MS328 Assignment7

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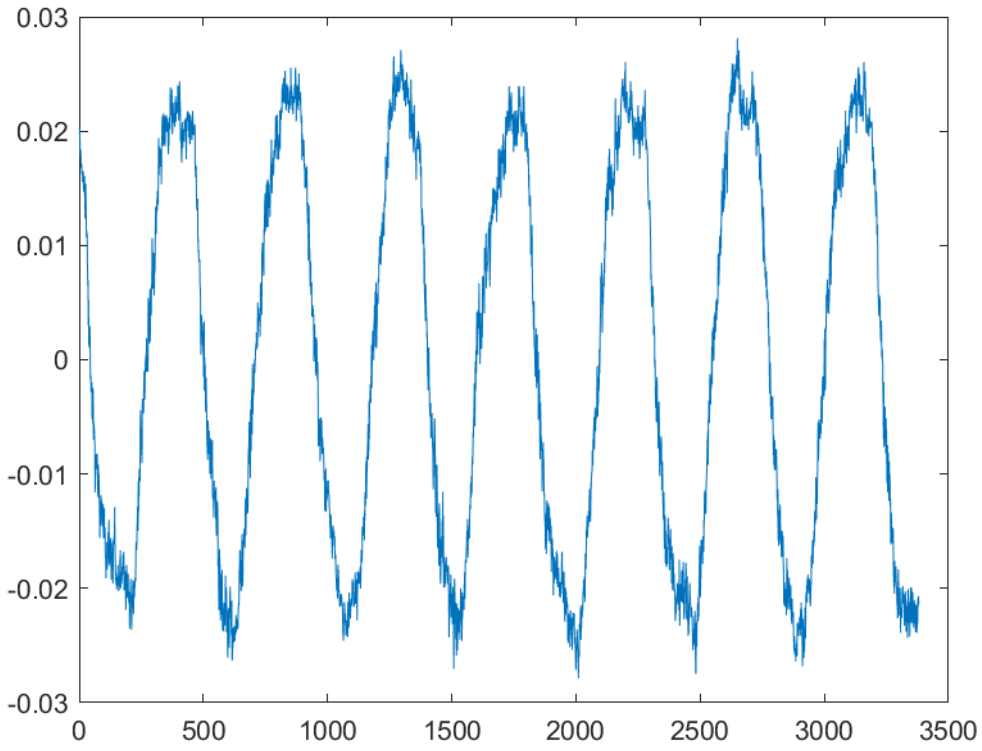
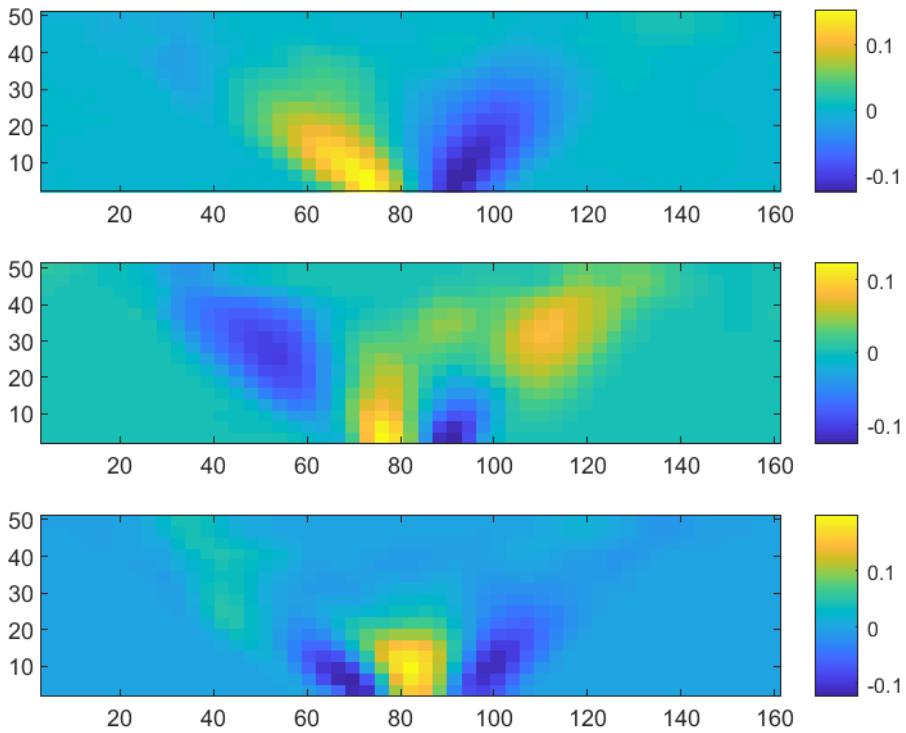
```
%% 减去时间平均场
M = mean(Full_matrix,2);
M1 = repmat(M,1,3380);
Normal_Full = Full_matrix - M;
D = mean(Normal_Full,2);
%% PCA 分解
[u,s,v] = svd(Normal_Full);
%% 画第一个模态的时间曲线
h1 = figure;
plot(v(:,1))
saveas(h1,'a1.png')
```



第一个模态系数的时间变化曲线

```
%% 作 2 维图，使用了 imagesc 代替 scatter 美化图表
Imp_data= importdata(New_data_files(1).name);
Instant_data= Imp_data.data;
x = Instant_data(:,1);
y = Instant_data(:,2);
h = figure;
% subplot(3,1,1), scatter(x,y,50,u(:,1),'filled')
u11= zeros(16,51);
for i=1:16
    u11(i,:) = u(i*51-50:i*51,1);
end
subplot(3,1,1), imagesc(Sample_data(1:51,1),Sample_data(1:51:816,2),u11);
set(gca,'YDir','normal')
colorbar

……
```



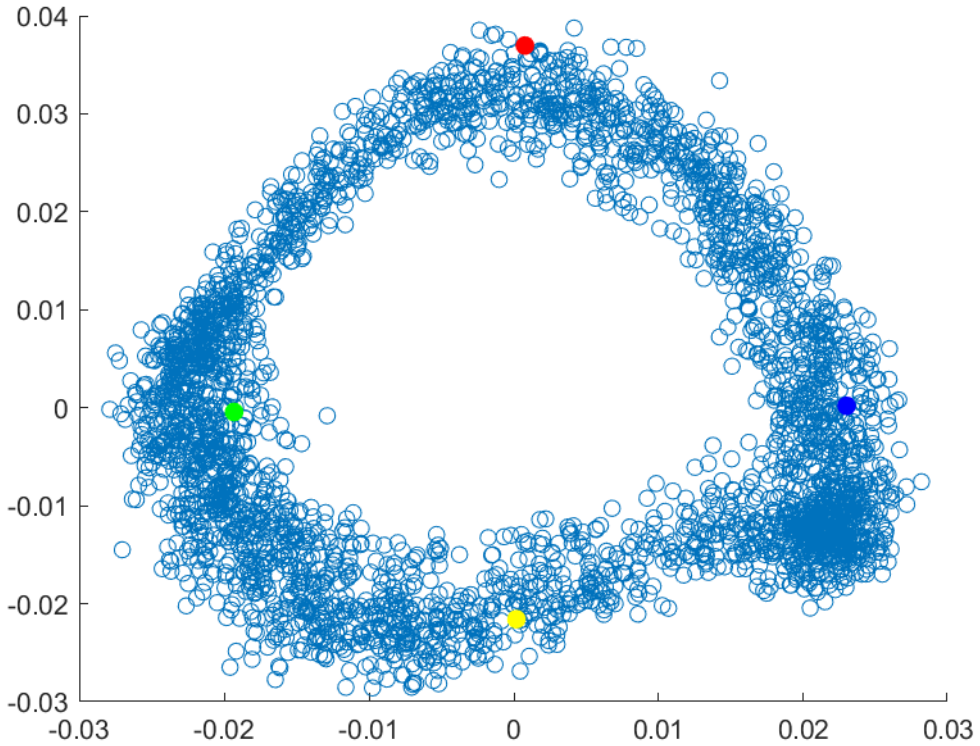
第一、二、三个模态的 2 维图

```
%% 相位散点图
h2 = figure;
scatter(v(:,1),v(:,2));
hold on;

u2 = u(:,1:2);
s2 = s(1:2,1:2);
v2 = v(1:2,:);

Imp_data1 = importdata('D:\Documents\MATLAB\New-data\sss-No-1.dat');
Imp_data1 = Imp_data1.data;
Imp_data1 = Imp_data1(:,7) - M;
Imp_data1_Proj = pinv(s2)*u2'*Imp_data1;
scatter(Imp_data1_Proj(1),Imp_data1_Proj(2),50,'g','filled')

……
```



4 个未知数据的相位

1：绿，2：红，3：蓝，4：黄