

EUV-UV-Optical Spectra of Young, Massive for UV Surveys

(Get spectra at <https://www.as.arizona.edu/~hubeny/>)

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Contents of the TLUSTY Spectral Library

Properties of stellar pop:

- Age
- Rotation
- Metallicity
- EUV, FUV, NUV, optical spectrum
- IMF

Properties of single stars

- Age, rotation, Z (as above)
- Mass range
- Temperature range
- Derived/Estimated parameters

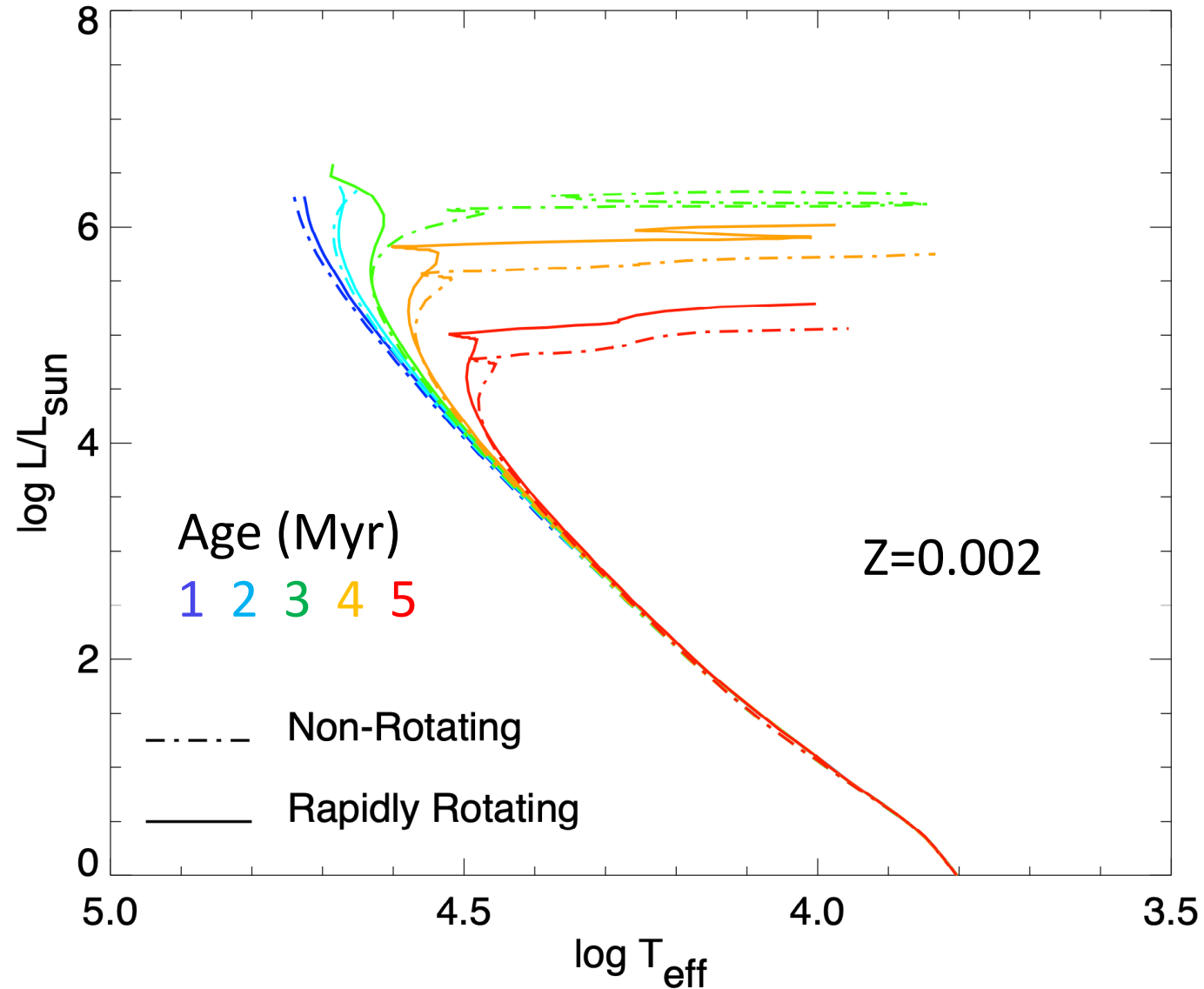
Library contains isochrones for:

1, 2, 3,5, 10 Myr
no rotation & rapid rotation
Z=.0004 (I Zw18), .002 (SMC), .006 (LMC)
Wavelength range (200-10,000 Å)
Choice of Salpeter or top-heavy IMF

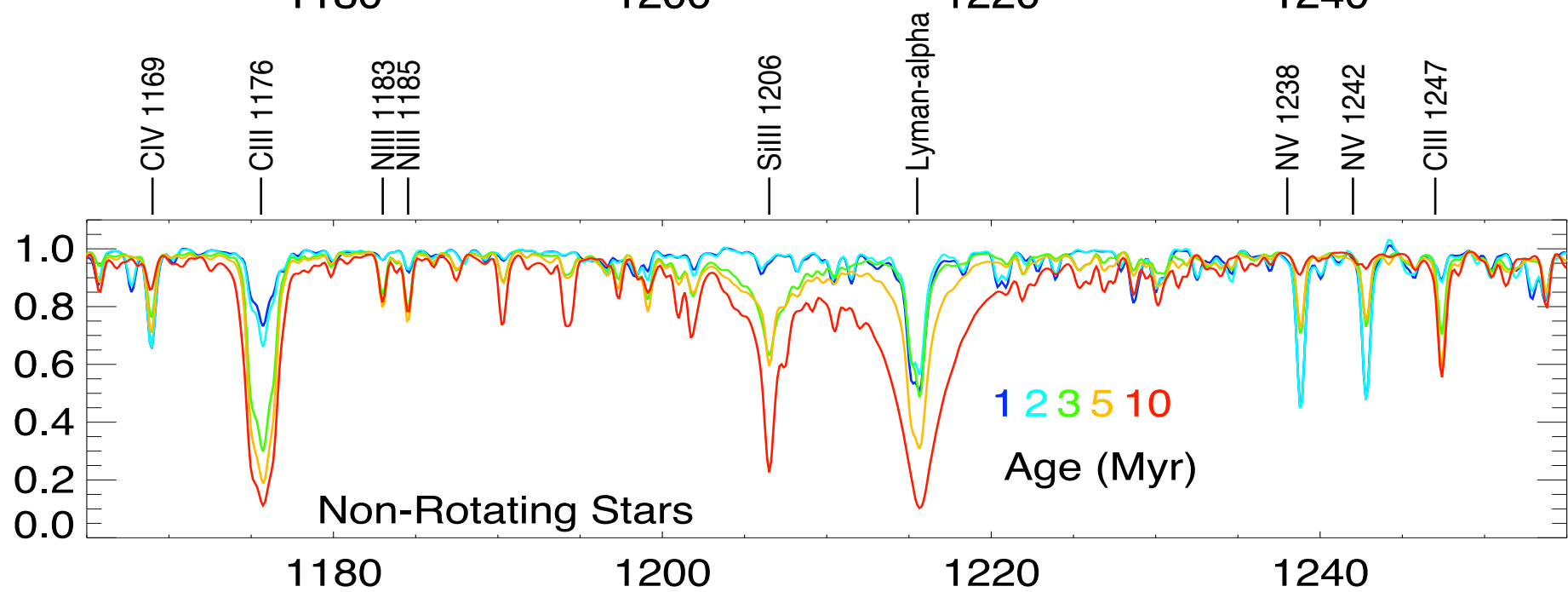
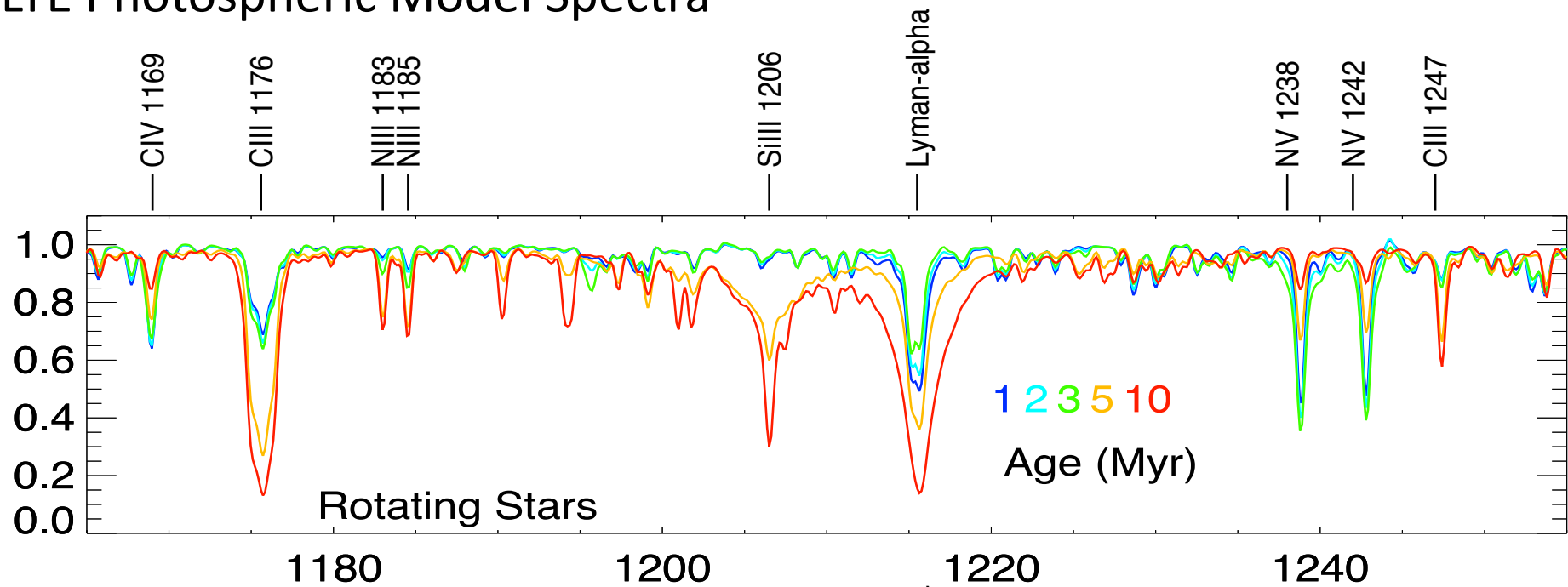
Each isochrones contains:

51-150 masses in an isochrone
0.8 - 120 M_{\odot}
5379 – 59129 K
Mass-loss rate (Vink + 2001)
Terminal velocity of wind ($2.7V_{esc}$)

Library of NLTE Spectra are based on (1) Geneva Isochrones (SYCLIST)

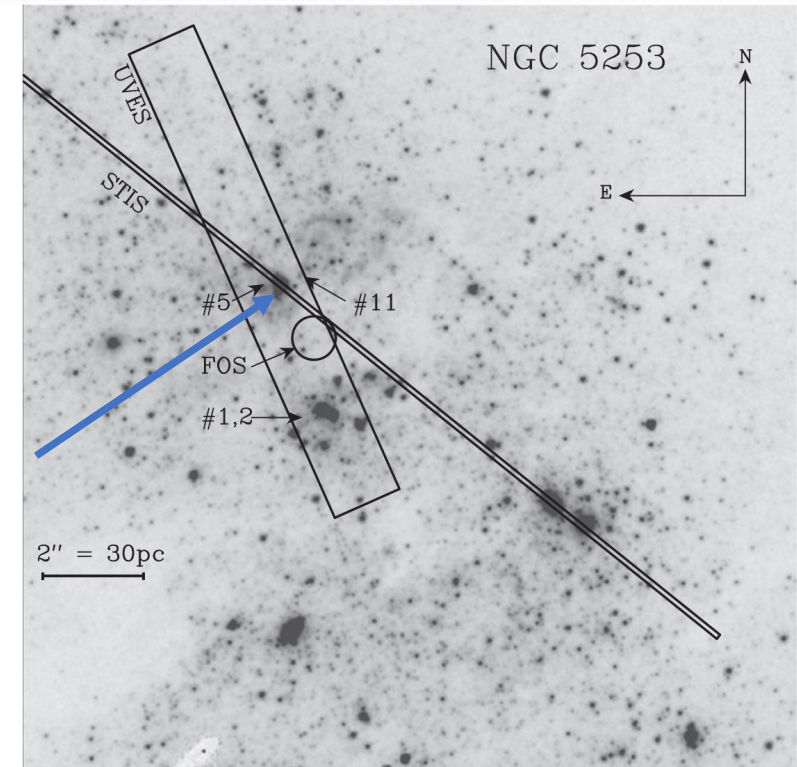


(2) TLUSTY NLTE Photospheric Model Spectra



NGC 5253

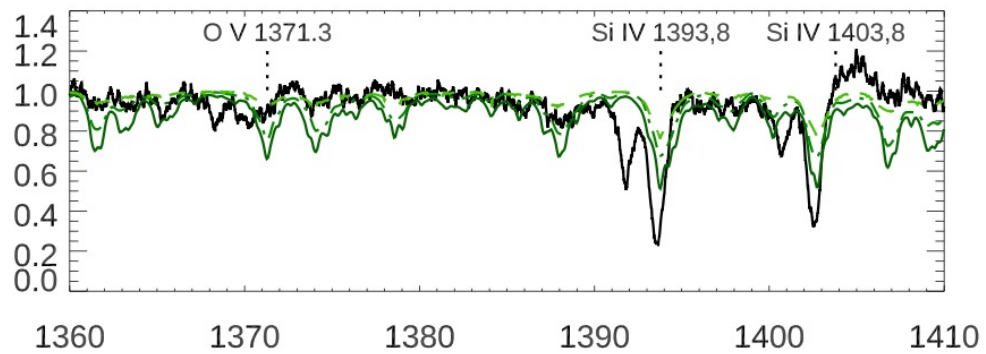
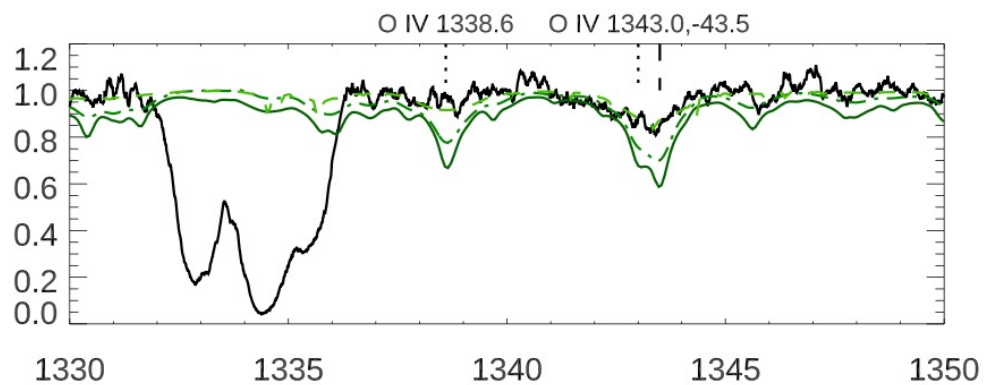
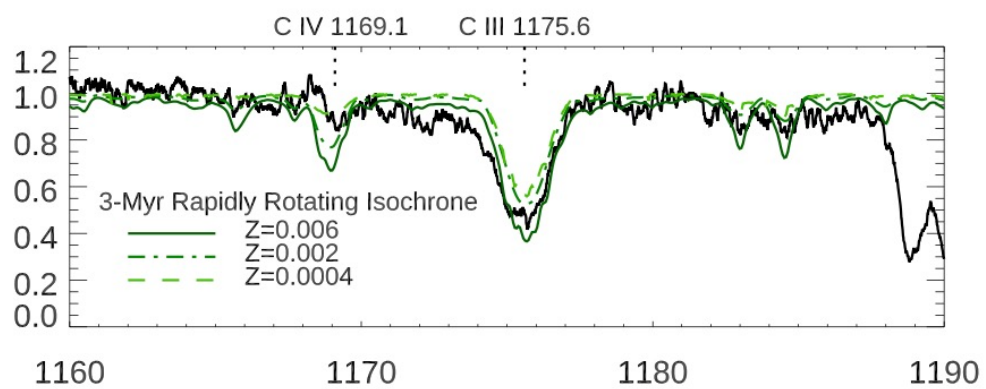
Cluster 5



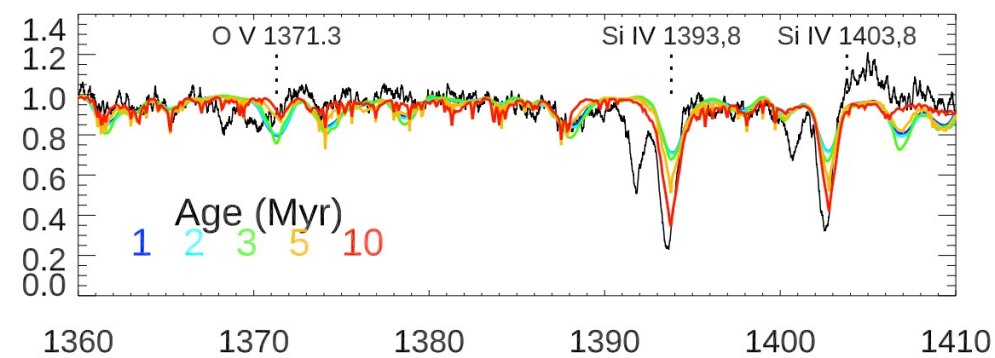
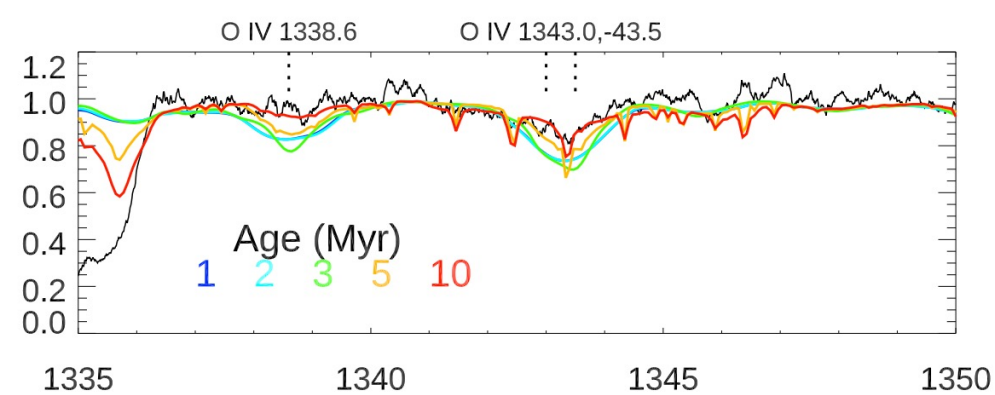
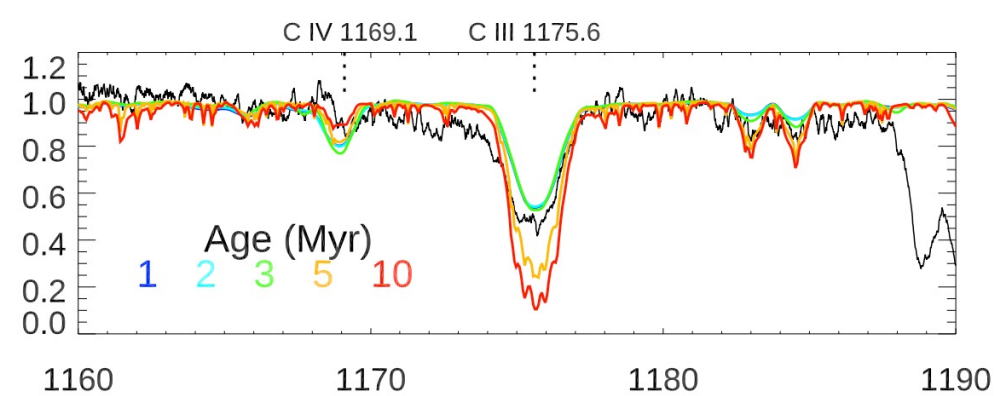
Credit: ESA/Hubble and NASA

Figure 1. *HST* ACS/HRC F550M image of the central region of NGC 5253 showing the positions of the *HST*/STIS and VLT/UVES slits and the *HST*/FOS aperture. The two nuclear star clusters #5 and #11 (Calzetti et al. 2015)

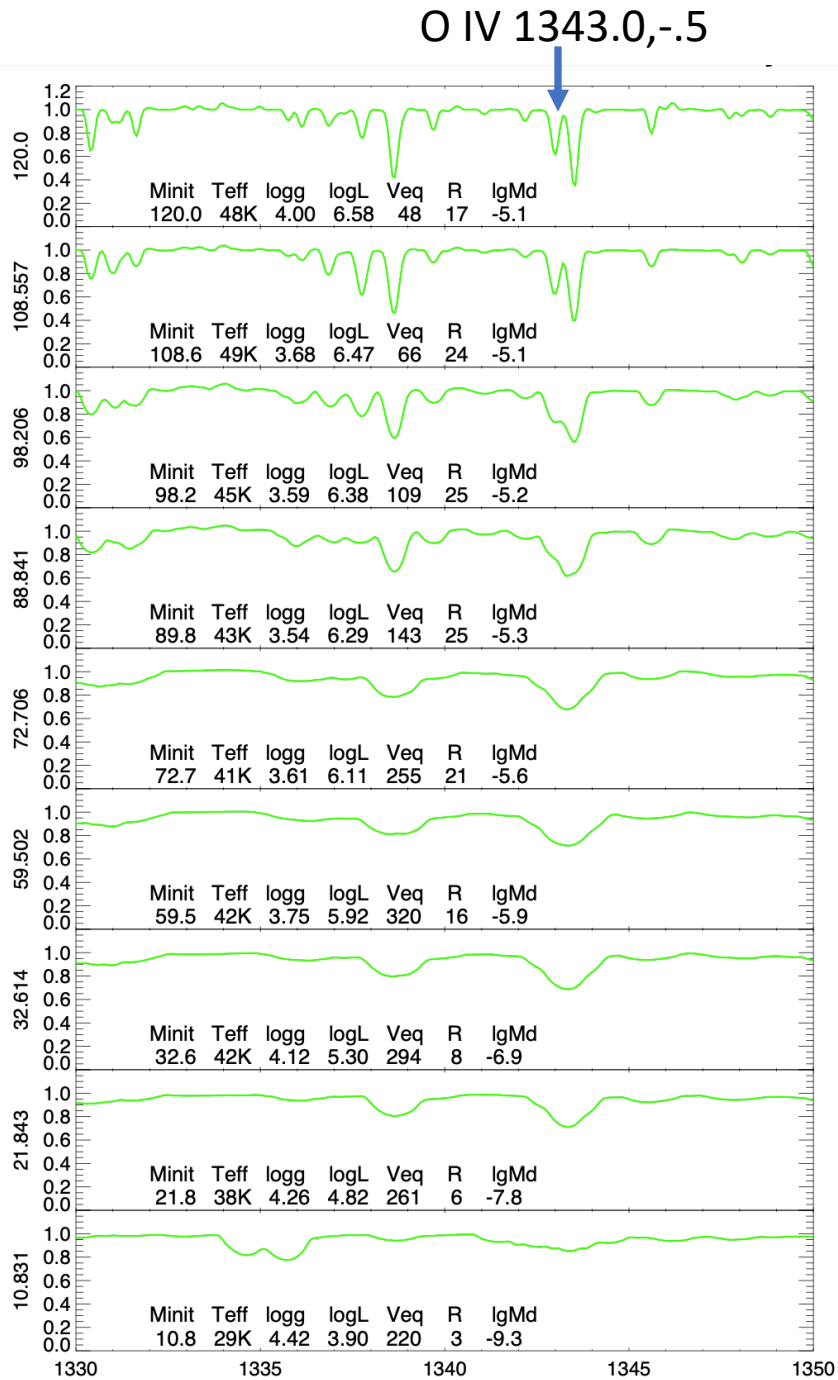
Variation in Z of a Rapidly Rotating 3-Myr Isochrone



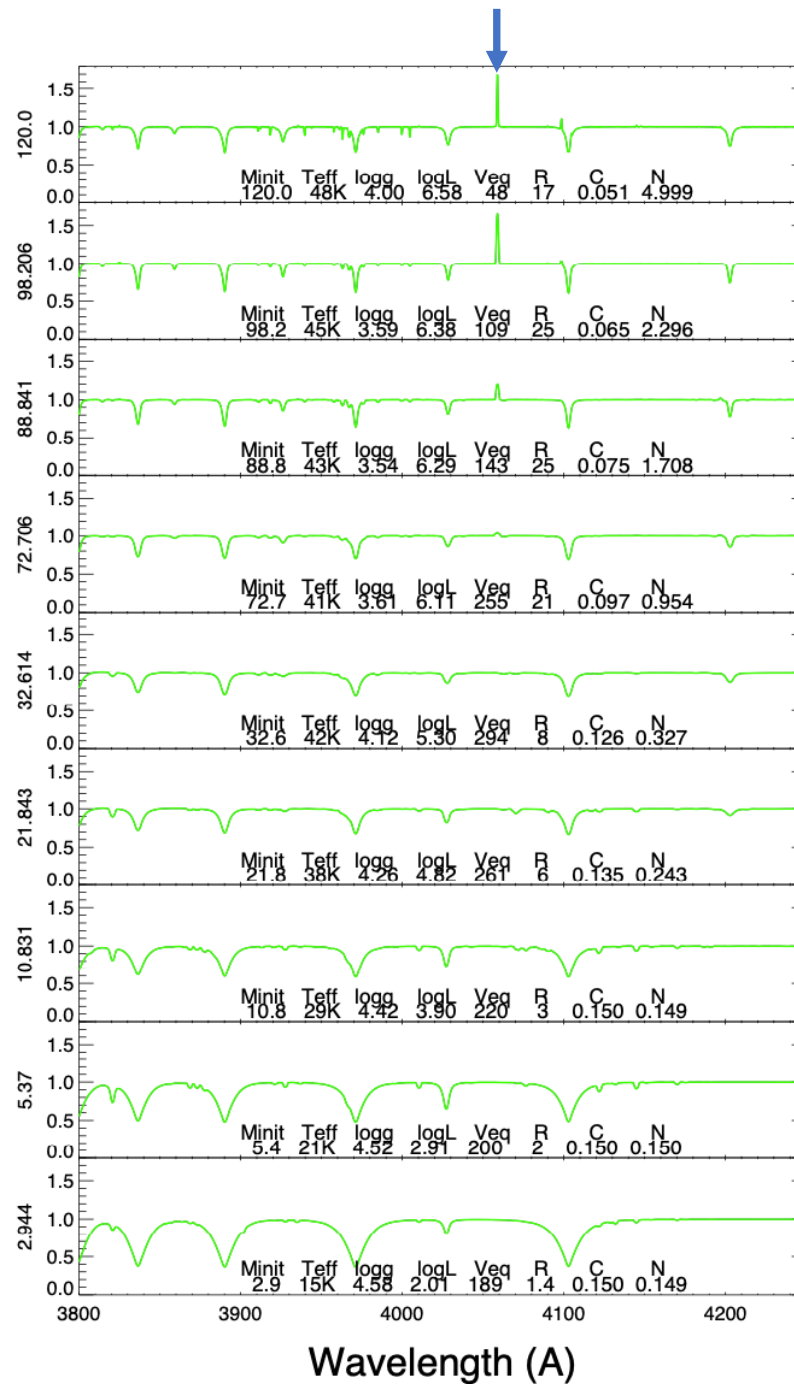
Variation in Age for a $Z=0.002$ Rapidly Rotating Isochrone



O IV 1343.0, -43.5 Å: Variation of Minit



N IV 4058 Å: Variation of mass

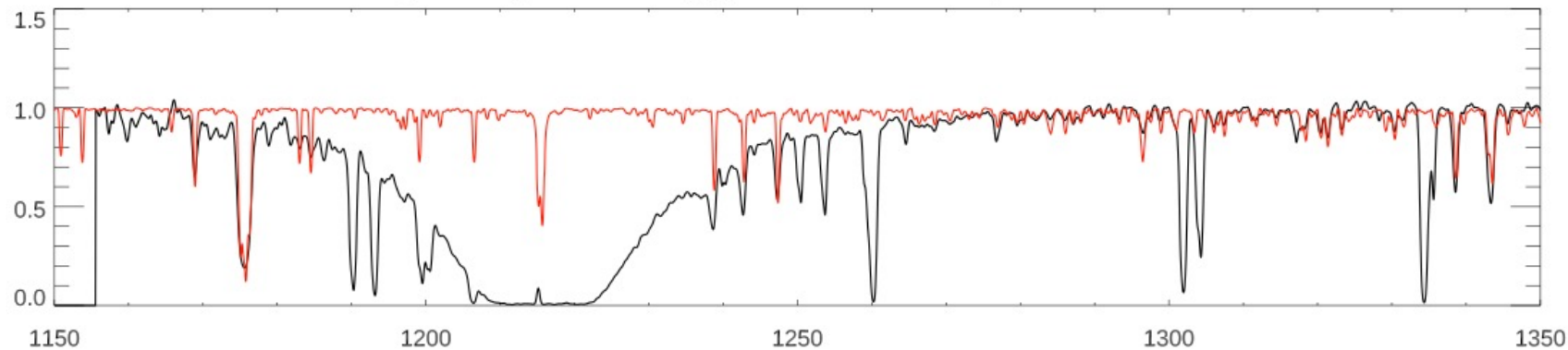


Get your library of TLUSTY spectra of stars and star clusters at:

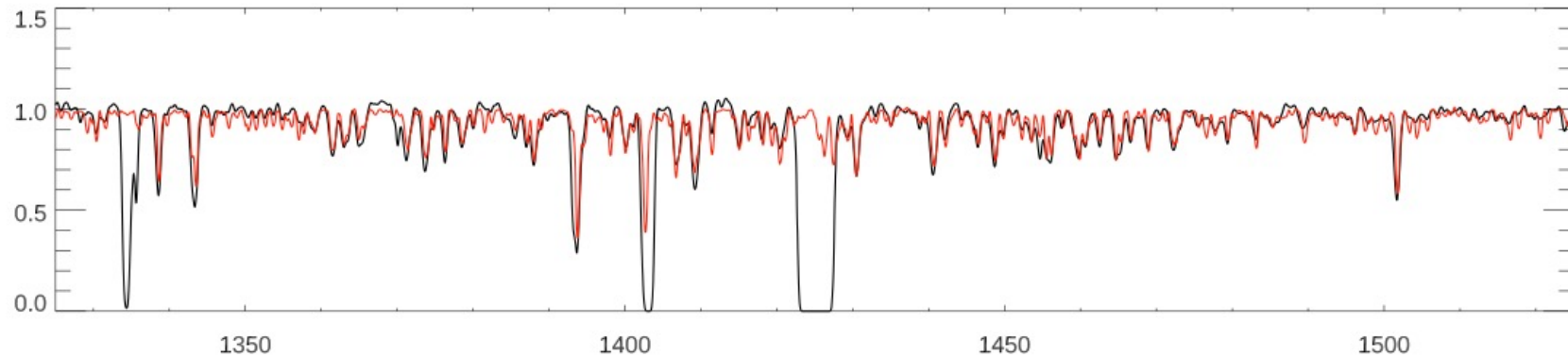
<https://www.as.arizona.edu/~hubeny/isochrones/>

(2) TLUSTY NLTE Photospheric Model Spectra

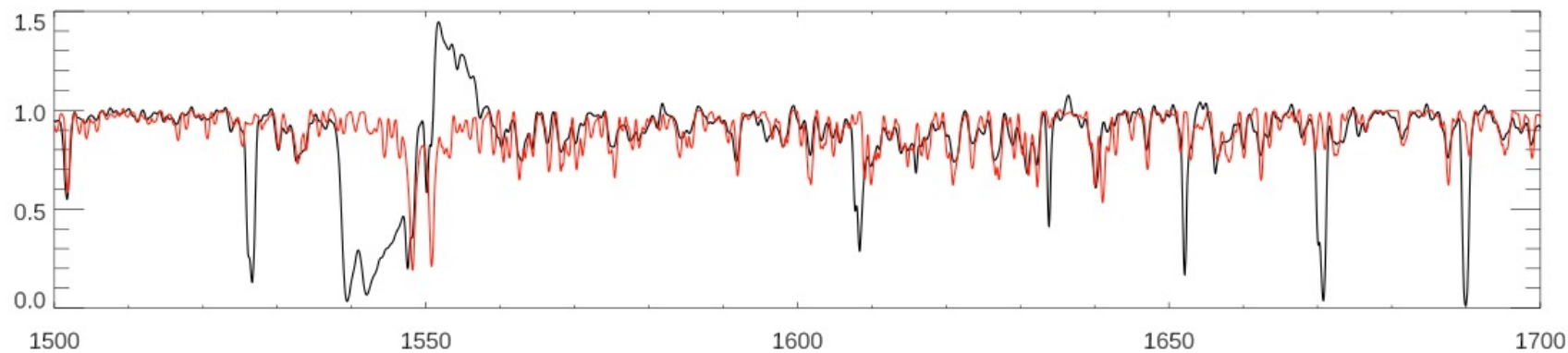
Example: AV 69 in SMC
OC7.5 III (Walborn 2000)



Black=STIS observation
 $V_{\text{rot}}=104$ km/s



Red=Model
Z002t6.7m34.441
 $V_{\text{rot}}=104$ km/s



Wavelength (Å)

Changes in Wind Properties With Age

