;Iov=0;As=1;K=3.14/3;Fs=0.4;Aa=0;Fa=0;Av=0;Fv=0;
% INITIAL CONDITIONS
Vs(1)=-0.05;I1s(1)=-0.0096;Va(1)=-0.05;I1a(1)=-0.0096;Vh(1)=-0.05;Vv(1)=-
0.05;I1v(1)=-0.0096;

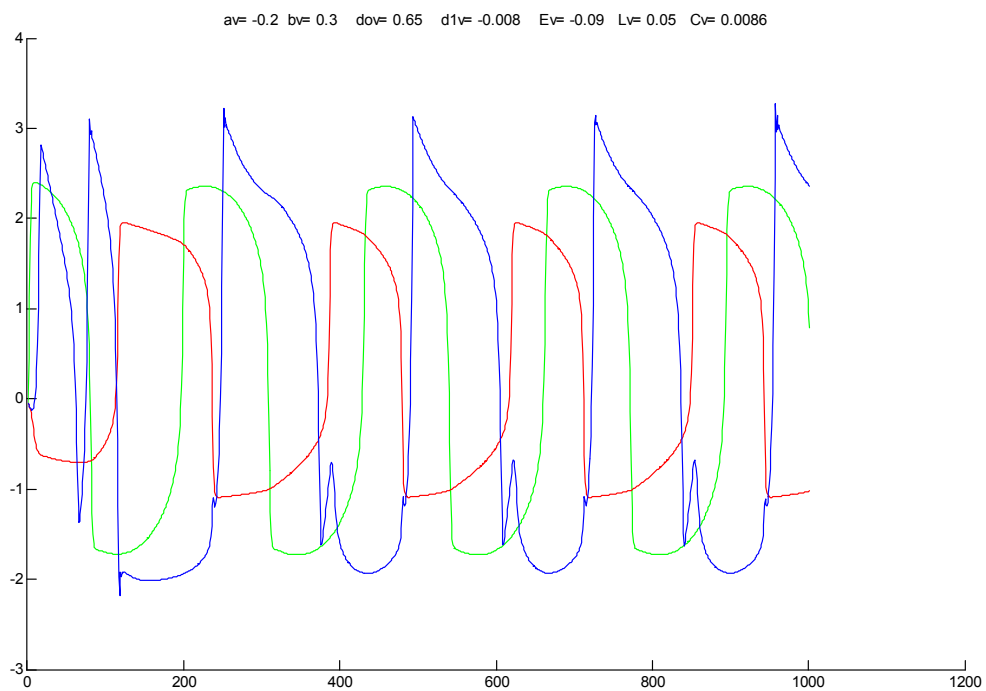
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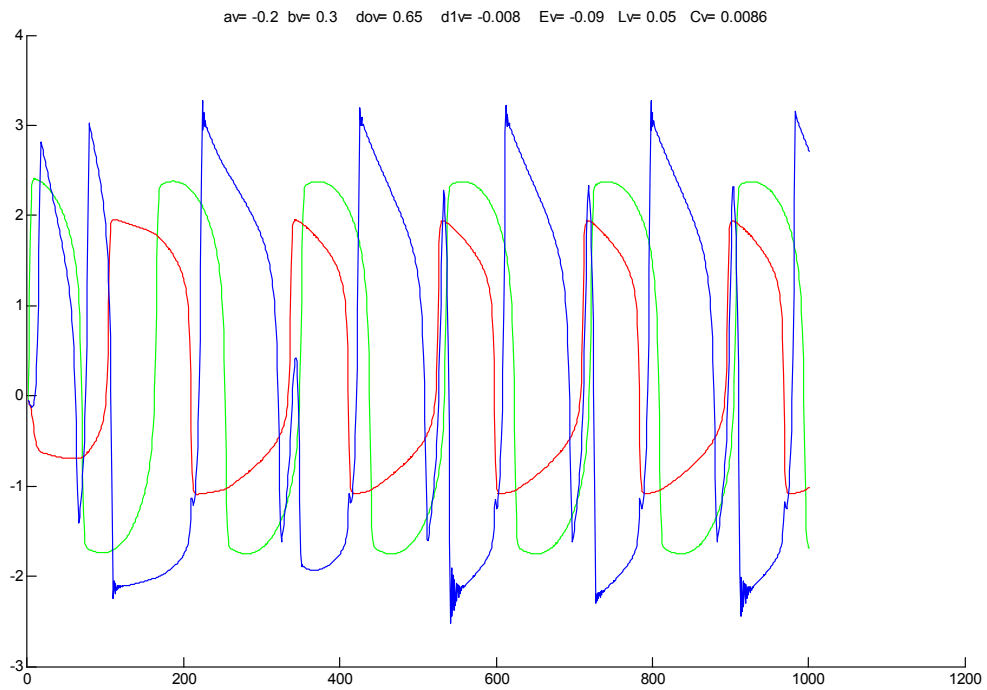
1-4-Fs=0.6



1-6-Fs=0.8

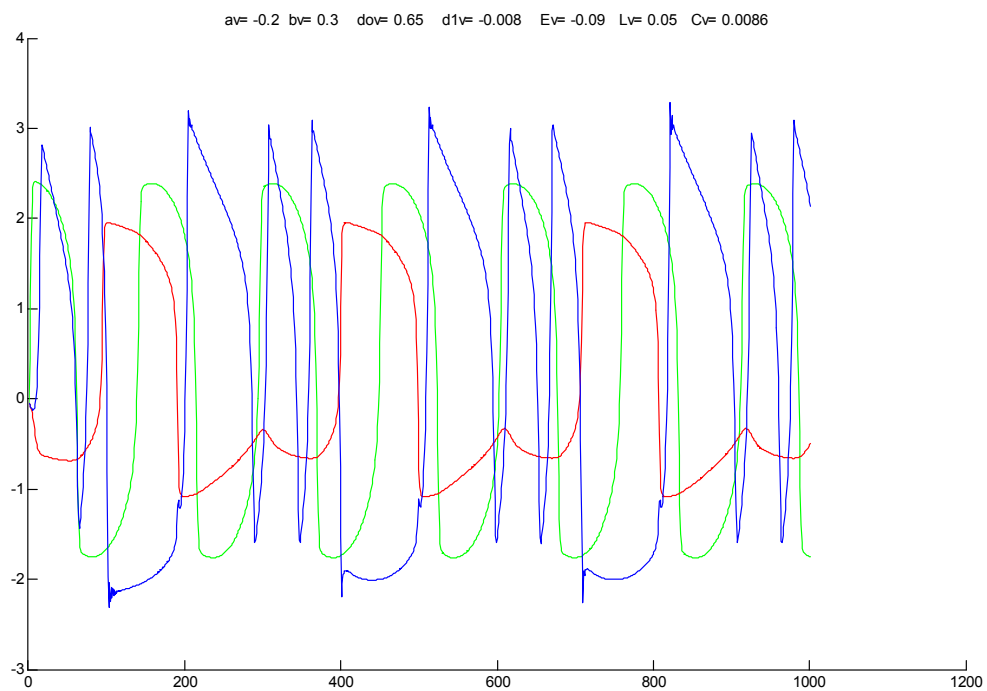


1-7-Fs=1

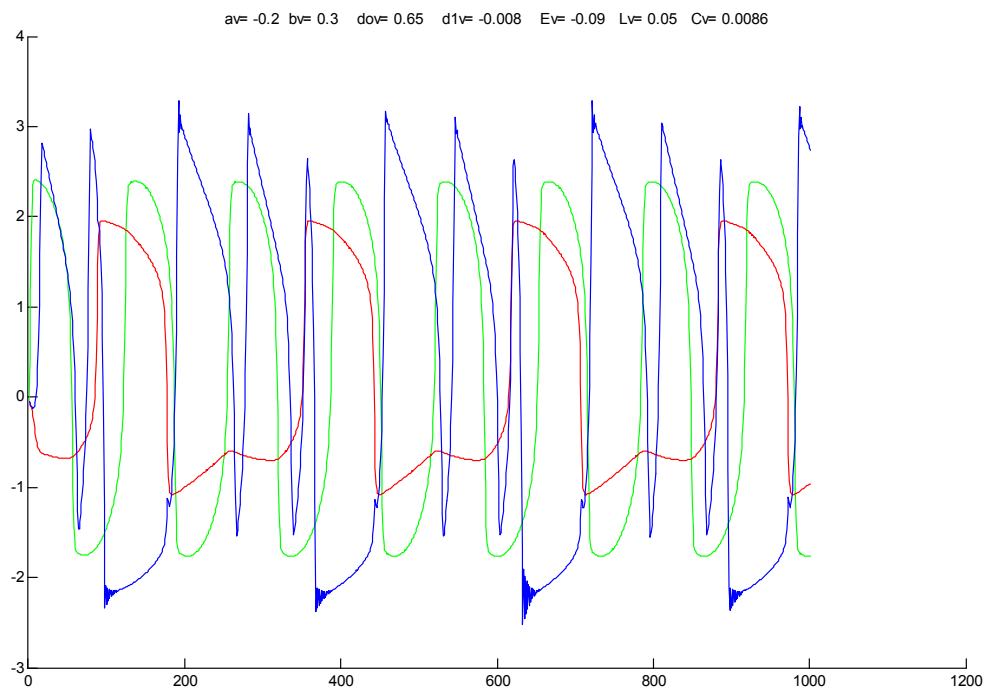


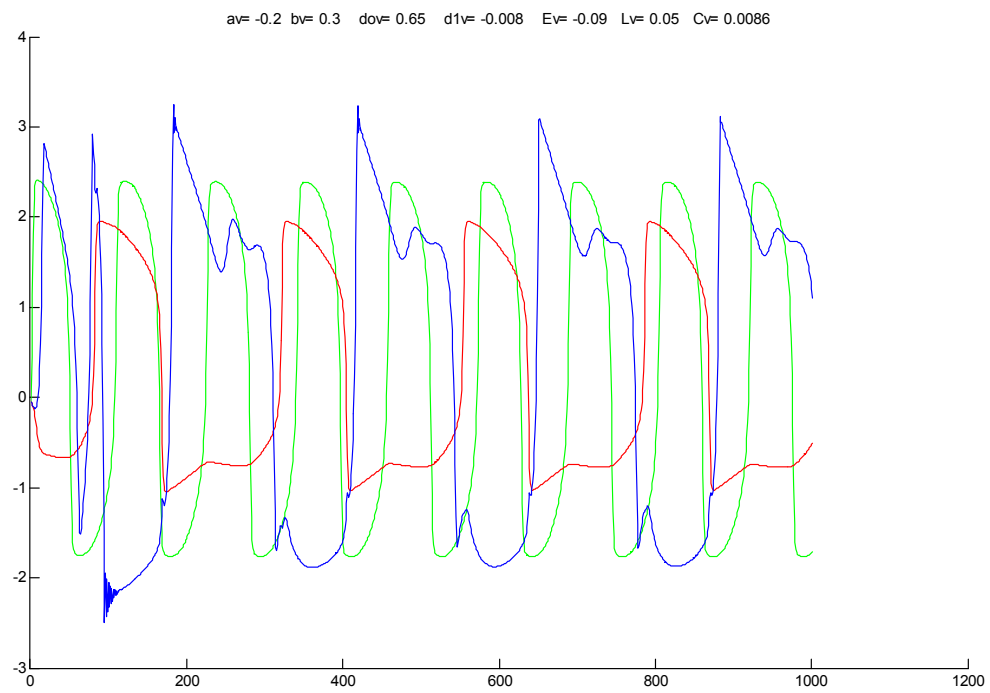
A begger mini activites.

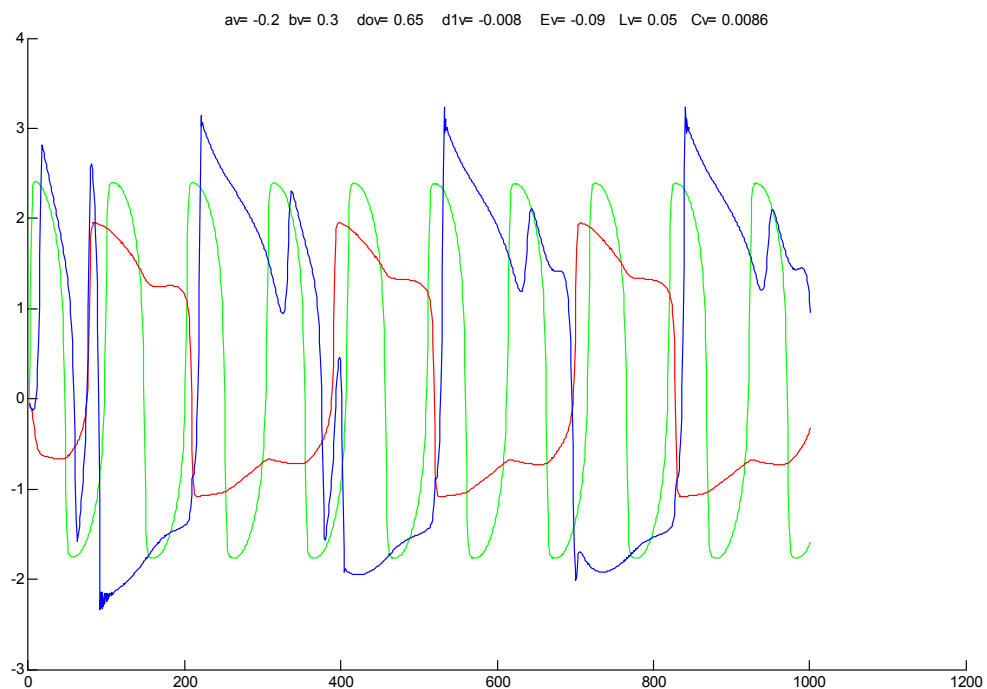
1-8-Fs=1.2 Hz



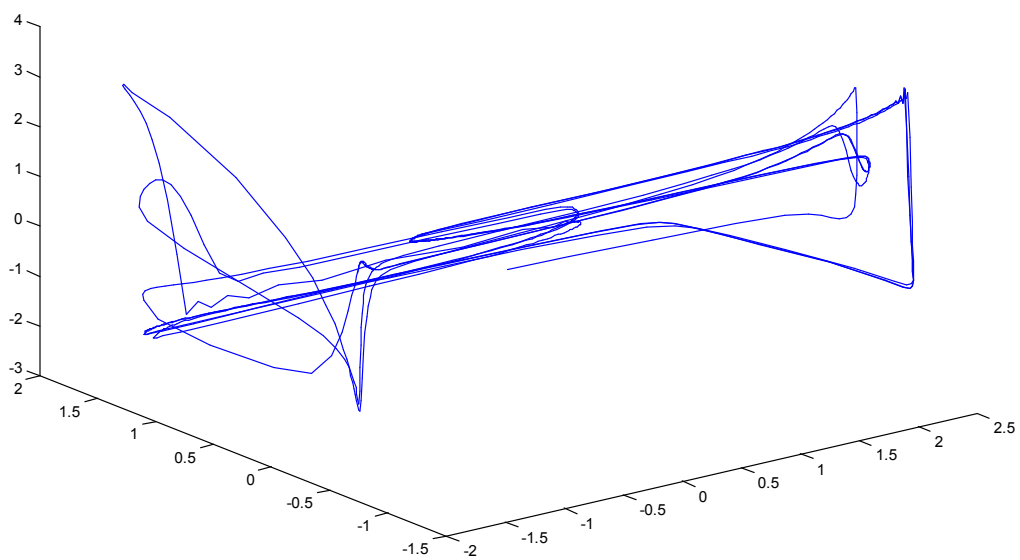
1-9- $F_s=1.4$ Hz Troubles de Rythme Ventriculaire



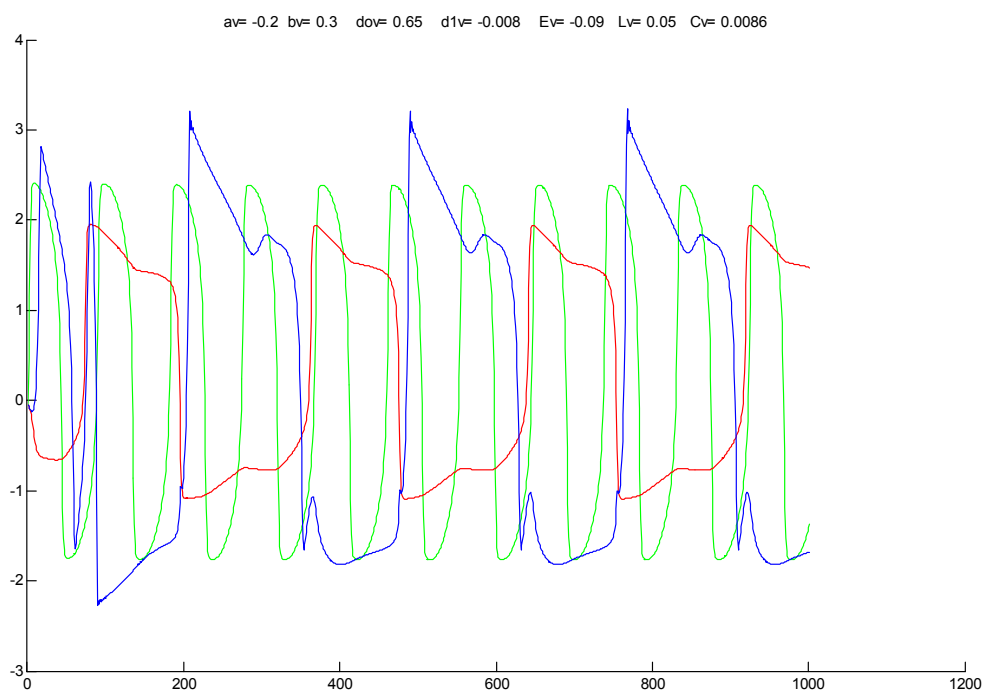
1-10-Fs=1.6 Hz**1-11-Fs= 1.8 Hz**



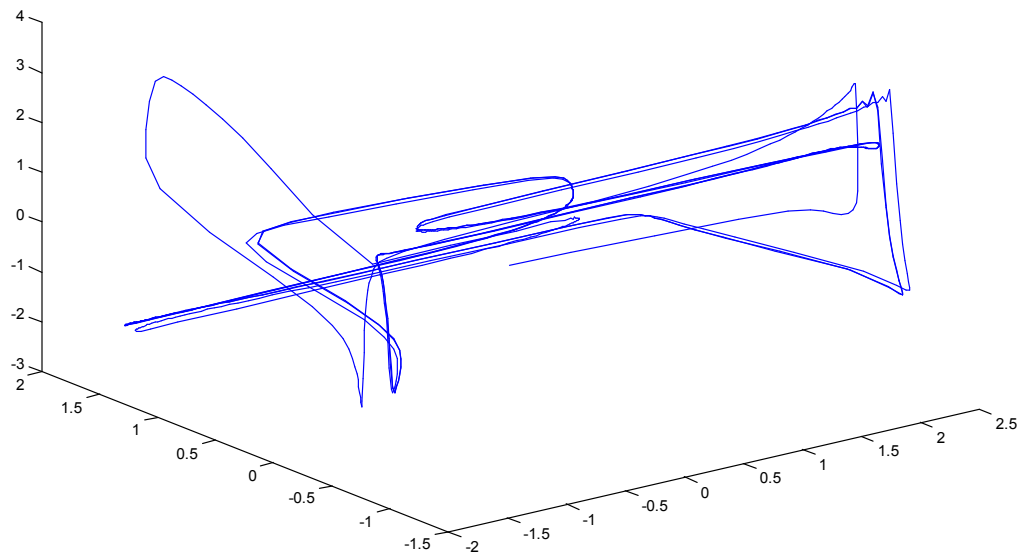
We observe the basin attractor (Vs,Va,Vv) with plot3(Vs,Va,Vv)



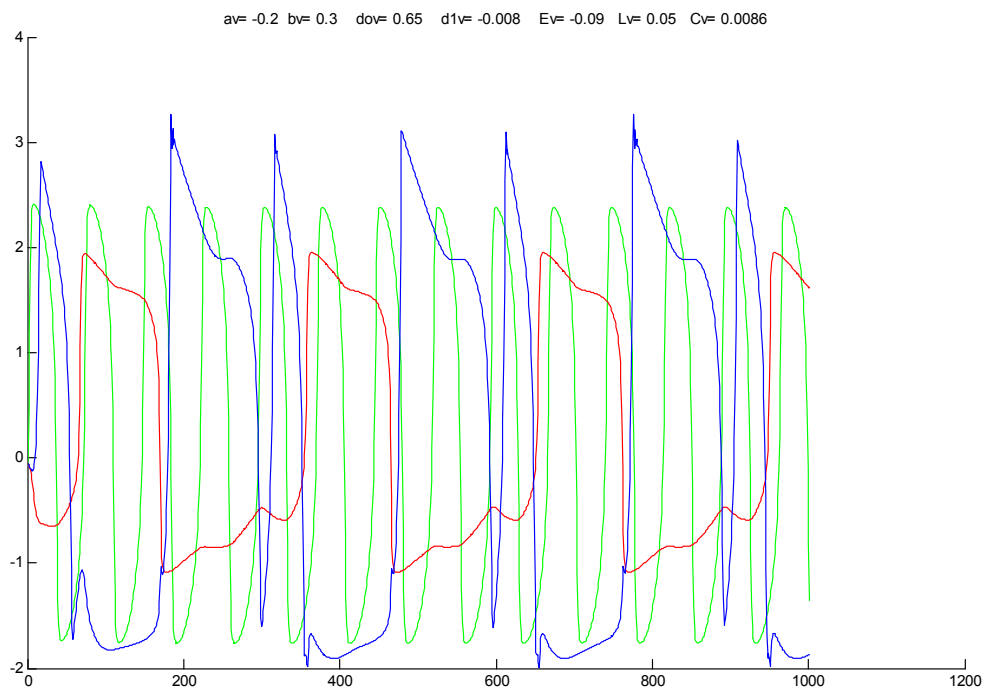
1-12-Fs = 2Hz

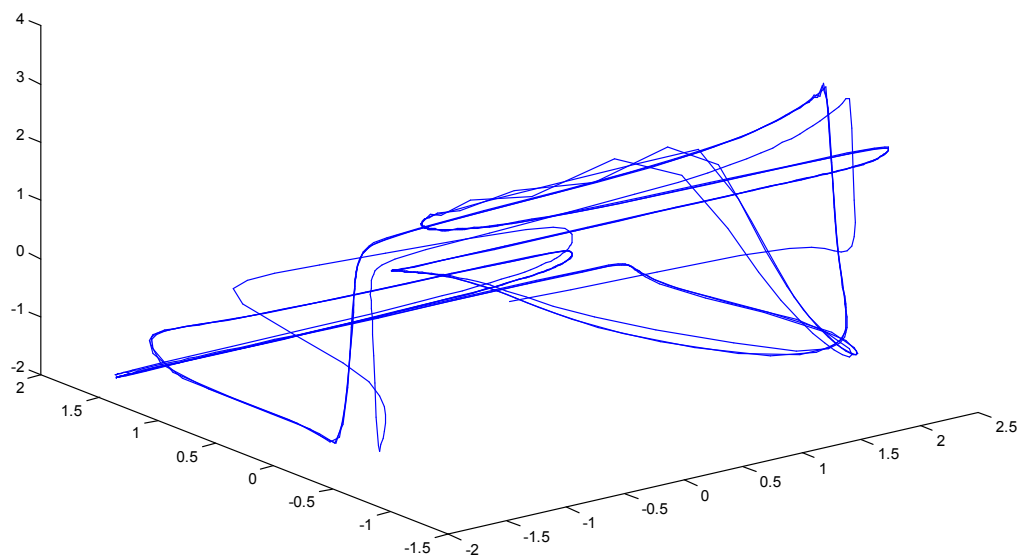


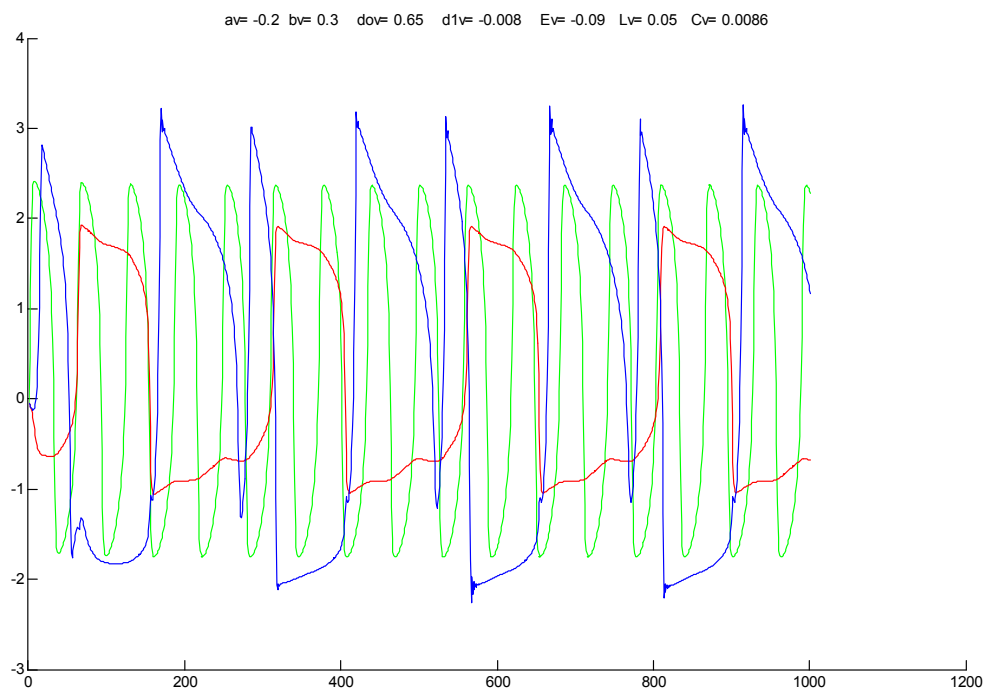
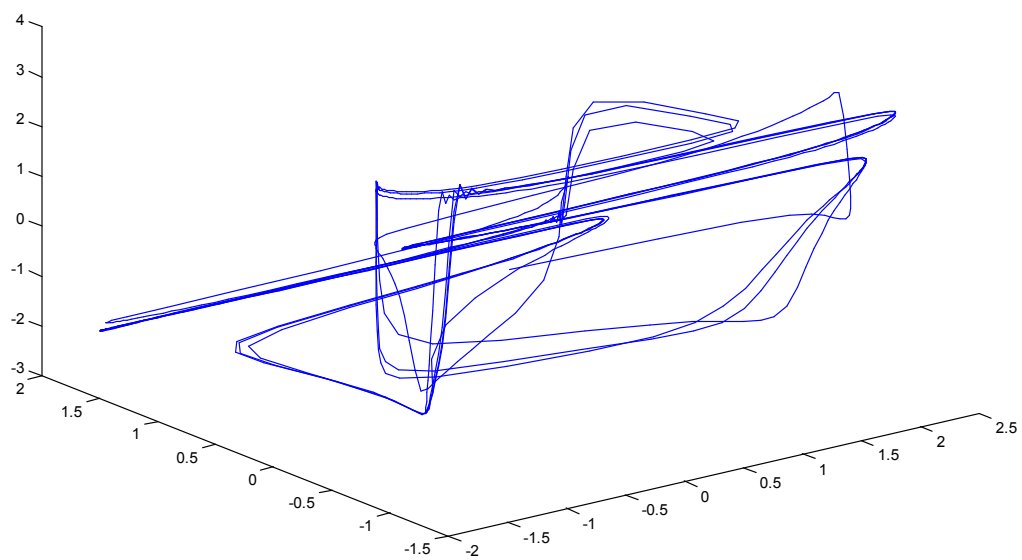
Plot3(Vs,Va,Vv) investigation Chao signal

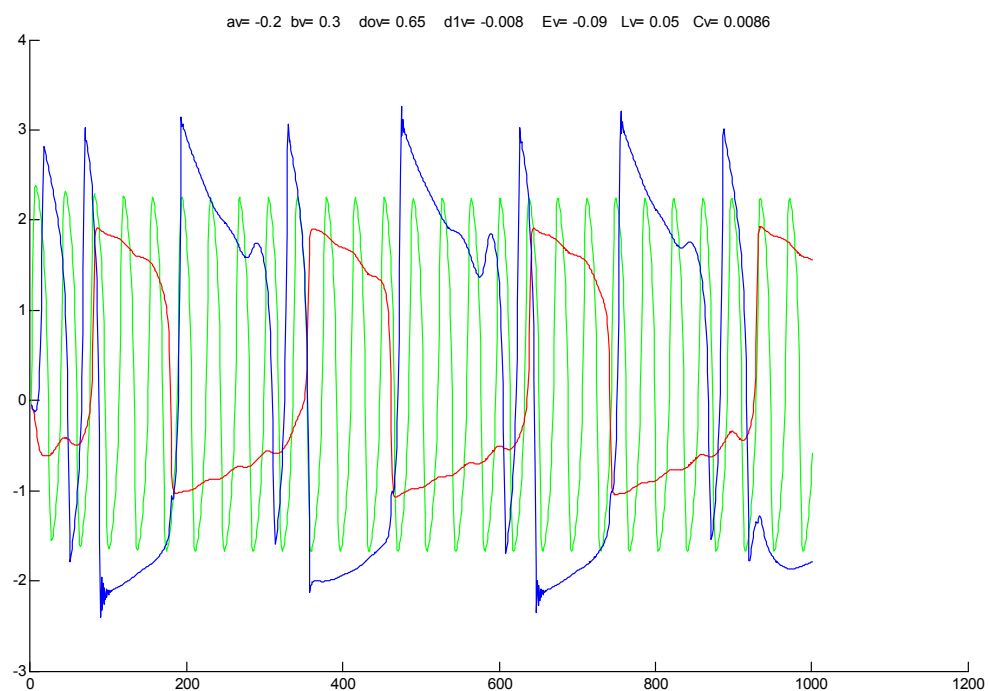
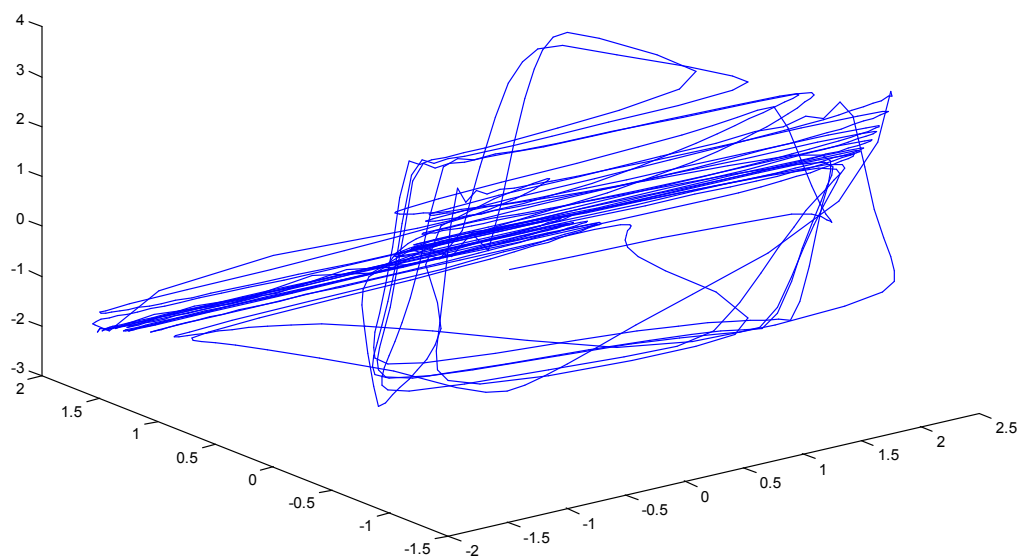


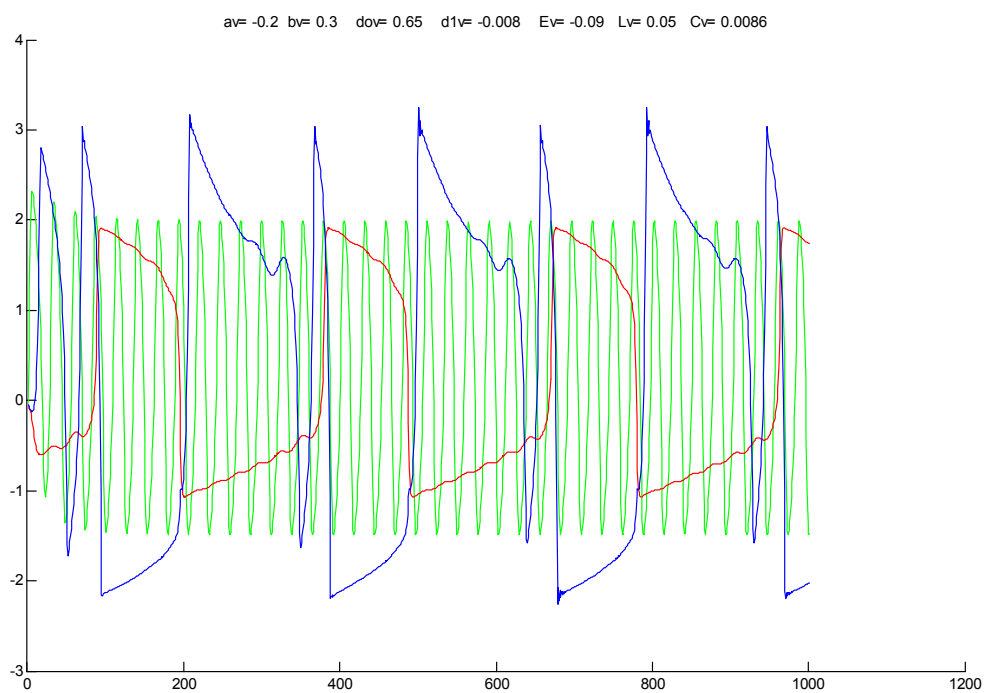
1-13-Fs= 2.5 HZ

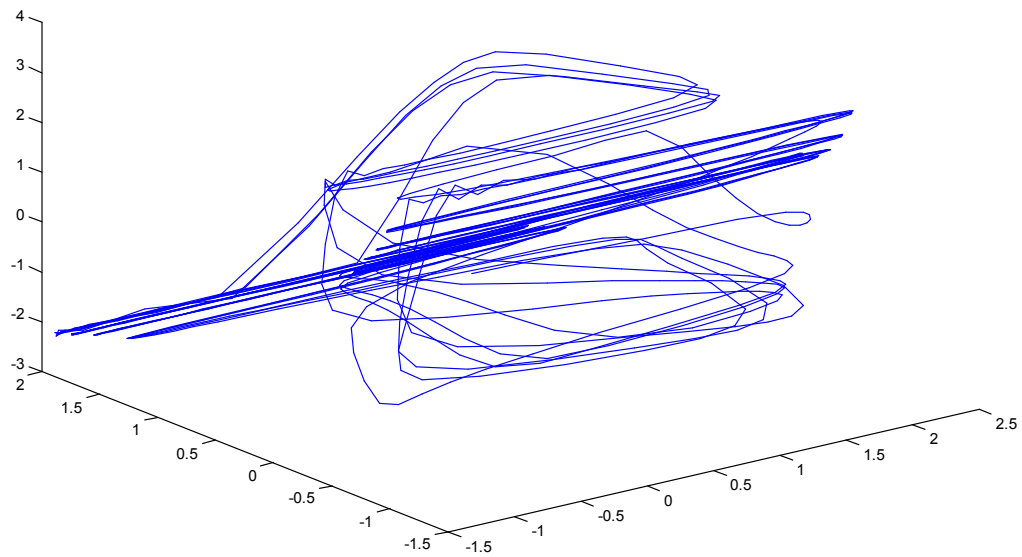


Plot3(Vs,Va,Vv)**1-14-Fs= 3Hz**

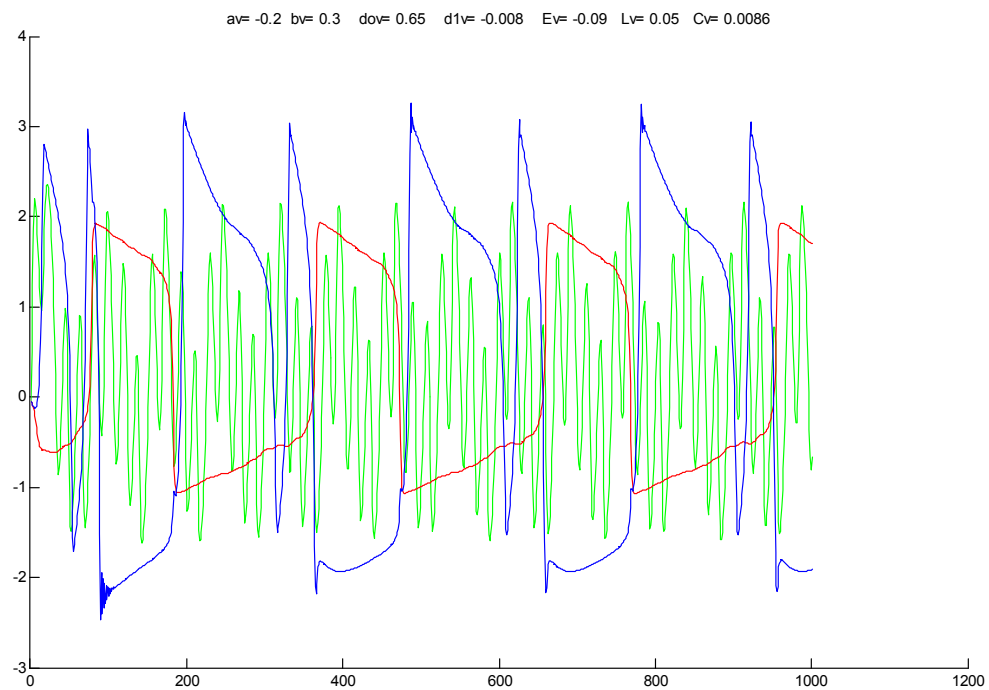
**Plot3(Vs,Va,Vv)**

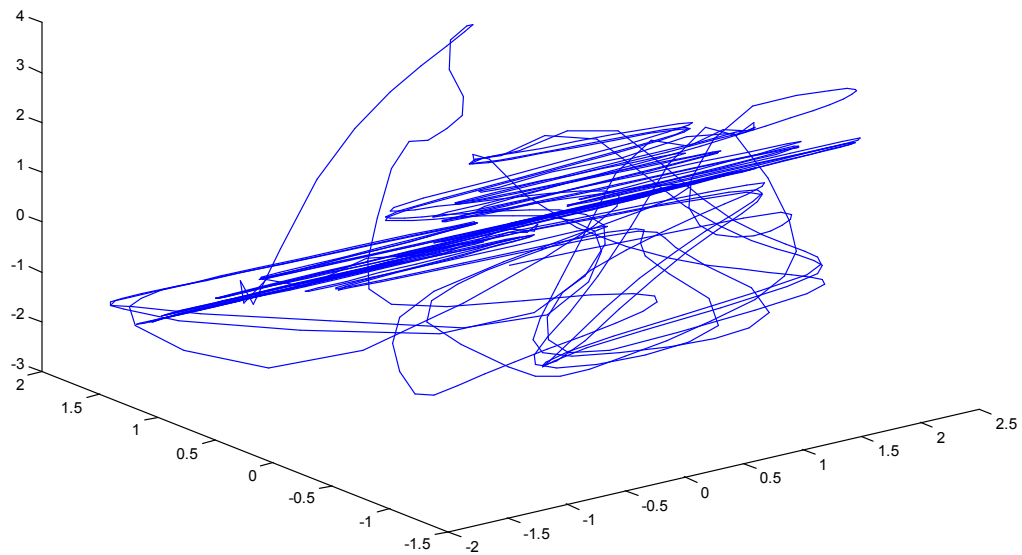
1-15-Fs = 5Hz**Plot3(Vs,Va,Vv) thanks Bill Copy/Coler**

1-16-Fs = 7 Hz**Plot3(Vs,Va,Vv)**



1-17-Fs= 10 Hz



Plot3(Vs,Va,Vv)

CHAPTER 2

Investigation (0,Fa,0)

2-1- Fa = 0.1 Hz As=Av=0

Stimulation Electrique Auriculaire

