PS 6

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github link: https://github.com/gretagoldberg/phys-ua210.git

1 Part A

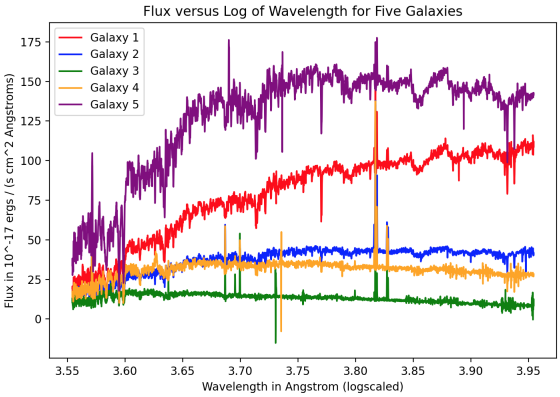

Figure 1: Original Five Galaxies

Taking into account the wavelength rescaling, we can recognize the Lymann series of hydrogen.

2 Part F

Can you think of reasons you might want to use SVD instead of constructing the covariance matrix and finding its eigenvectors? One may want to use SVD since it is more numerically stable. Also, you can get more information from SVD if you want to use the other matrices.

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The condition number for the residuals is 6561841.5
The condition number for the covariance matrix is 27040161792.0
```

3 Part H

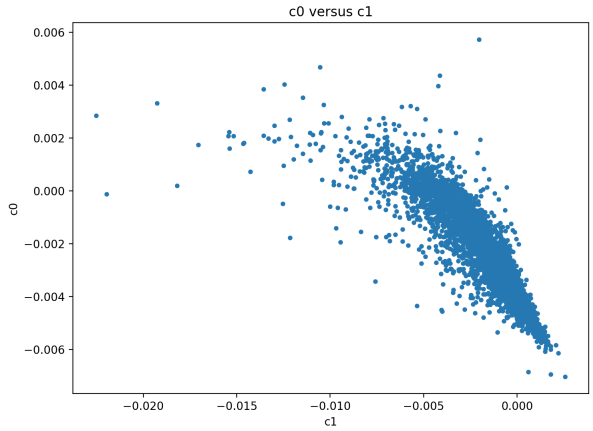

Figure 2: Coefficients

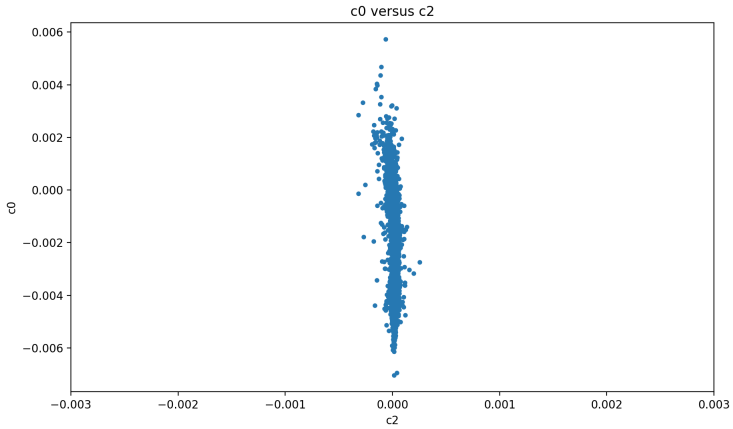

Figure 3: Coefficients

4 Part i

So I had many issues with this section. As you can see in my script I was trying to plot the residuals squared but I simply could not get this to happen. I know that there should be no negative values since they are all squared, however, that is not what I see on my graph. Additionally, I know that as N increases the residuals should decrease since you are adding more information, or getting closer to the original spectrum.

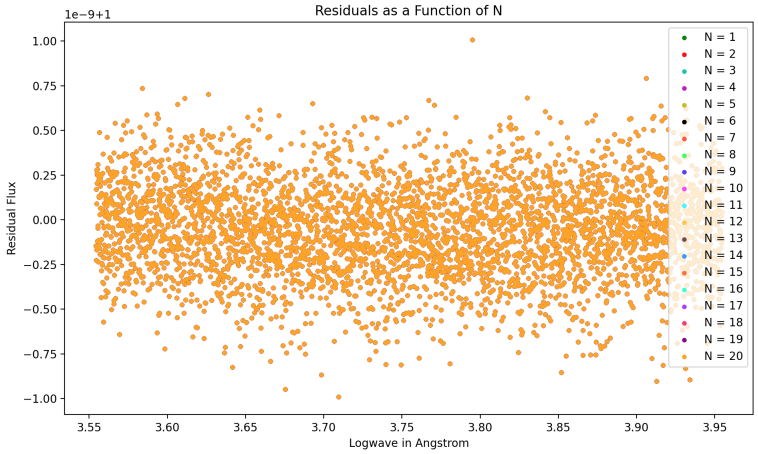

Figure 4: Residuals?