

The HST/STIS Next Generation Spectral Library

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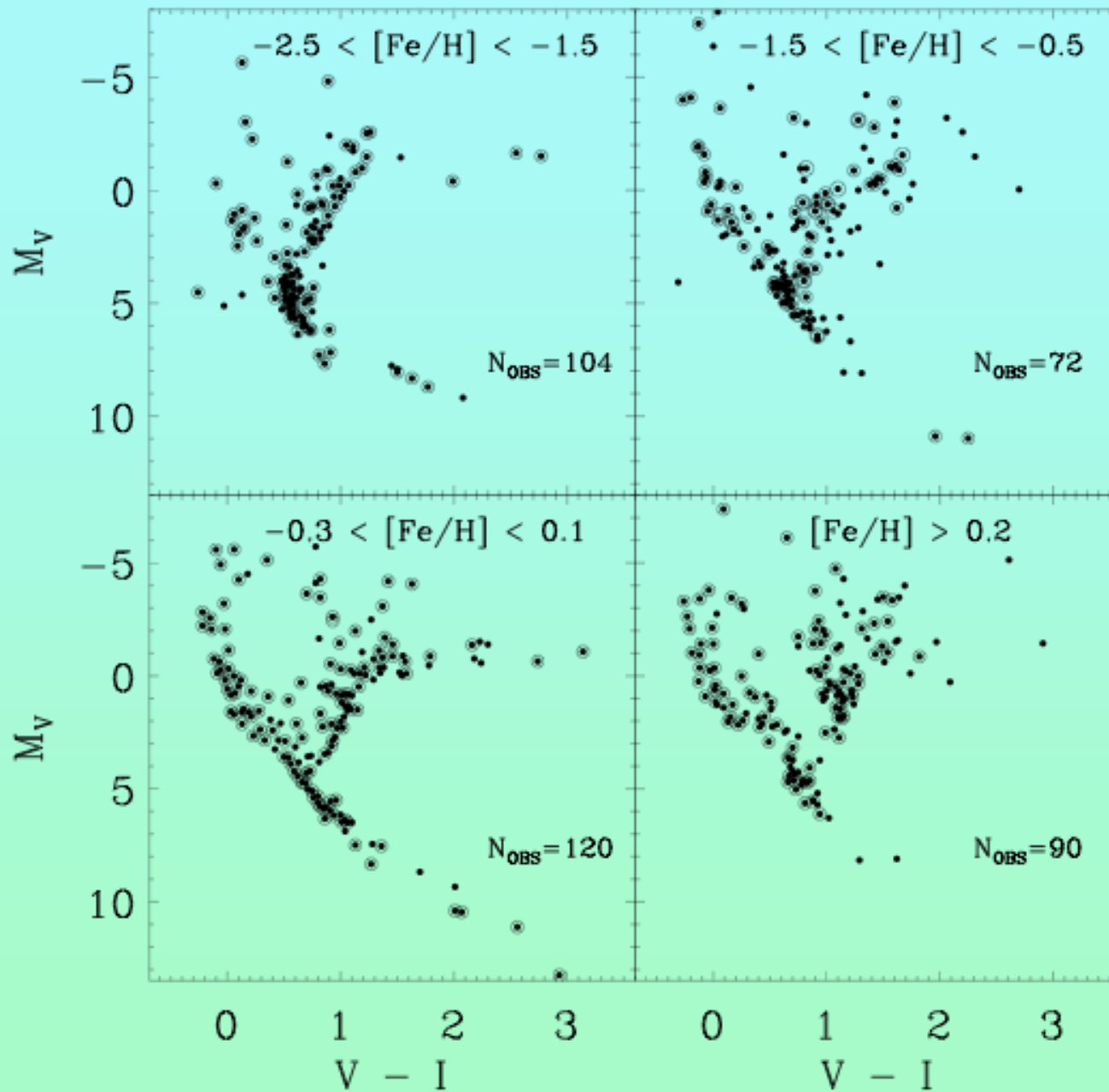
NGSL Proposed:

- Snapshot program to produce a UV/Optical stellar spectral atlas of 600 stars
- STIS Low Resolution modes:
G230LB, G430L, G750L
- High S/N
- Stable HST calibration
- Good coverage of L, Teff, log(g) with 150 stars in each of 4 abundance intervals:
[Fe/H] < -1.5 -1.5 < [Fe/H] < -0.5 -
0.3 < [Fe/H] < 0.1 [Fe/H] > 0.2

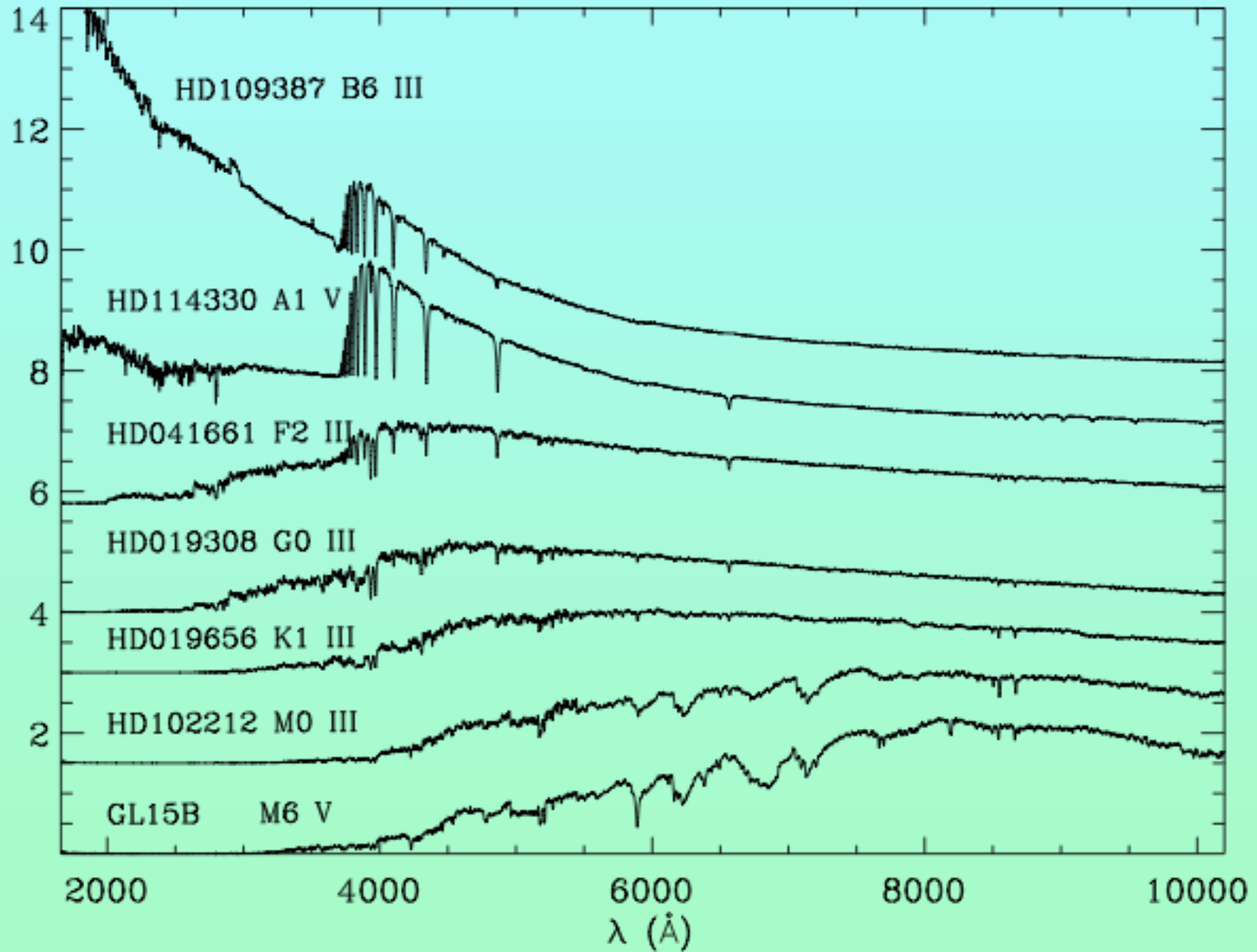
NGSL Realized:

- **Cycle 10: 300 snapshots, 156 observed**
- **Cycle 12: 450 snapshots, 208 observed**
- **Cycle 13: 450 snapshots, 17 observed**
- **Total of 380 targets**

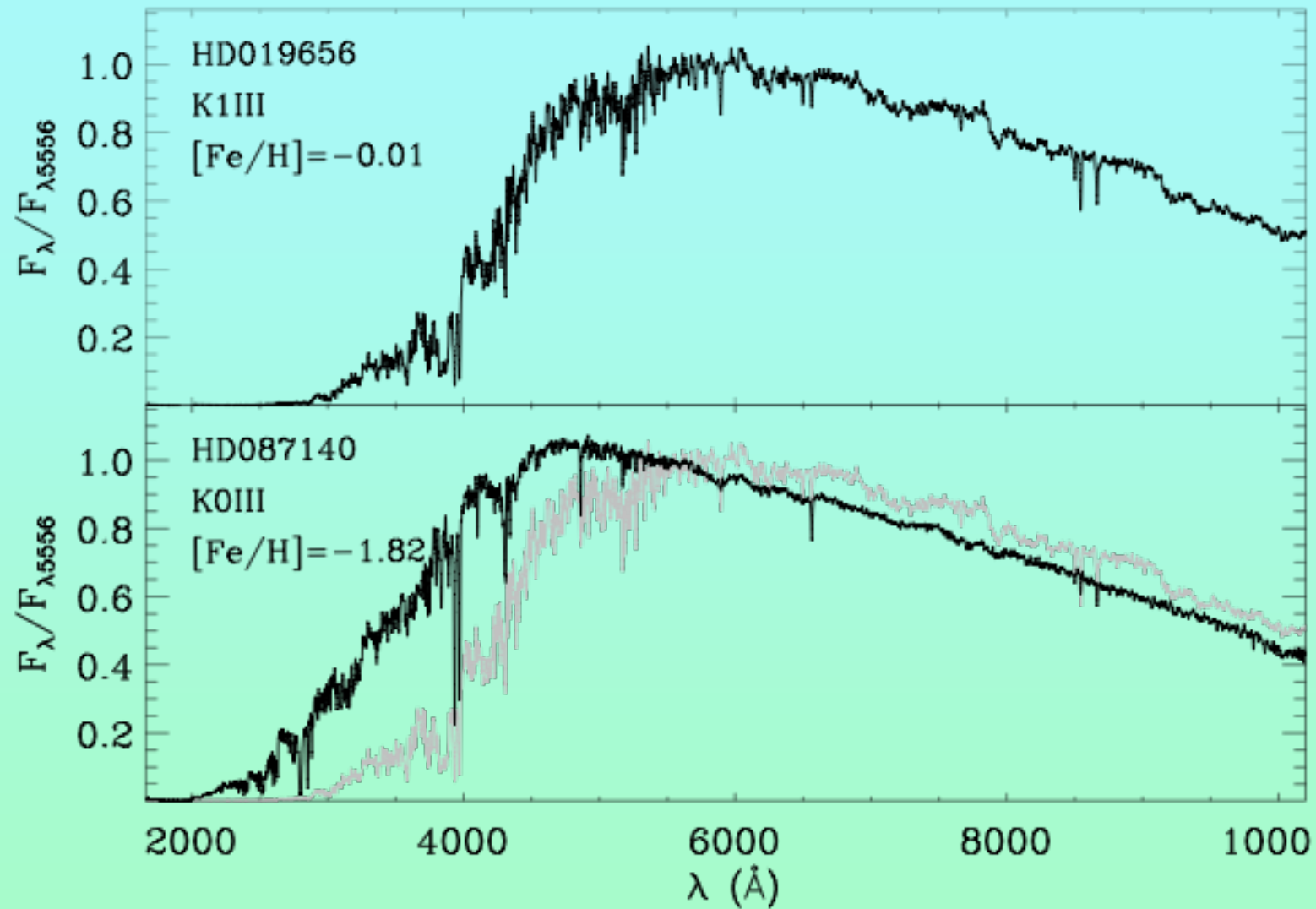
Final Sample



Example NGSL Spectra



Metallicity Comparison

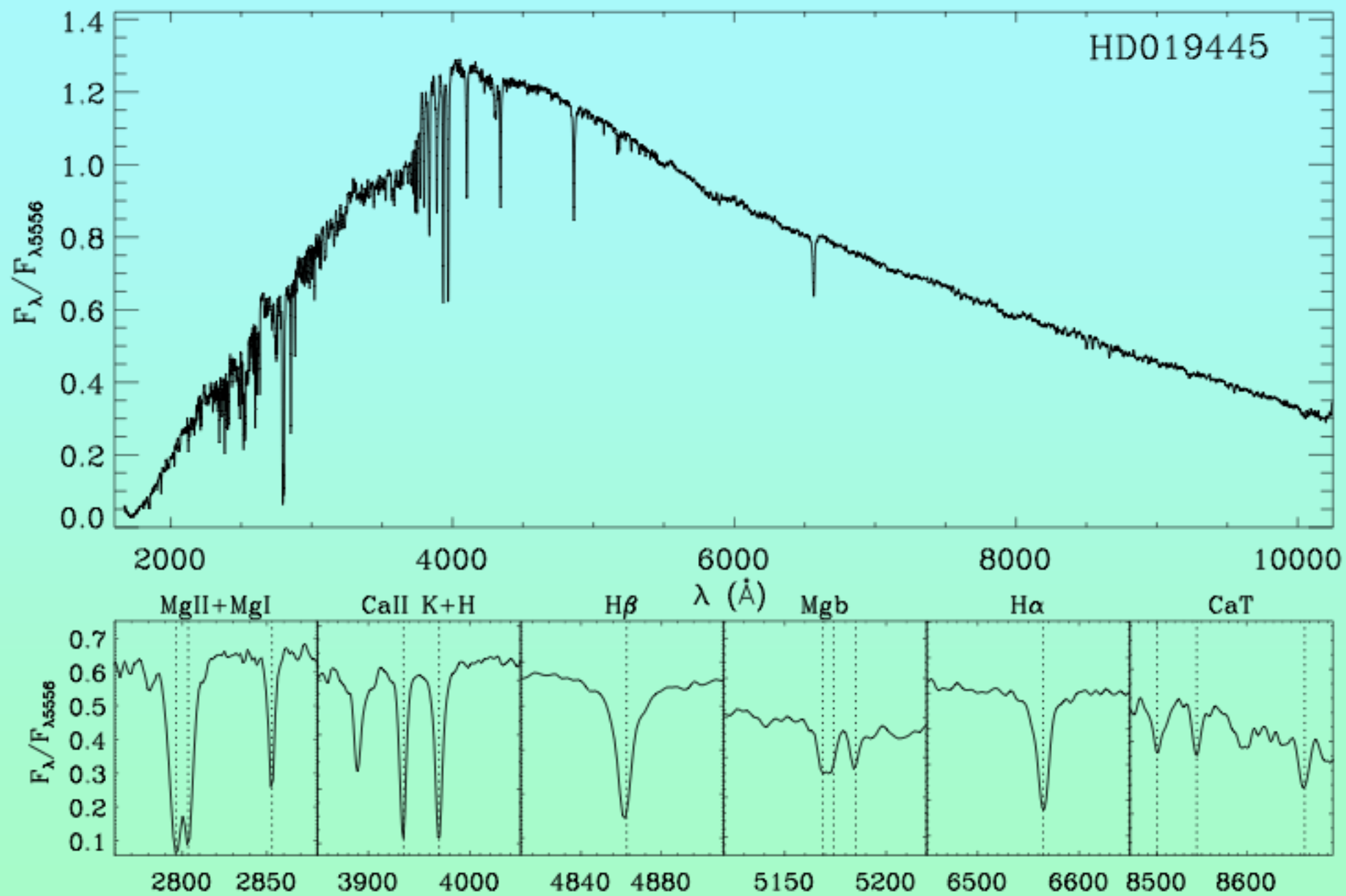


NGSL Calibration Challenges

- **No Wavecals (on purpose)**
- **E1 Aperture, 0.2" slit**
- **Fringing**
- **G230LB Red Light Contamination**
- **Fit Table Format**

No Wavecals

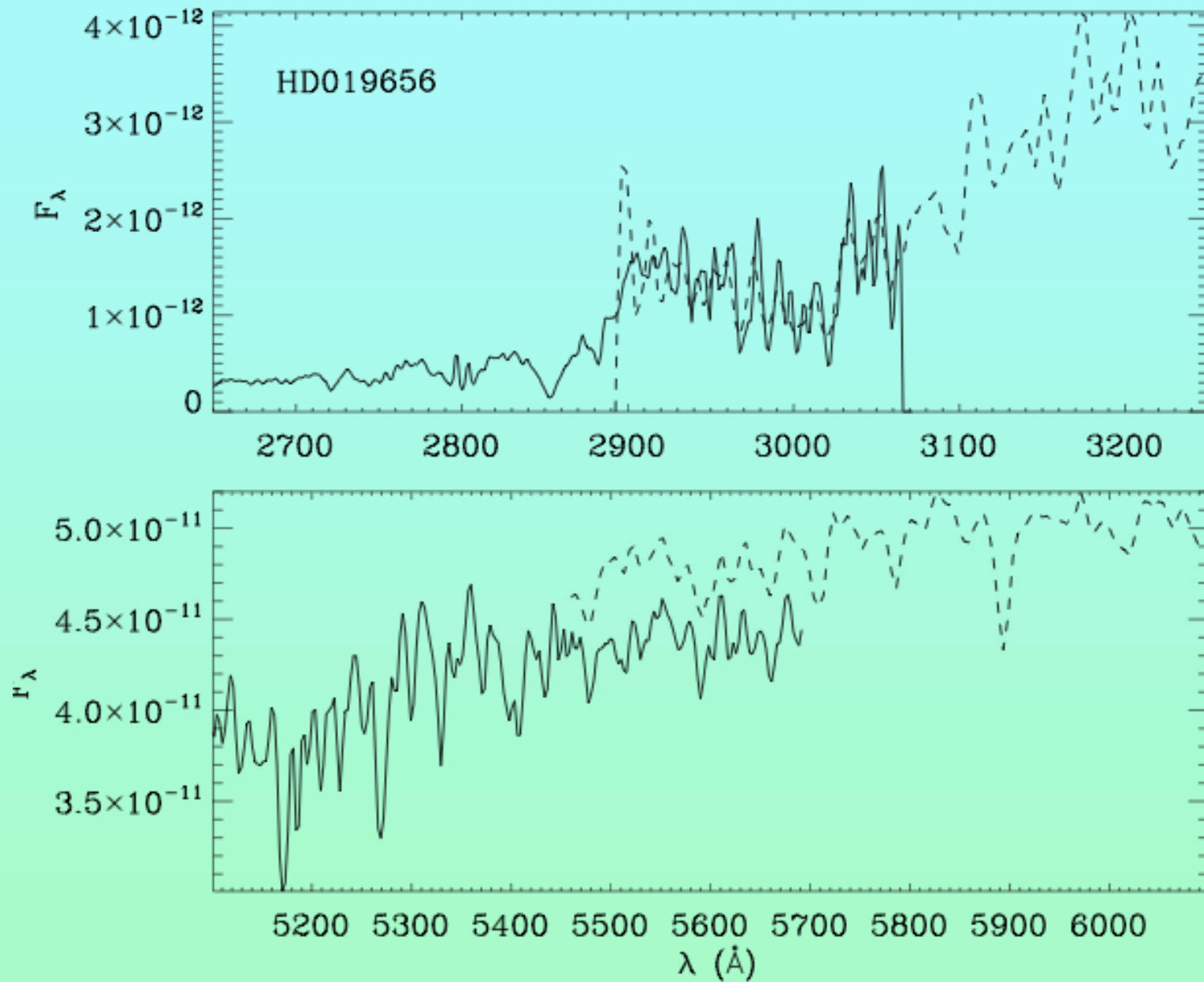
- All targets have known V_{rad}
- Cross correlate to find SHIFTA1
- Shift to published V_{rad}
- De-redshift
- $\$ \% \& \#$ Fits Table Format



E1 Aperture, 0.2" slit

- **Absolute calibration**
- **Relative calibration between gratings**
- **Mis-centered observations**
- **fits Table Format**

Flux Calibration Comparison



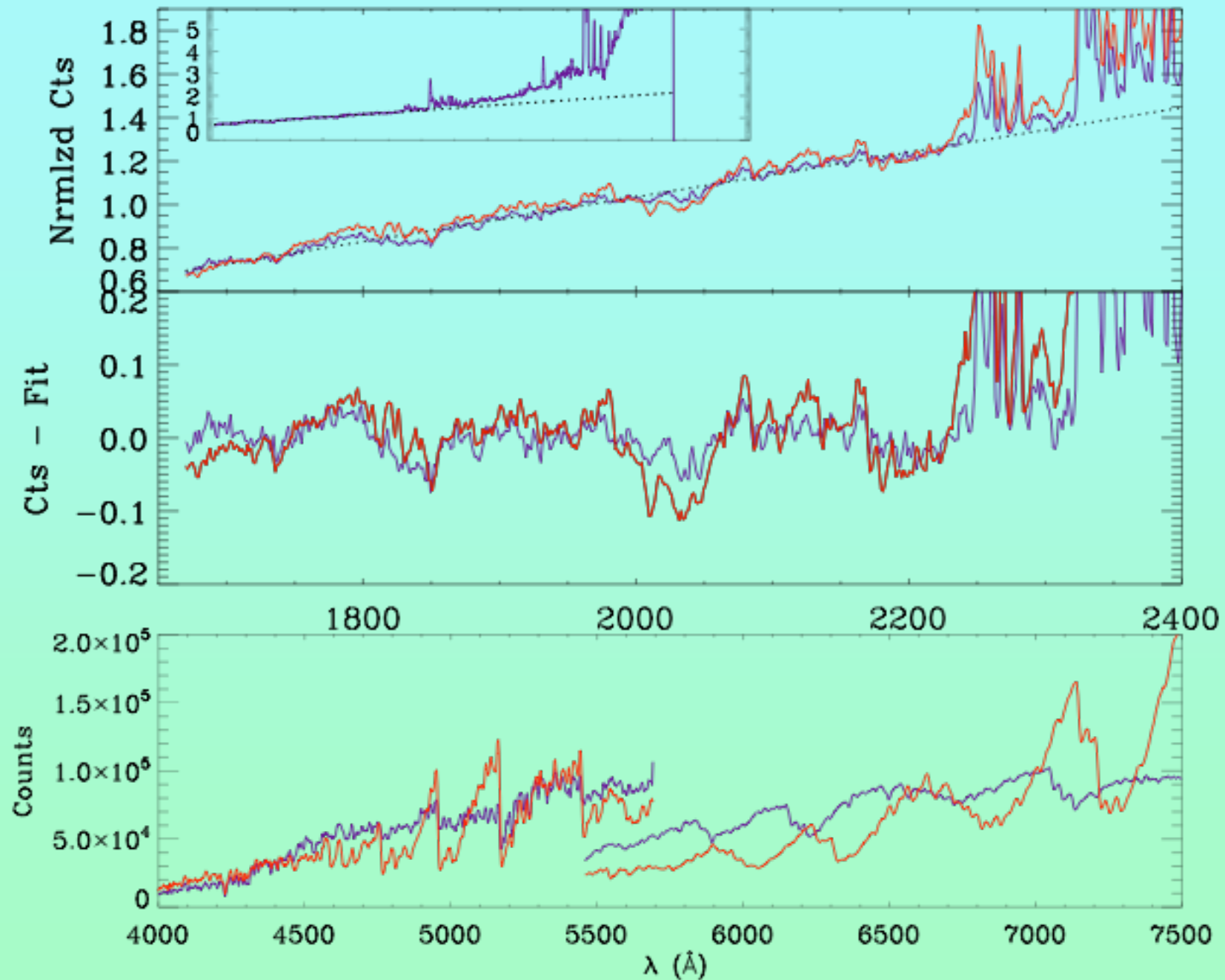
Flat Fielding / Fringing

- **Modified versions of CALSTIS routines**
- **Flux calibration would be improved by using flats to take out high order response at blue end of G750L**
- **Fringe removal is improved by subtracting scattered light from fringe flat**

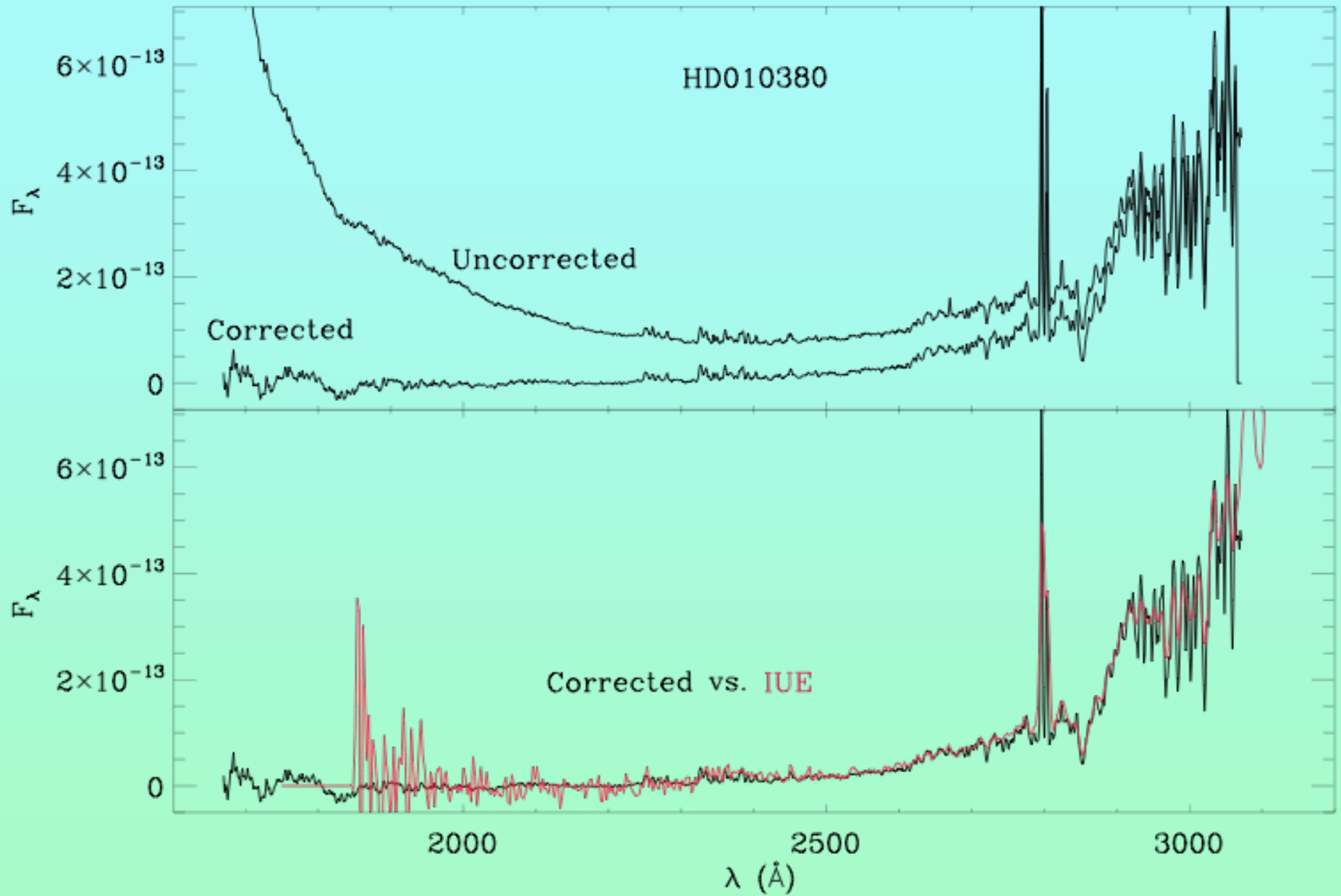
G230LB Red Light Contamination

- **Zeroth order image wings overlap G230LB blue end**
- **FOS had similar (but different) trouble**
- **Affects bright red targets the most**

Rising red light contamination



Example correction



G230LB Contamination:

- **Not a DC correction as for FOS**
- **Contamination increases to the red => important components besides zero order image**
- **Sloping straight line scaled to V magnitude works over limited color range**
- **Need to develop sophisticated correction**

What's Coming...

- **G430L + G750L release**
- **UV addition**
- **Fill out red giants & dwarfs from HST archive**
- **Add far UV from HST & IUE archive**
- **VLT/UVES extension**
- **IRTF/SPEX extension**
- **Interpolated, semi-empirical spectral library**

Text