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CH18B020

CH5440 Assignment-3

Question 1

Part a)

Constraint model obtained:

```
Amat_actual =

   -4.4234   -5.9442    3.4148    2.4995   -1.4265
    4.8720    0.0921   -0.0826    0.0115   -4.8509
    0.3878    0.5297   -4.3309    3.7867    0.1845
```

Regression model obtained:

```
>> Areg

Areg =

   -0.0043    1.0146
    1.0000   -1.0003
    1.0043   -0.0127
```

True regression model:

```
>> Atrue_reg

Atrue_reg =

     0     1
     1    -1
     1     0
```

Maxdiff was found to be 0.0146.

Singular values: 372.3466, 8.1239, 1.3687, 1.0412, 0.3177

Part b)

Part c)

Part d)

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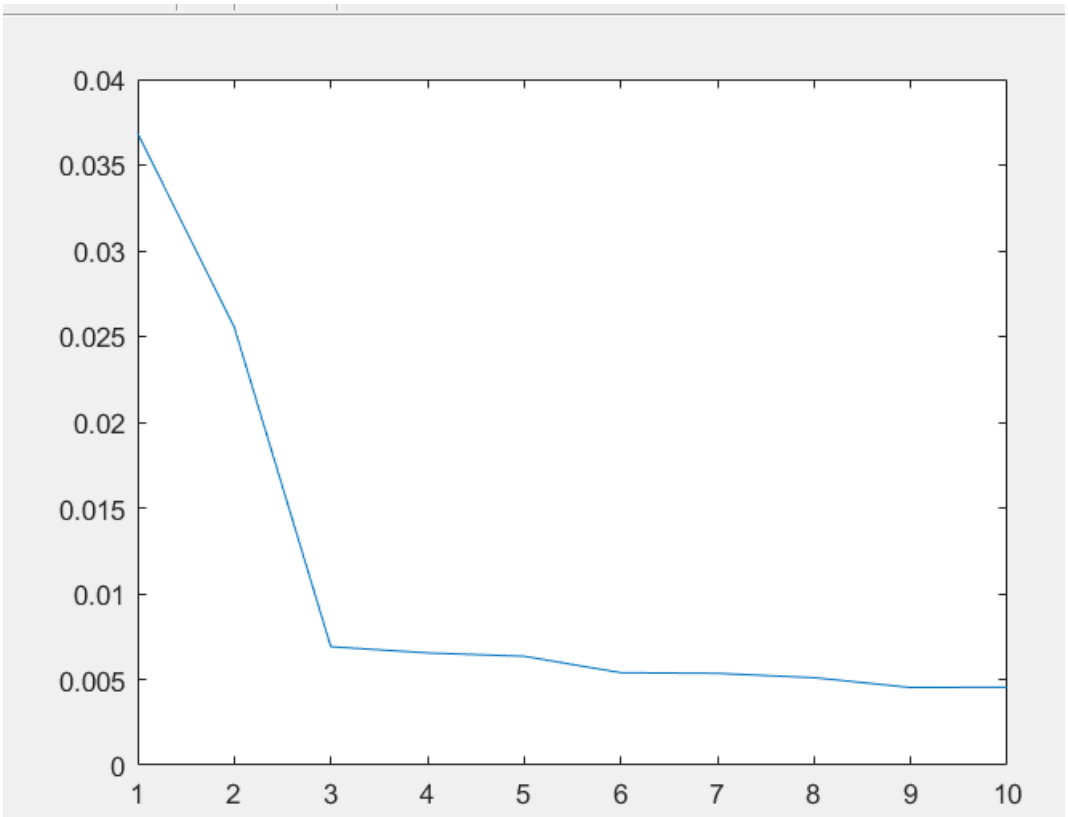
Question 2

Part a)



We can see the PRESS plot flattens after p = 3, so we pick 3 components for the final model.

Calibration model:

```
B =

   -0.0040   -0.0203   -0.0087
   -0.0029    0.0419   -0.0226
    0.0133   -0.0507   -0.0281
```

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Part b)

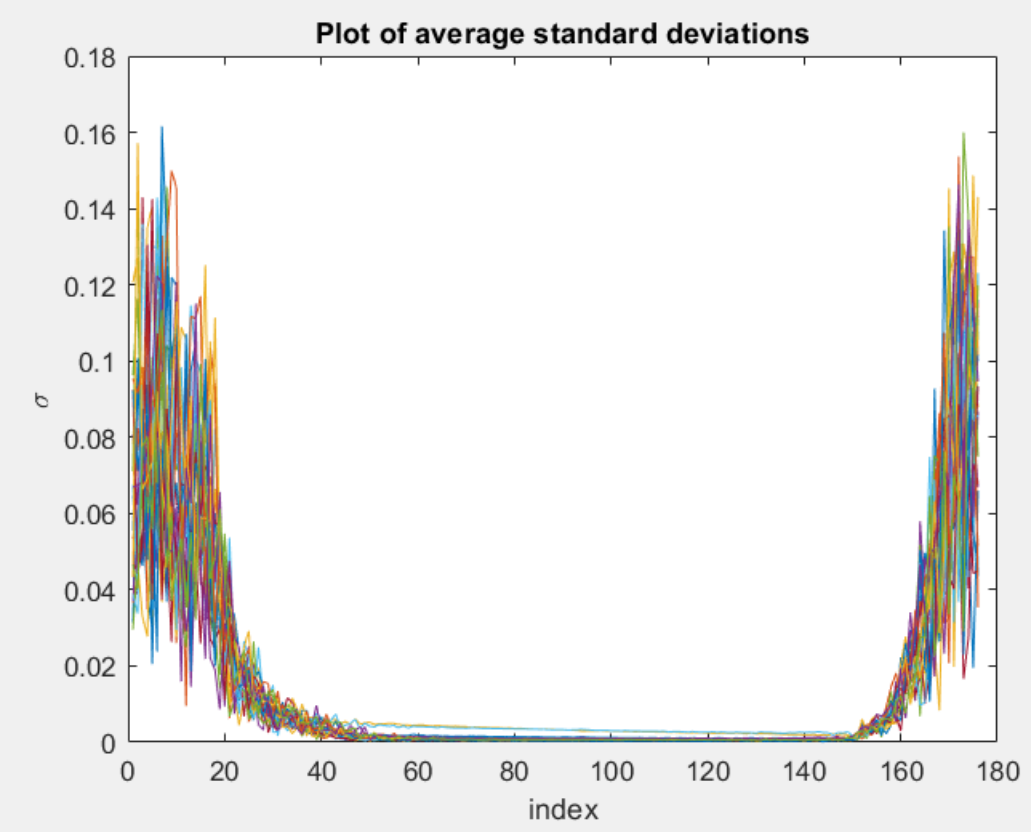
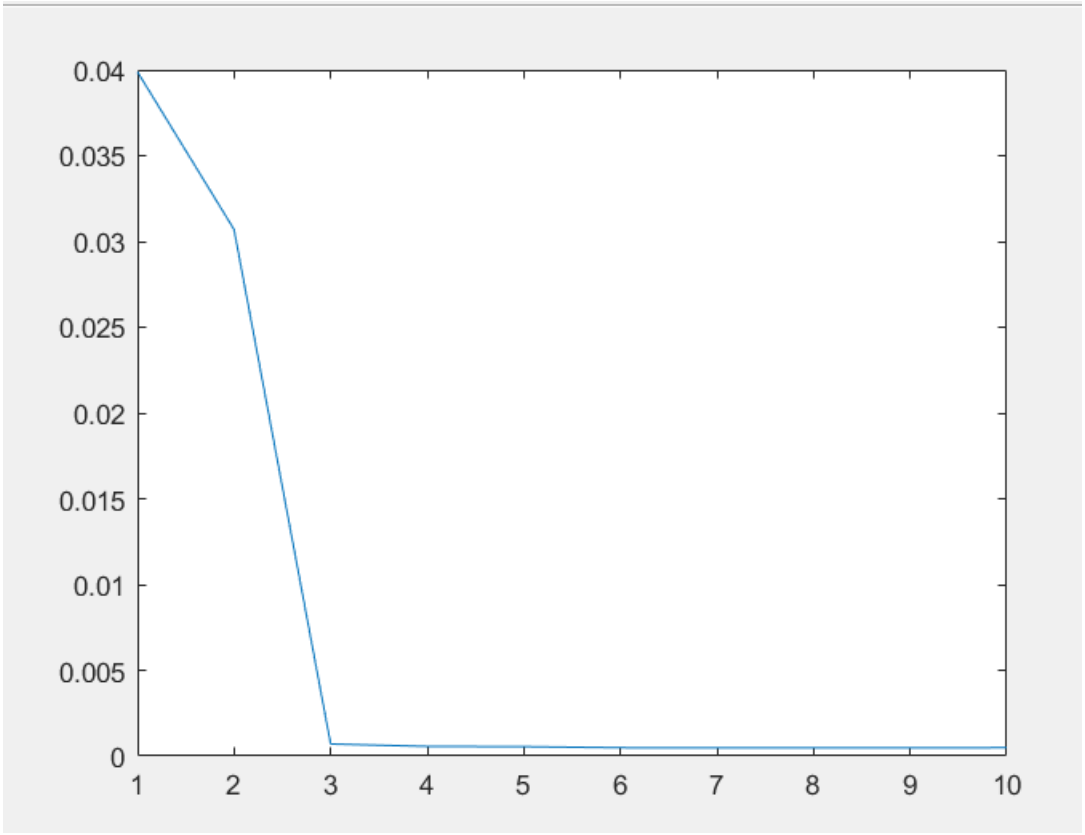


Figure: Plot of average standard deviations for each wavelength



Once more PRESS flattens after 3 components, so we choose 3 components for the final model

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Calibration model:

```
>> B2

B2 =

   1.0e-04 *

   -0.0491   -0.2327   -0.1068
    0.0196    0.4944   -0.2731
   -0.1340    0.8687    0.2526
```

Before this model is used, one should SCALE the input data using the standard deviations used to build this model.

Part c)

Part d)