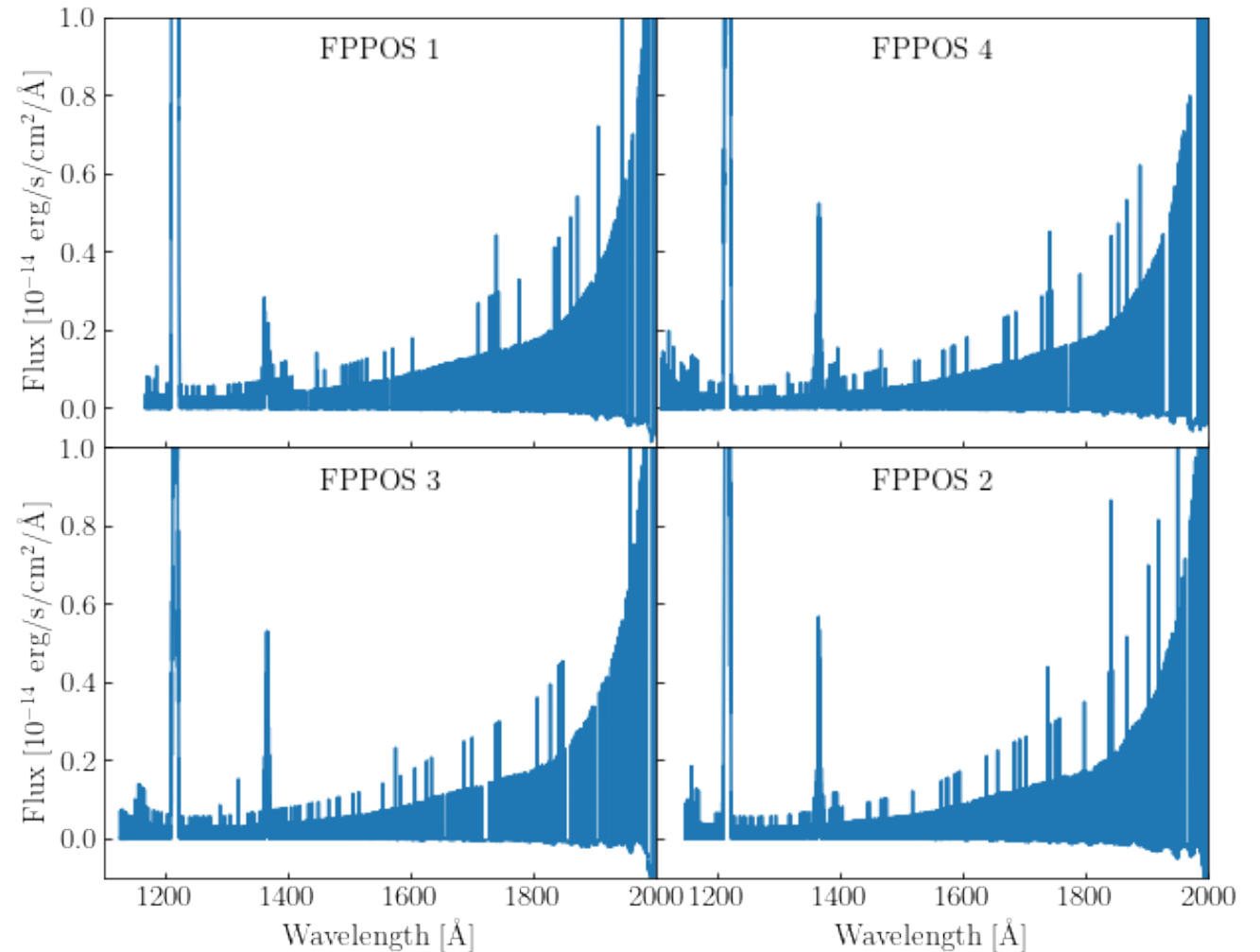# COS Data First Steps

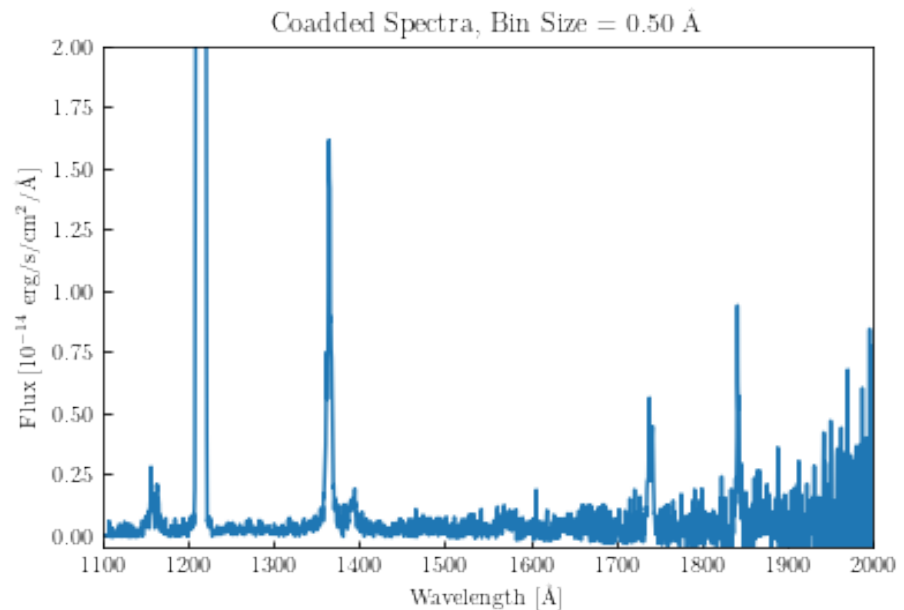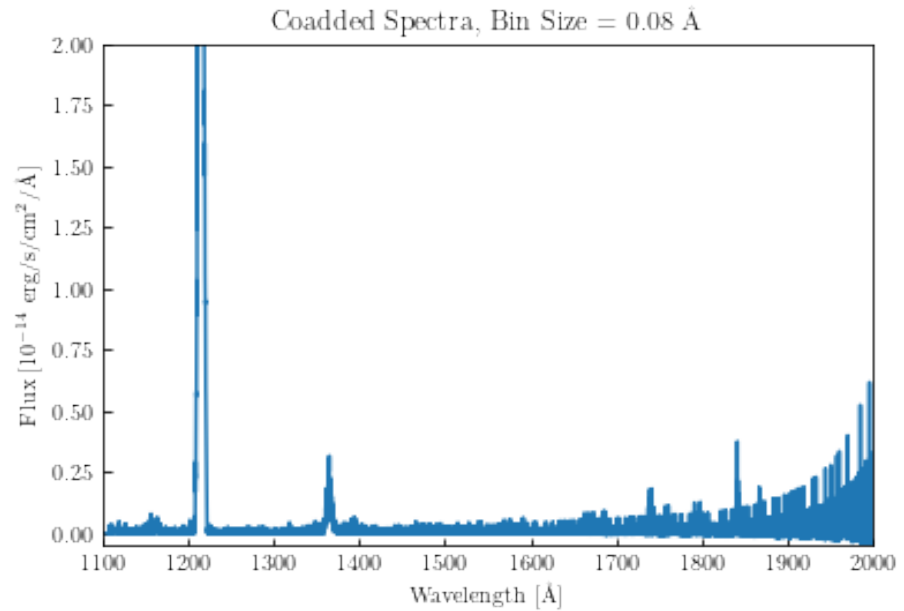Jean J. Somalwar

Separate Exposures

Cuts: DQ = 0 or DQ = 4

- DQ=0: No anomalies
- DQ = 4: Detector shadow

Stacked Spectra

- Exposure weighted average of the 4 exposures

- Using wavelength bins with width given in plot titles

- Cuts: DQ=0 or DQ=4

Stacked Spectra

- Exposure weighted average of the 4 exposures

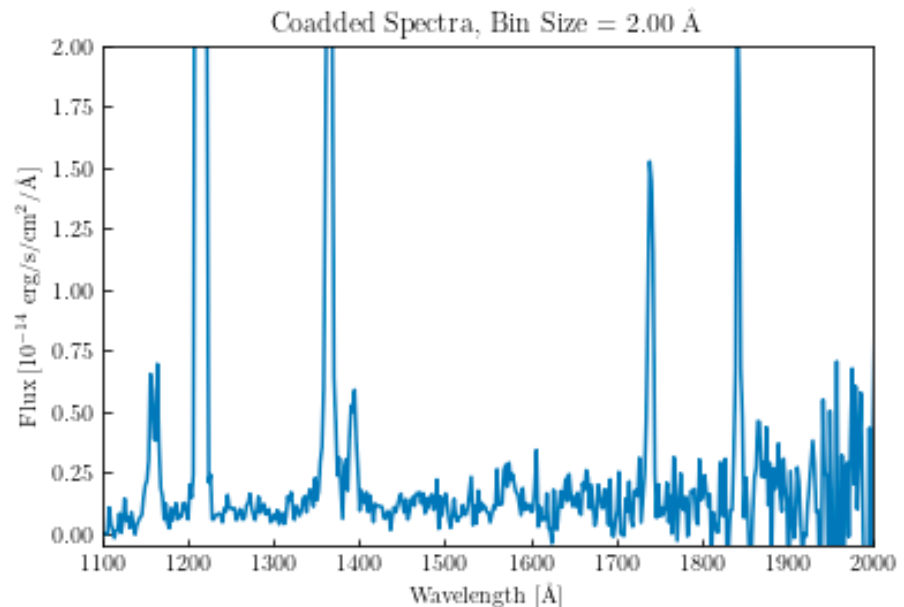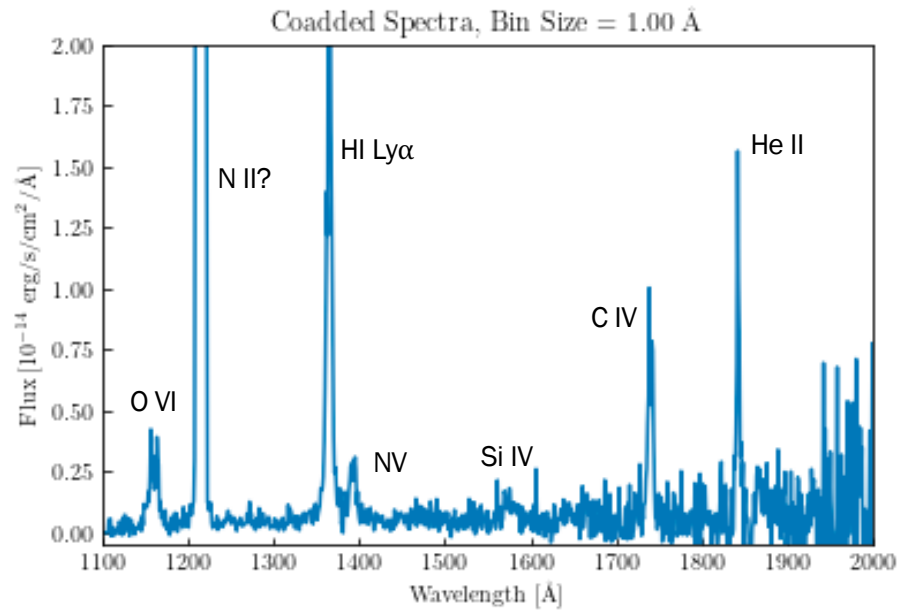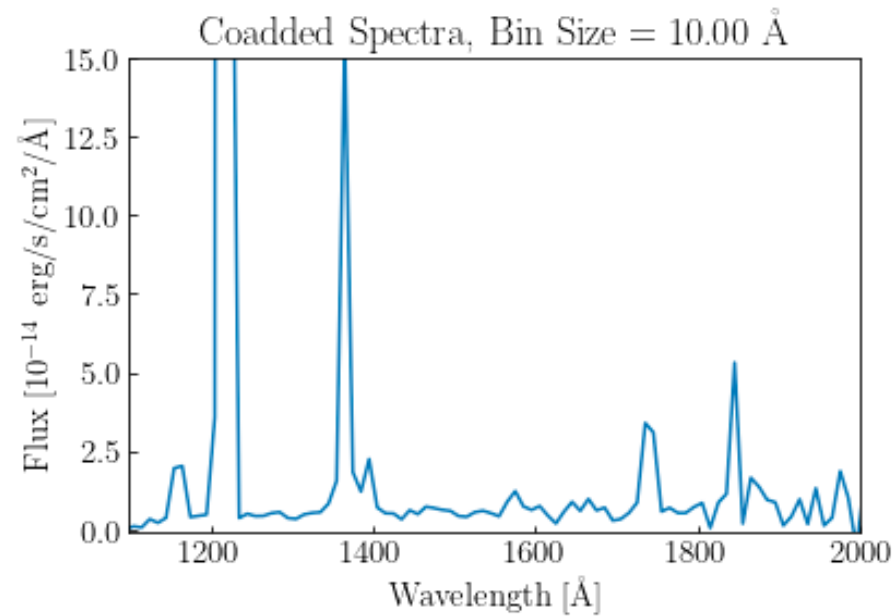- Using wavelength bins with width given in plot titles

- Cuts: DQ=0 or DQ=4

Stacked Spectra

- Exposure weighted average of the 4 exposures

- Using wavelength bins with width given in plot titles

- Cuts: DQ=0 or DQ=4

Coadded Spectra, Bin Size = 10.00 Å

Lines

Element	Rest-Frame Wavelength (Å)	z = 0.1234 Wavelength (Å)
O VI	1031.92, 1037.61	1159.26, 1165.65
N II?	1083.99	1217.75
HI Ly α	1215.67	1365.68
N V (fit not shown, IP)	1238.82, 1242.8	1391.69, 1396.16
Si IV (fit not shown, IP)	1393.75, 1402.77	1565.74, 1575.87
C IV	1548.19, 1550.77	1742.14
He II	1640.4	1842.83
O III	1665.85	1871.42

Line Fits, O VI

- Fitting the lines using the stacked spectra with wavelength bins of width 1 Å
- Blue: 2nd degree polynomial fit to continuum region (region bounds are approximate)
- Red: gaussian fit to line region (region bounds are approximate) (I'm pretty sure some of the lines are actually two lines, but for now I am fitting them with only one gaussian)
- Errors on count values are from astropy's poisson_conf_interval
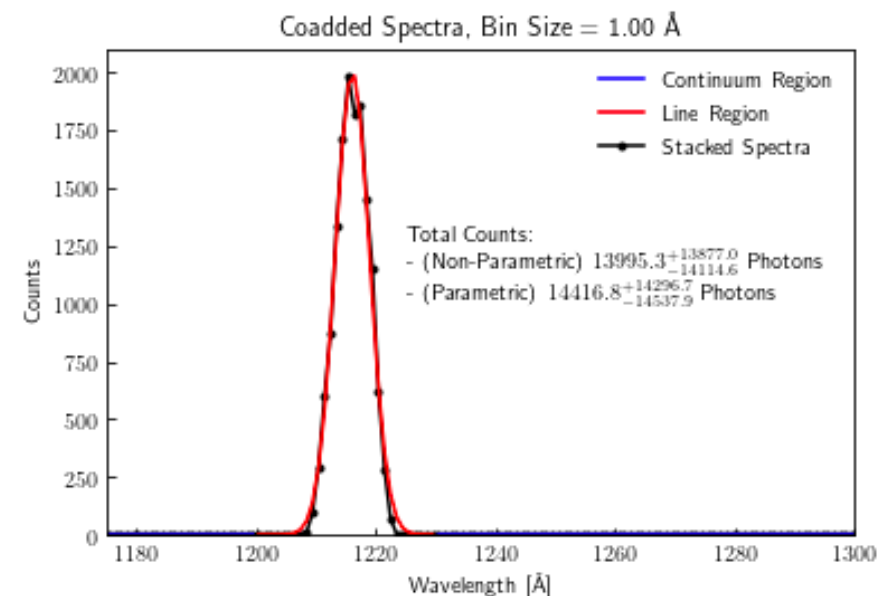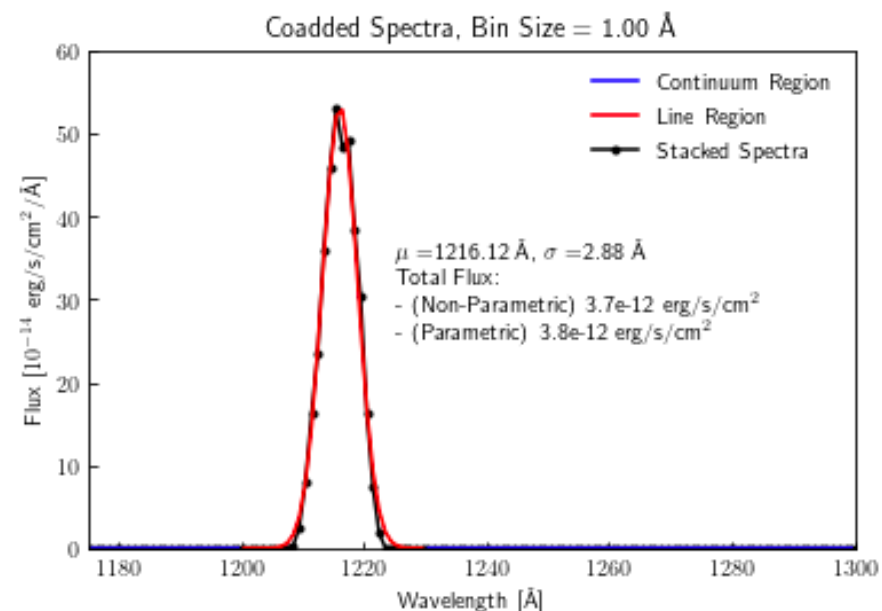
Jean J. Somalwar
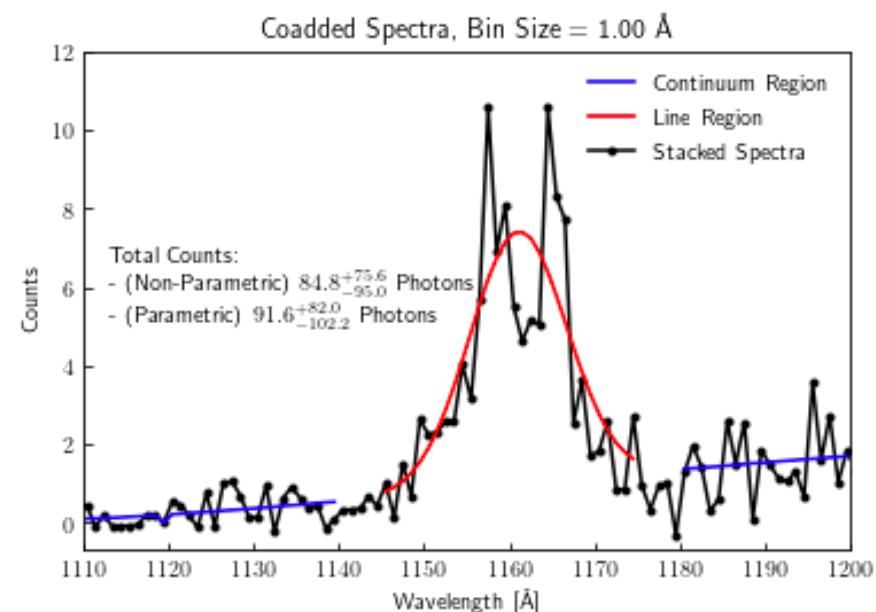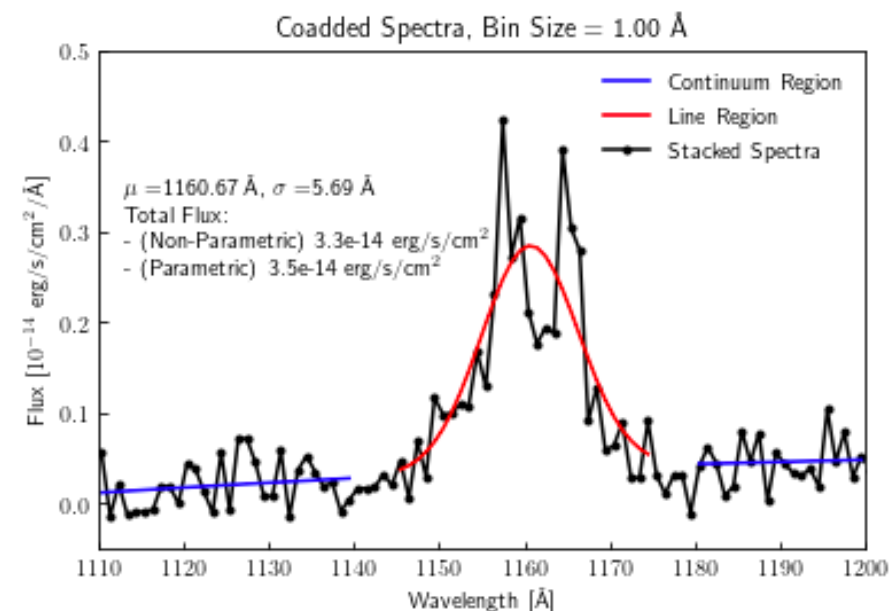
Line Fits, N II?

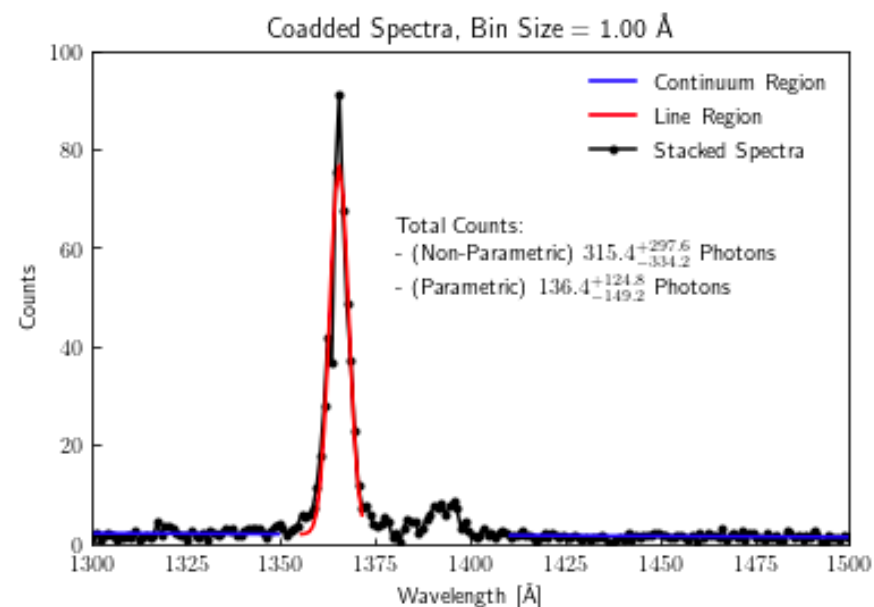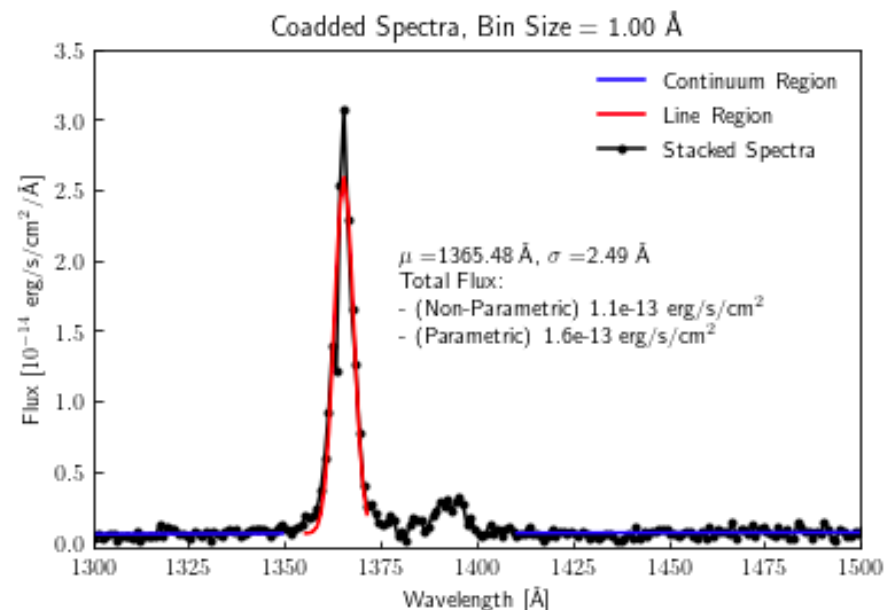- Fitting the lines using the stacked spectra with wavelength bins of width 1 Å

- Blue: 2nd degree polynomial fit to continuum region (region bounds are approximate)
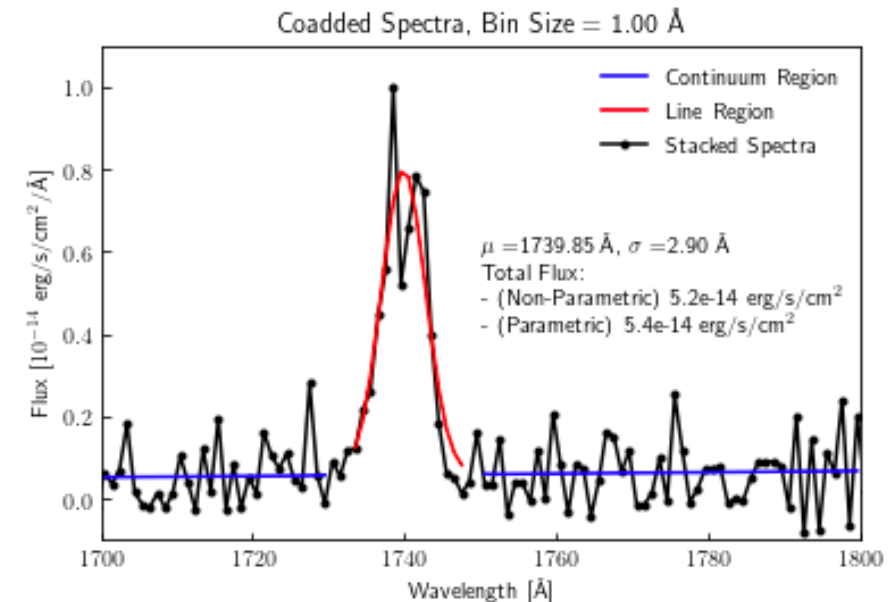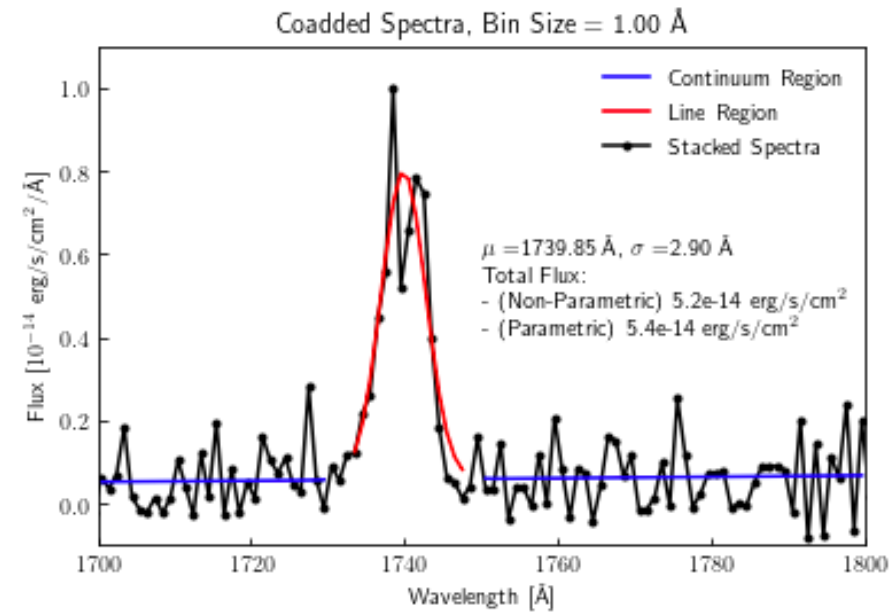
- Red: gaussian fit to line

Line Fits, HI Lyα

- Fitting the lines using the stacked spectra with wavelength bins of width 1 Å

- Blue: 2nd degree polynomial fit to continuum region

- Red: gaussian fit to line region

- **The fit to the N V peak was not working very well, so I do not show that for now**

Jean J. Somalwar

Line Fits, C IV

- Fitting the lines using the stacked spectra with wavelength bins of width 1 Å

- Blue: 2nd degree polynomial fit to continuum region

- Red: gaussian fit to line region

Line Fits, He II

- Fitting the lines using the stacked spectra with wavelength bins of width 1 Å

- Blue: 2nd degree polynomial fit to continuum region

- Red: gaussian fit to line region

Jean J. Somalwar