Tarantula Massive Binary Monitoring

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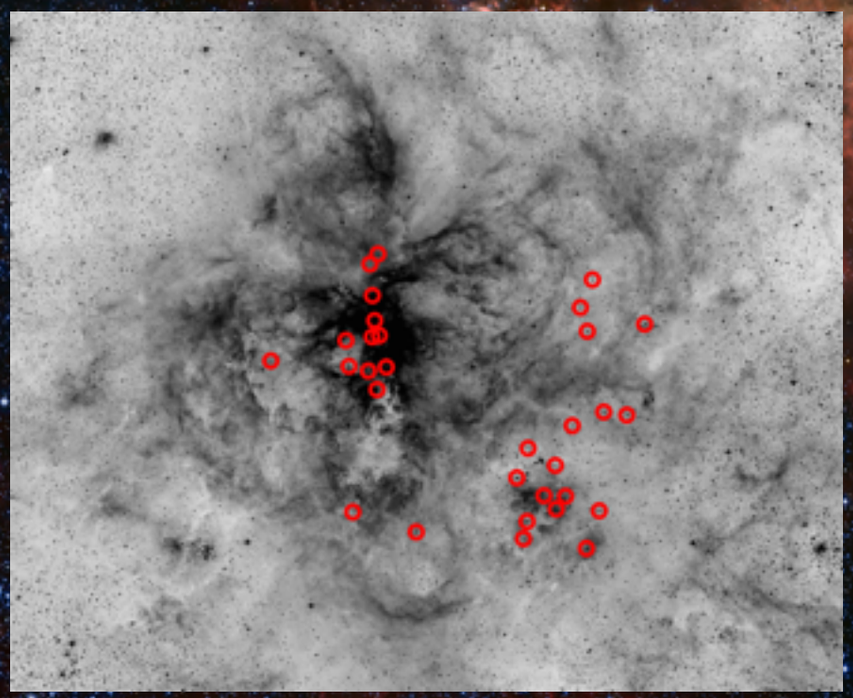


<u>VLT/FLAMES Tarantula Survey (VFTS):</u>

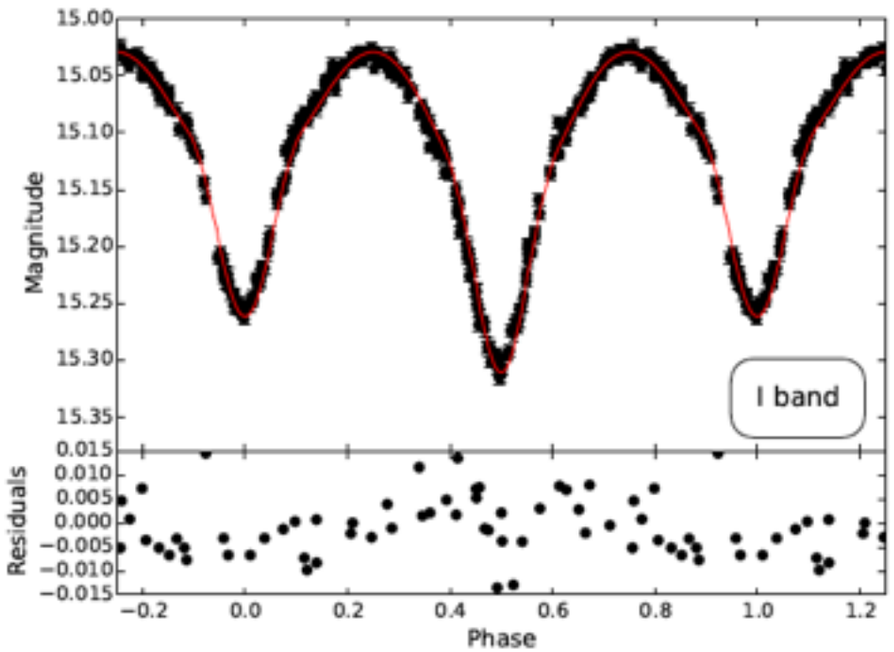
- 800 massive stars
- 360 O-type stars
- **116 binaries (SB1+SB2)**

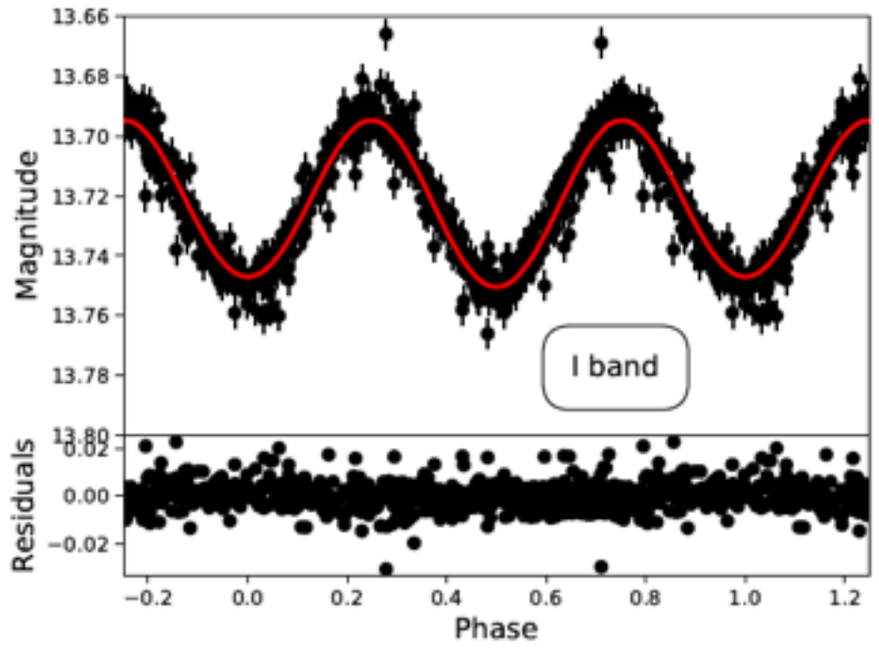
<u>Tarantula Massive Binary Monitoring (TMBM):</u>

- FLAMES (51 SB1+32 SB2)
- Multi-epoch campaign (**32 epochs)**
- [3950-4560] Å
- [H, He I, He II, C III, N III, Si IV]

+

OGLE photometry (V & I bands)
13 systems





Masses

+

Radii

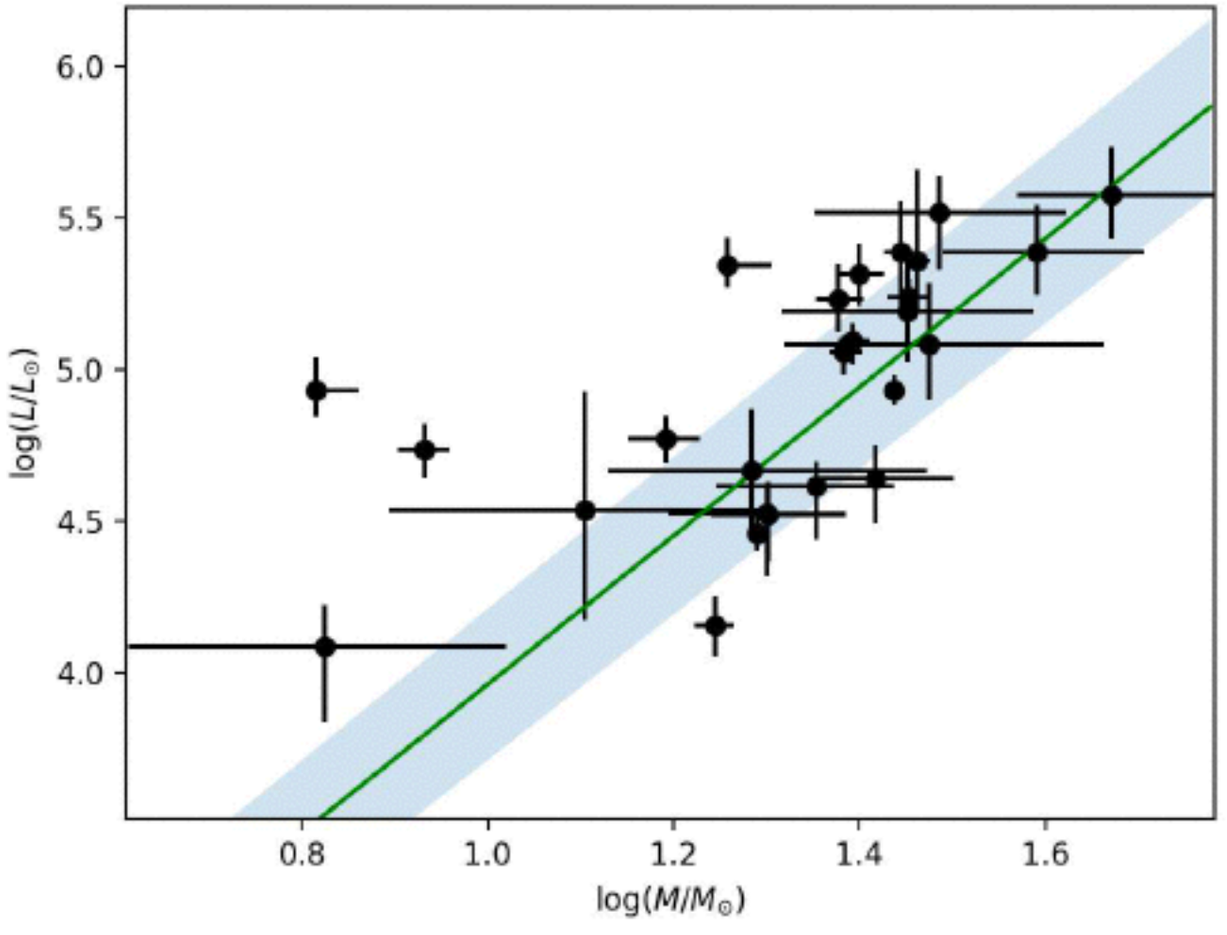
from photometry

For stars with masses between 6 and 50 Msun:

$$\log(L/L_\odot) = [2.45 \pm 0.04] \log(M/M_\odot) + [1.51 \pm 0.20]$$

For galactic stars with masses between 10 and 50 Msun:

$$\log(L/L_\odot) = [2.76 \pm 0.02] \log(M/M_\odot) + [1.28 \pm 0.02]$$

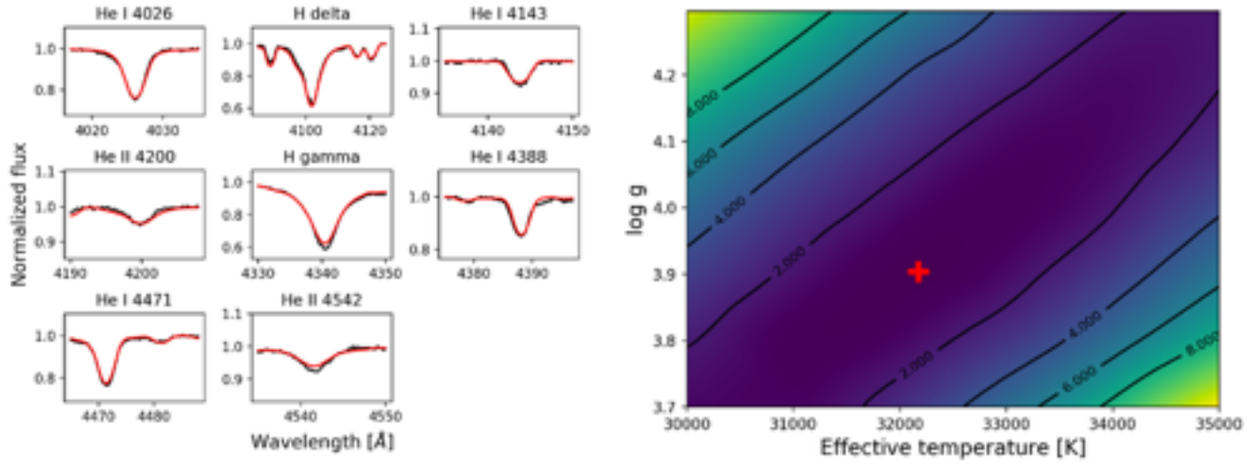


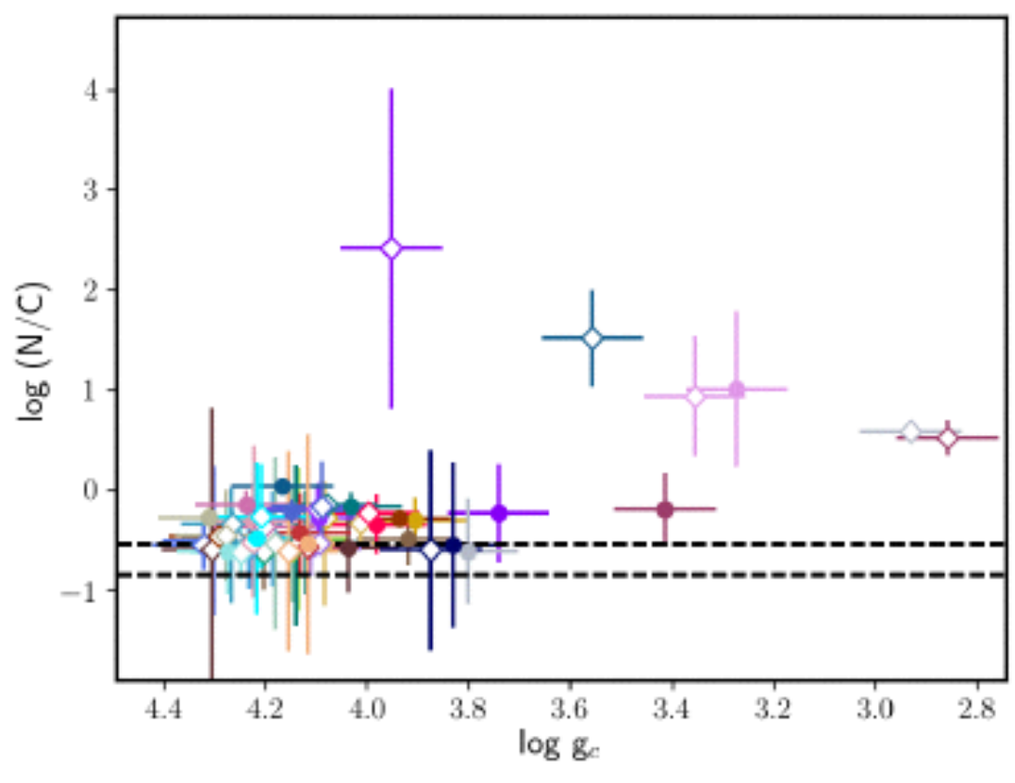
Teff, log g, surface abundances (He, C, N) from spectroscopy

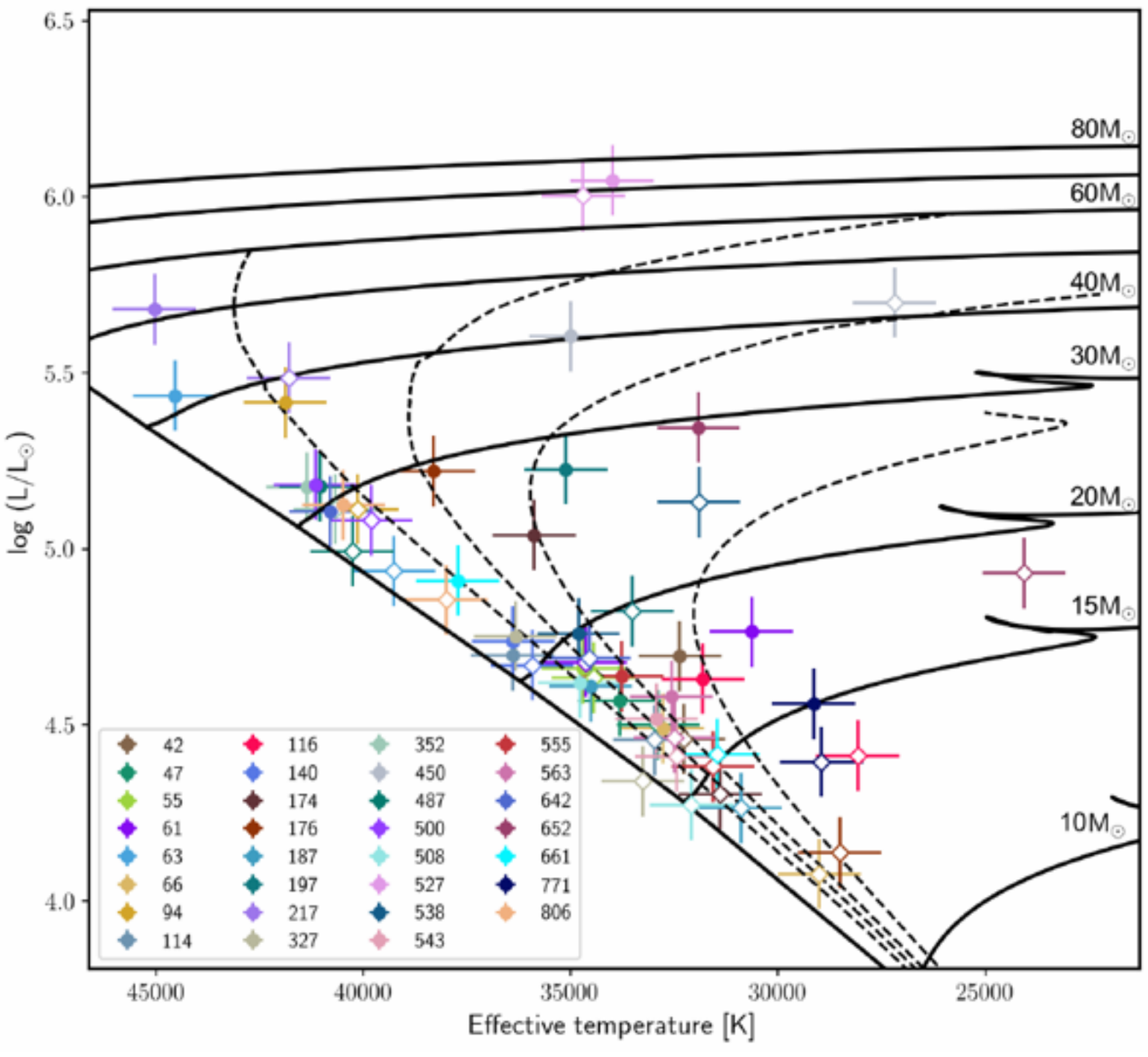
Spectral disentangling

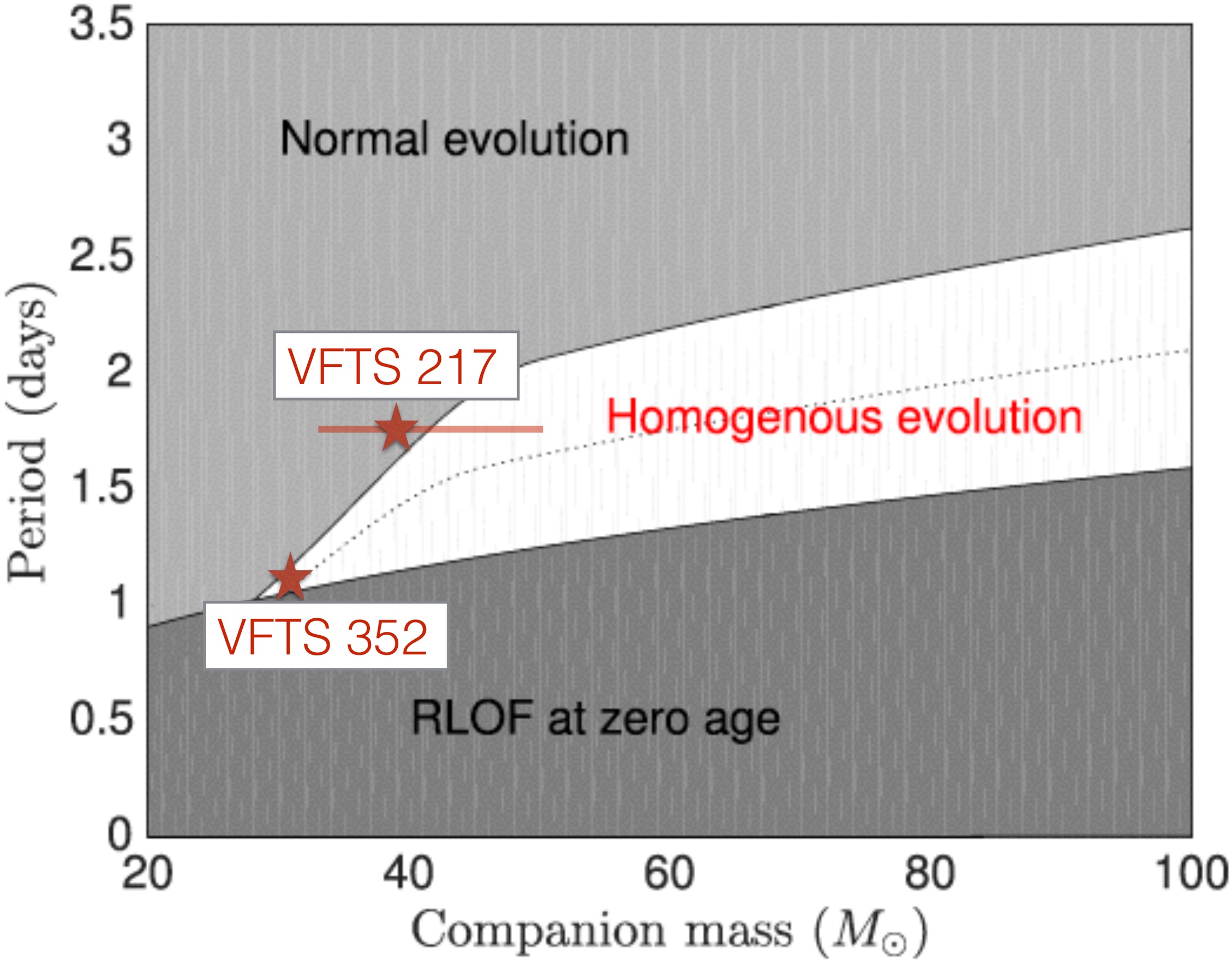
+

Atmosphere modelling



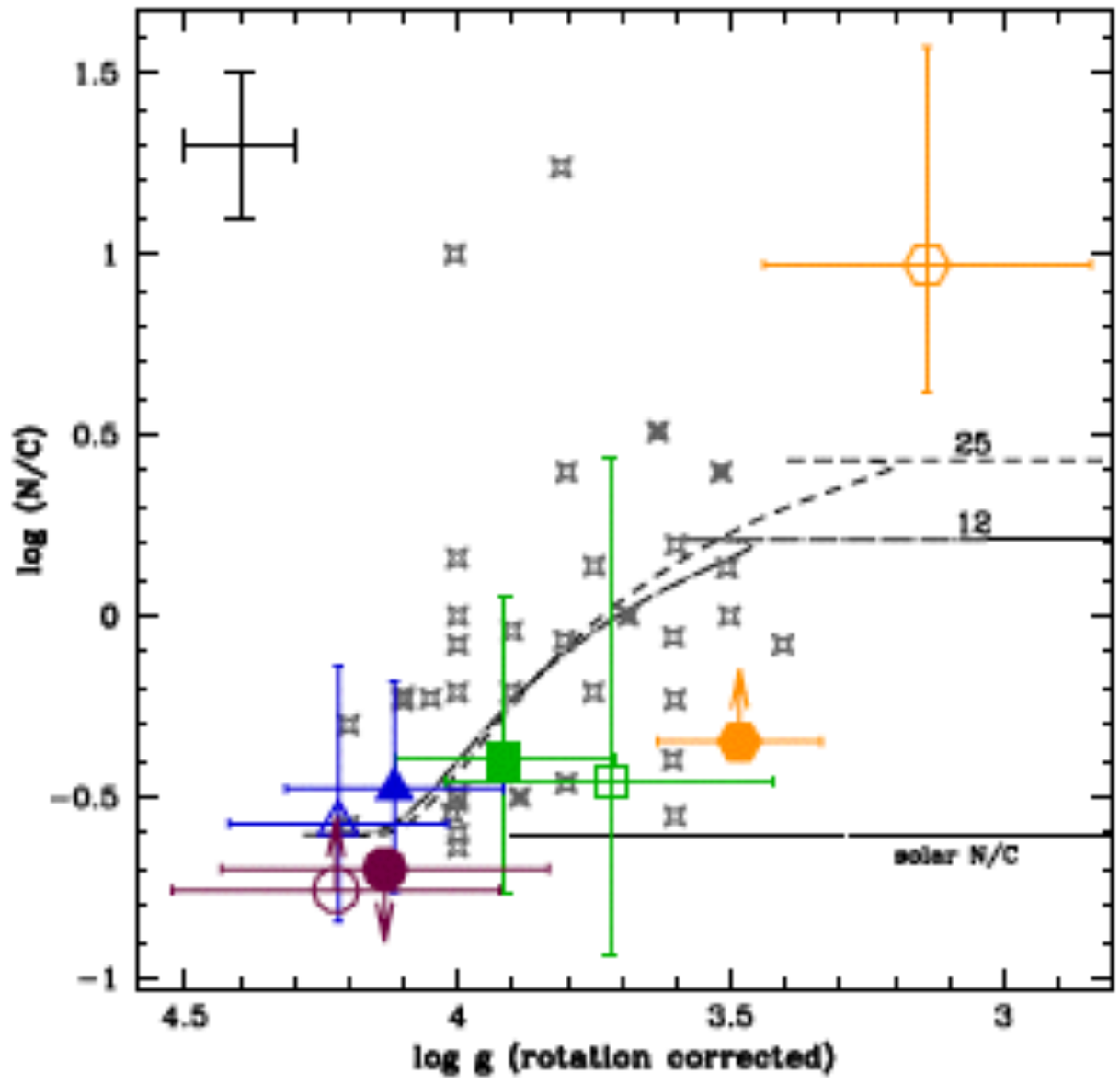


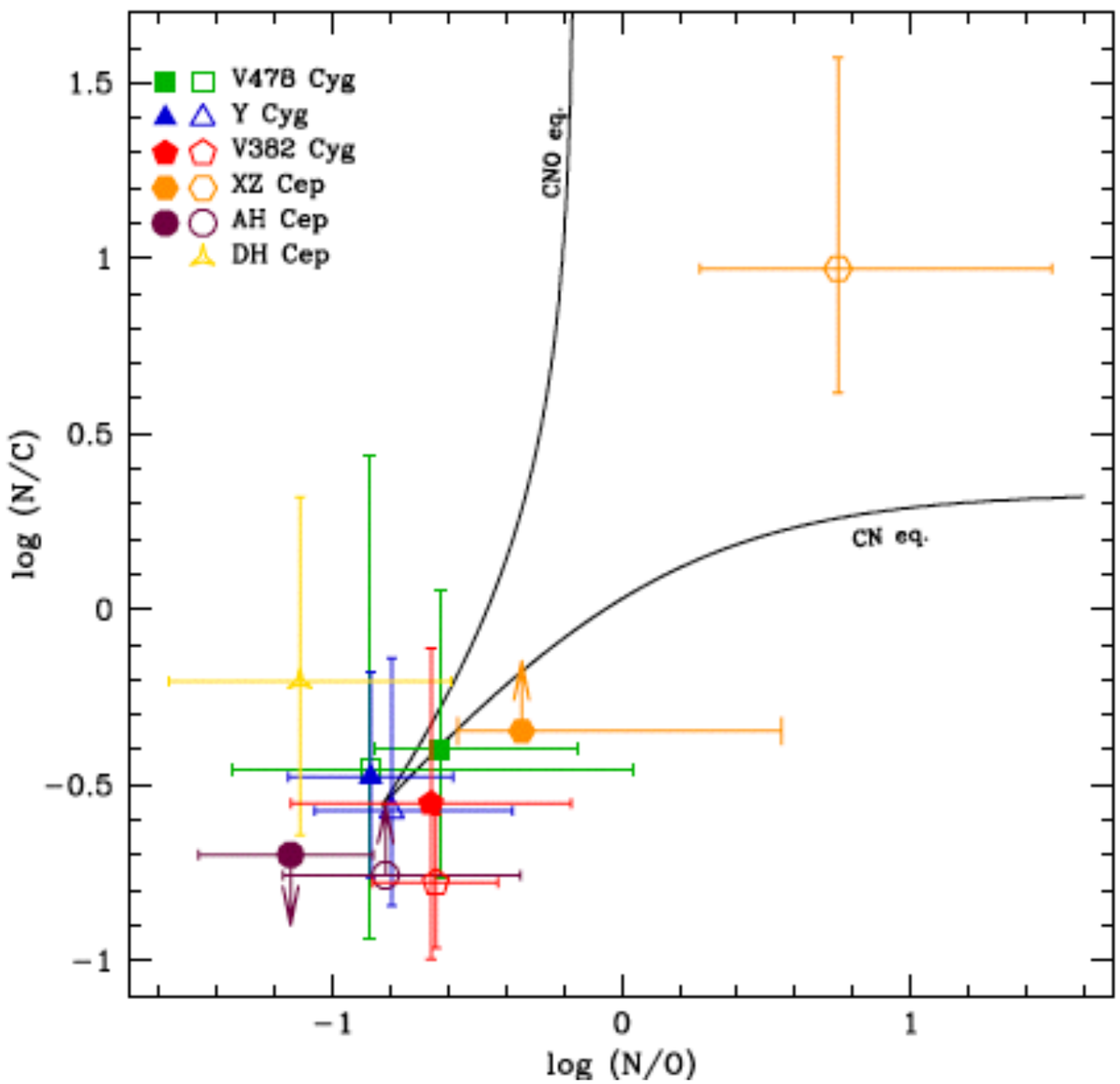



Normal evolution
Homogenous evolution
RLOF at zero age
VFTS 217
VFTS 352
Period (days)
Companion mass ($M_\odot$)
3.5
3
2.5
2
1.5
1
0.5
0
20
40
60
80
100

Pilot study of 6 eclipsing massive binaries

30 systems will come





Martins, Mahy, Hervé (2017)