function [P,T, LATENT,A,Jth\_T2,Jth\_SPE]=DPCA\_nomal(X,Y)

% clc

% clear all

% data=xlsread('nomal\_data.xlsx');

% Y=data(17,:);

% X=data(1:50,:);

%求均值

Y\_mean=mean(Y,2);

X\_mean=mean(X,2);

%求标准差

Y\_std = std(Y,0,2);

X\_std = std(X,0,2);

%数据标准化

[mY,nY]=size(Y);

[mX,nX]=size(X);

Y=(Y - repmat(Y\_mean,1,nY))./repmat(Y\_std,1,nY);

X=(X - repmat(X\_mean,1,nX))./repmat(X\_std,1,nX);

Y=transpose(Y);

X=transpose(X);

for i= 2:nX-10

xf(1:mX) = X(i,:);

xf(mX+1:2\*mX) = X(i+1,:);

xf(2\*mX+1:3\*mX) = X(i+2,:);

xf(3\*mX+1:4\*mX) = X(i+3,:);

xf(4\*mX+1:5\*mX) = X(i+4,:);

Z(i-1,:) = xf;

end

[nZ,mZ]=size(Z);

[COEFF, SCORE, LATENT] = pca(Z);

P=COEFF;

T= SCORE;

per=0.85;

A=0;

for i=1:mZ

cpv(i)=sum(LATENT(1:i))/sum(LATENT); %前A个主元的累计贡献率公式

if cpv(i)>=per

A=i;

break

end

end

%计算控制限

m=mZ;

n=nZ;

alpha=0.95;%置信水平

theta1=sum(LATENT(A+1:m));

theta2=sum(LATENT(A+1:m).^2);

theta3=sum(LATENT(A+1:m).^3);

h0=1-2\*theta1\*theta3/(3\*theta1^2);

ca= norminv(alpha,0,1);

Jth\_T2=A\*(n^2-1)\*finv(alpha,A,n-A)/(n\*(n-A));

Jth\_SPE=theta1\*(ca\*sqrt(2\*theta2\*h0^2)/theta1+1+theta2\*h0\*(h0-1)/theta1^2)^(1/h0);