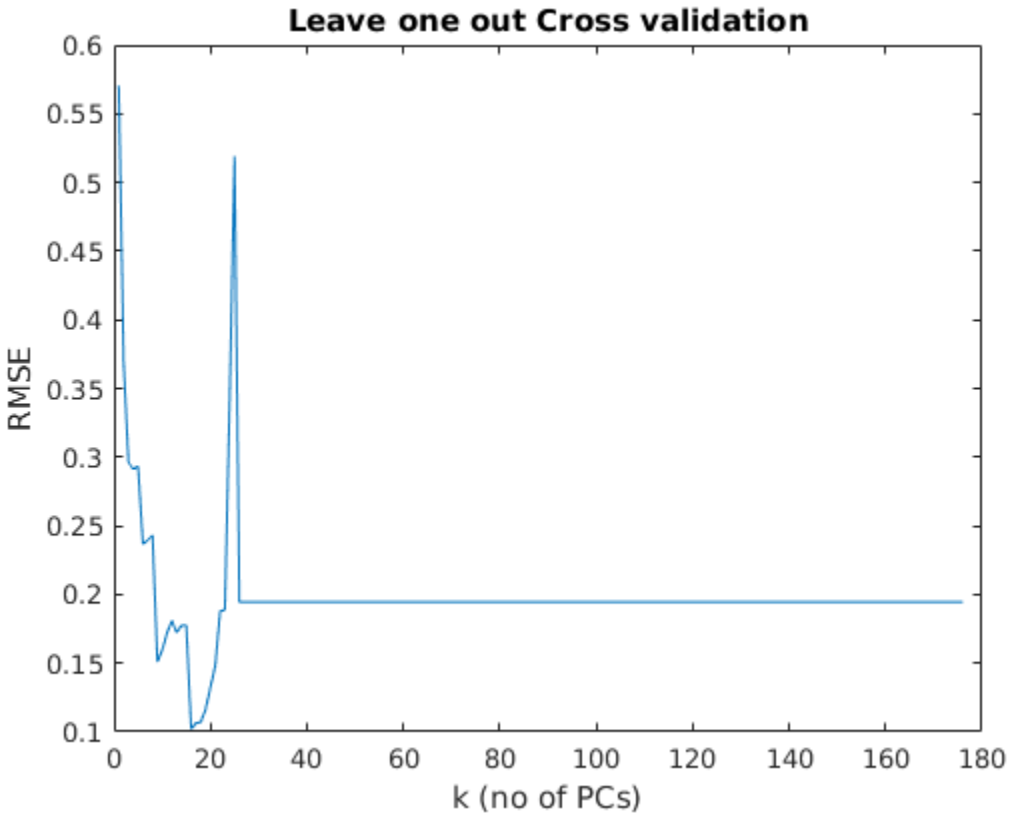
```
clear all; close all; clc
load('Inorfull.mat')

for i=1:26
DATA1(i,:)=DATA(5*(i-1)+1,:);          % select 1st of each blocks
CONC1(i,:)=CONC(5*(i-1)+1,:);          % select 1st of each blocks
end
Z=DATA1';                              % data matrix 176x26
[u,s,v]=svd(Z);                        % svd

for k=1:176
    RMSE(k)=0;

    for i=1:26
    s1=s(1:k,:);                       % kx26
    u1=u(:,1:k);                       % 26xk
    T=s1*v';                           % kx26
    T1=T;
    T1(:,i)=[];                        % leave ith score out kx25

    conc=CONC1;
    conc(i,:)=[] ;                       % leave ith conc out, 25x3
    P=[PureCo; PureCr; PureNi];
    Y=(P'*conc')';                          % dependent quantity of OLS
 regression (176x3)(3x25)=176x25
    B=T1'\Y;                % Regression matrix Y=T1'B 25x176=(25xk)
(kx176)

    c_p=T(:,i)'*B*P'*inv(P*P');        % predicted concentration

    RMSE(k)=RMSE(k)+norm(c_p-CONC1(i,:));

    end
end

[M,m]=min(RMSE);
fprintf('\n\n-------------------------------------------------------------
\n')
fprintf('\n Number of PCs is %d \n',m)
fprintf('\n RMSE=%d \n',M)
fprintf('\n-------------------------------------------------------------
\n')
plot([1:176],RMSE)
xlabel('k (no of PCs)')
ylabel('RMSE')
title('Leave one out Cross validation')
```

Number of PCs is 16

```
RMSE=1.019814e-01

------------------------------------------------------------
```



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