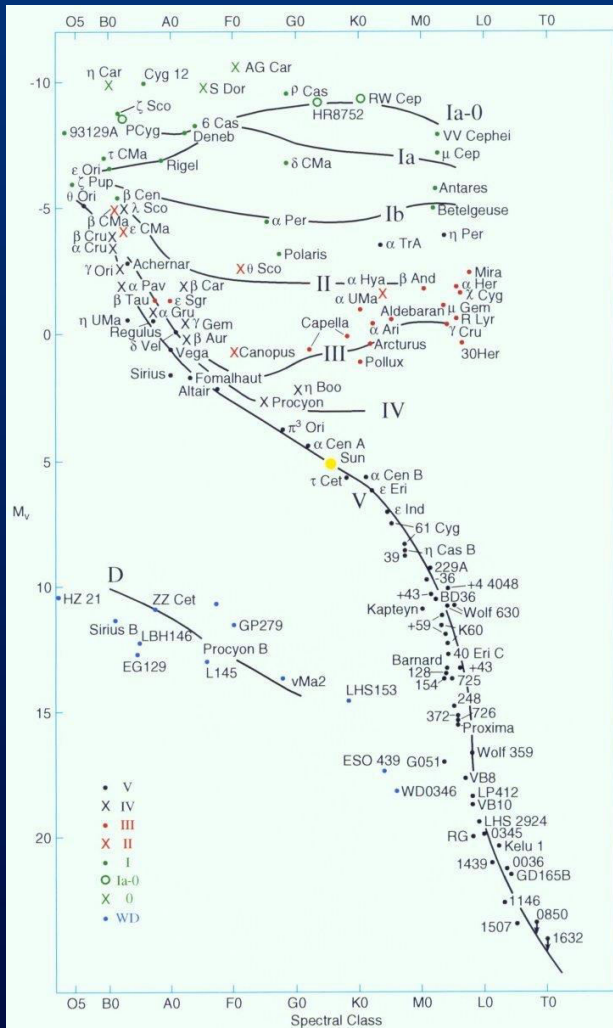




A Tayf Türü Yıldızlar

UĞUR ŞENASLAN

18880017



O-B Sınıfı
Dev yıldızlar



1 yıldız

A-F Sınıfı yıldızlar



25 yıldız

K Sınıfı yıldızlar



80 yıldız

G Sınıfı yıldızlar



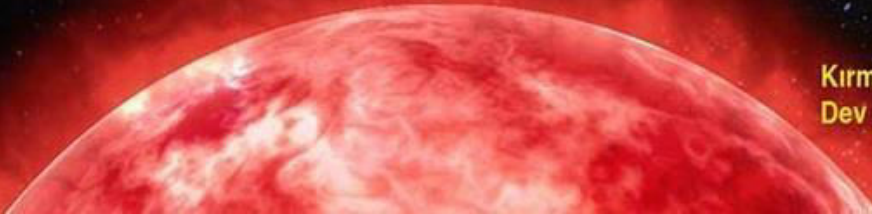
35 yıldız

M Sınıfı yıldızlar



800 yıldız

Kırmızı
Dev yıldızlar



4 yıldız

Karakteristik Özellikleri

Sınıf	Etkin Sıcaklık	Görünür Renk	Kütle	Yarıçap	Işıtma Gücü	Bulunma Yüzdesi
O	> 30.000 K	Mavi	> 16 M	> 6.6 R	> 30.000 L	0.00003%
B	10.000 - 30.000 K	Derin mavimsi	2.1 - 16 M	1.8 - 6.6 R	25 - 30.000 L	0.13%
A	7.500 - 10.000 K	Mavi beyaz	1.4 - 2.1 M	1.4 - 1.8 R	5 - 25 L	0.60%
F	6.000 - 7.500 K	Beyaz	1.04 - 1.4 M	1.15 - 1.4 R	1.5 - 5 L	3%
G	5.200 - 6.000 K	Sarımsı beyaz	0.8 - 1.04 M	0.96 - 1.15 R	0.6 - 1.5 L	7.60%
K	3.700 - 5.200 K	Soluk sarı turuncu	0.45 - 0.8 M	0.7 - 0.96 R	0.08 - 0.6 L	12.10%
M	2.400 - 3.700 K	Açık turuncu kırmızı	0.08 - 0.45 M	< 0.7 R	< 0.08 L	76.45%



SPECTRAL CLASS O

Dark Blue

28,000 - 50,000 K

Ionized Atoms, especially helium

Example: Mintaka (O1-3III)



SPECTRAL CLASS B

Blue

10,000 - 28,000 K

Neutral helium, some hydrogen

Alpha Eridani A (B3V-IV)



SPECTRAL CLASS A

Light Blue

7,500 - 10,000 K

Strong hydrogen, some ionized metals

Sirius A (A0-IV)



SPECTRAL CLASS F

White

6,000 - 7,500 K

Hydrogen and ionized metals,

calcium and iron

Procyon A (F5V-IV)

Yellow

5,000 - 6,000 K

Ionized calcium, both neutral and ionized metals

Example: Sol (G2V)

SPECTRAL CLASS G



Orange

3,500 - 5,000 K

Neutral Metals

Alpha Centauri B (K0-3V)

SPECTRAL CLASS K



Red

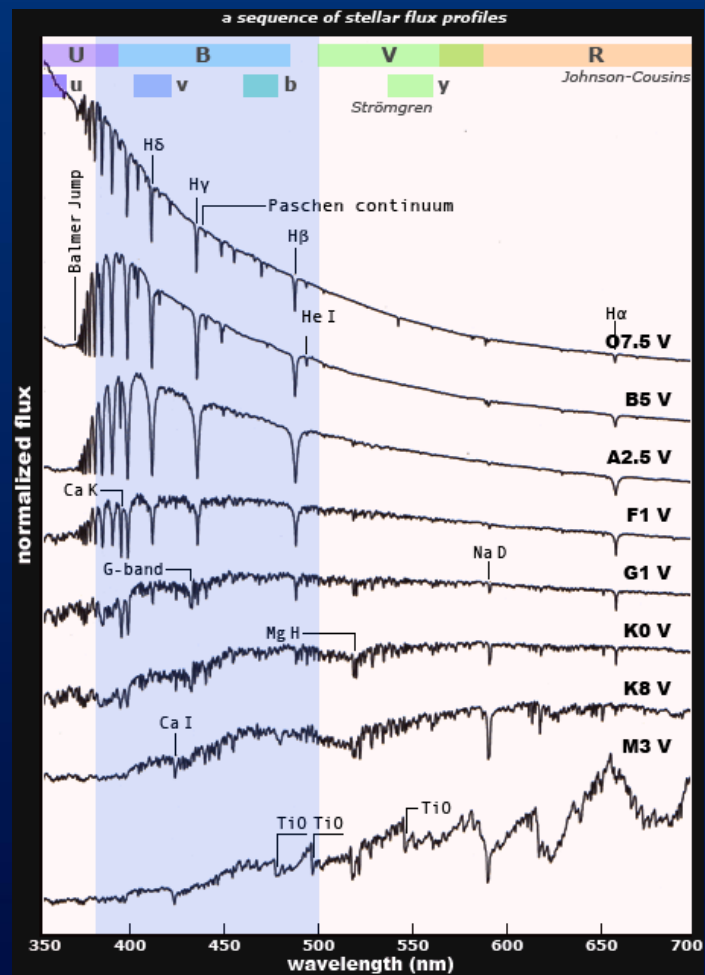
2,500 - 3,500 K

Ionized atoms, especially helium

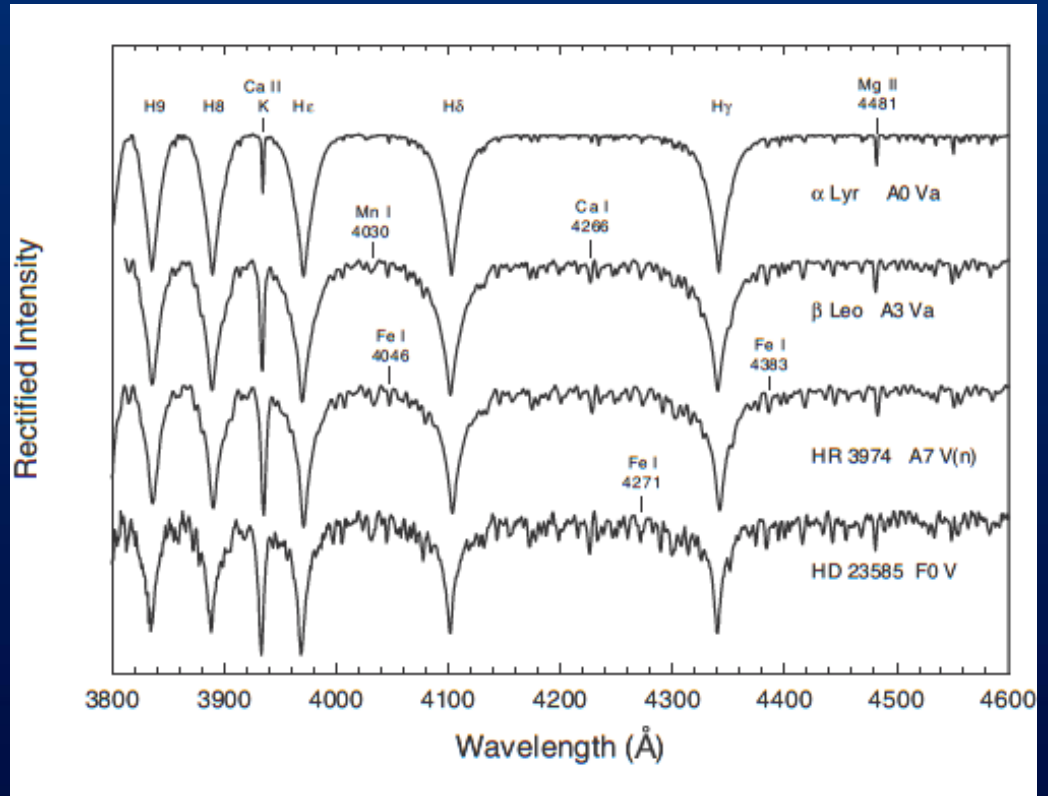
Wolf 359 (M5-8V)

SPECTRAL CLASS M

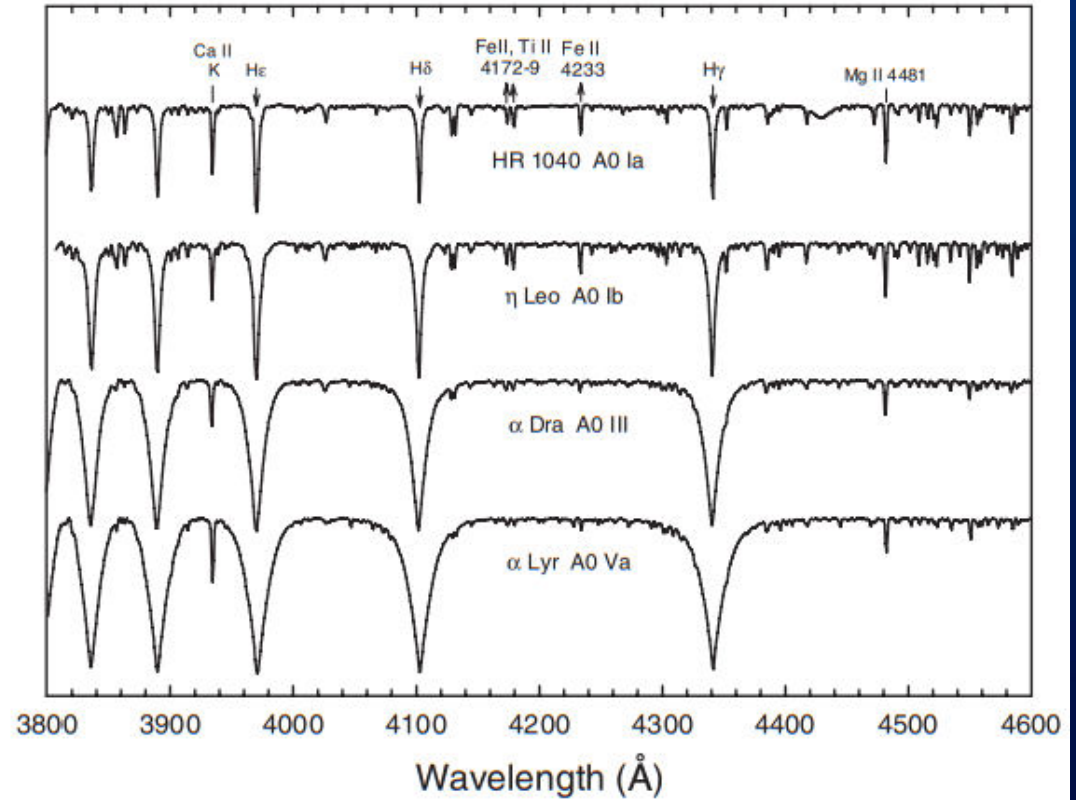


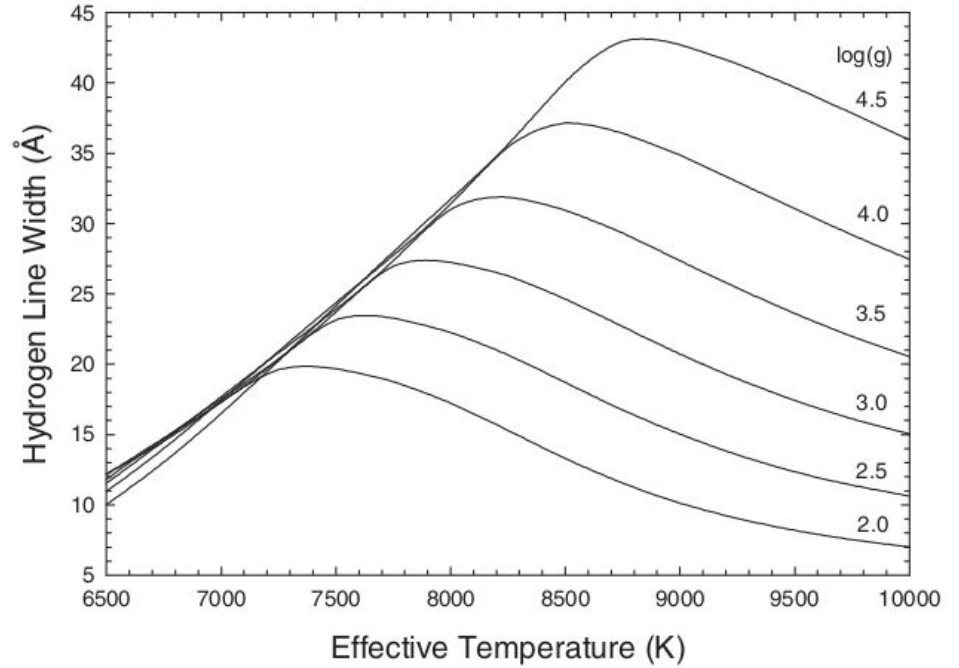
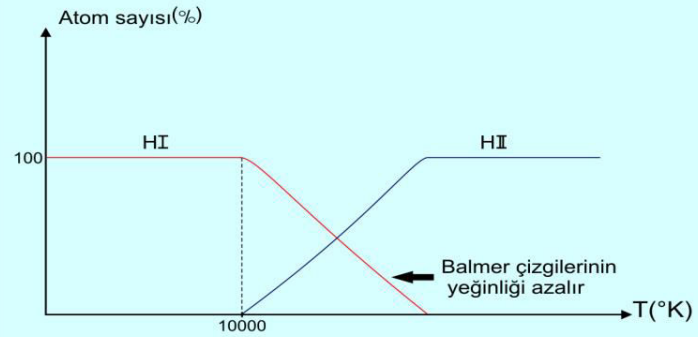


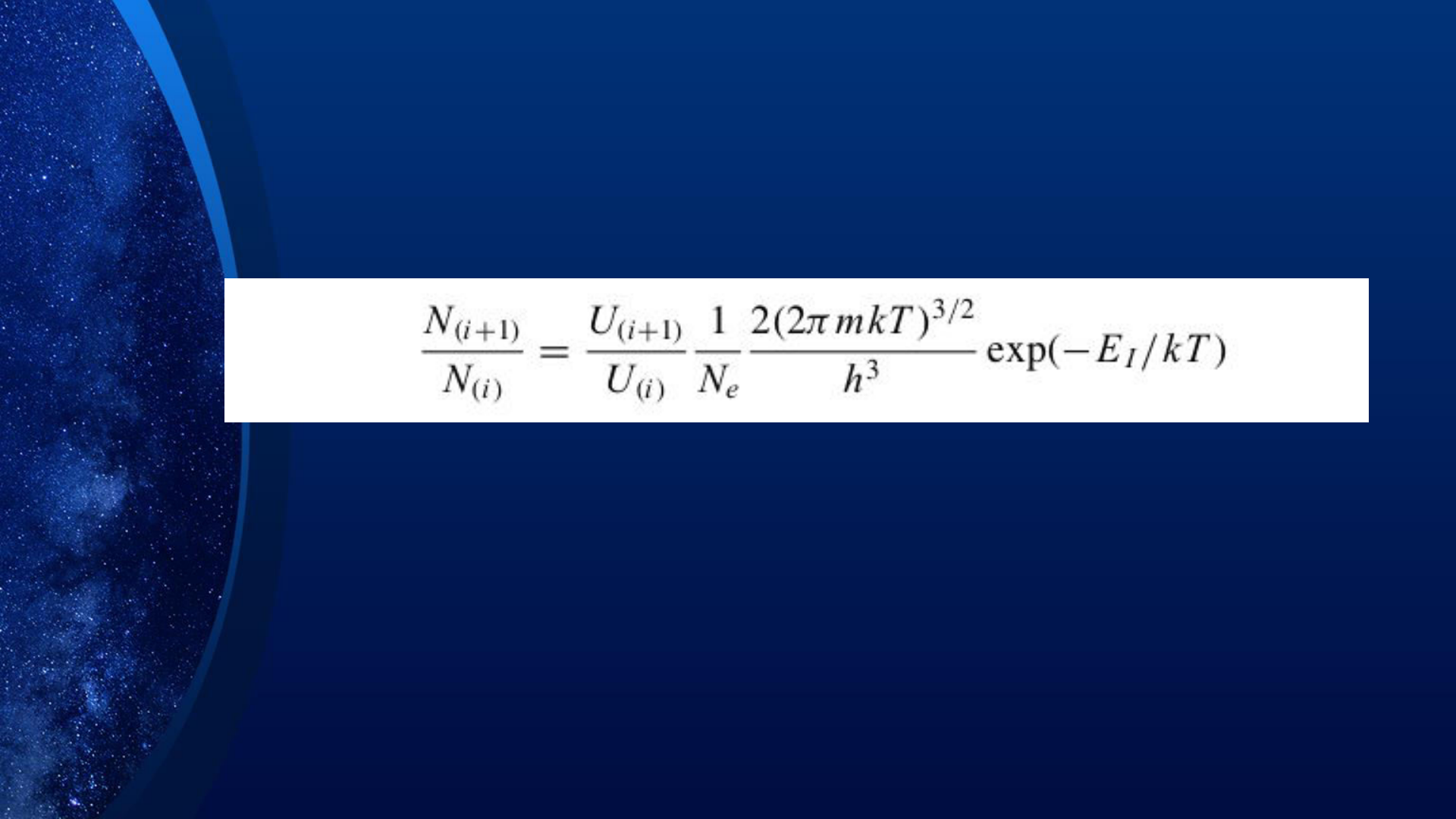
Sıcaklık İle Değişimi



Işınım Sınıfı İle Değişimi

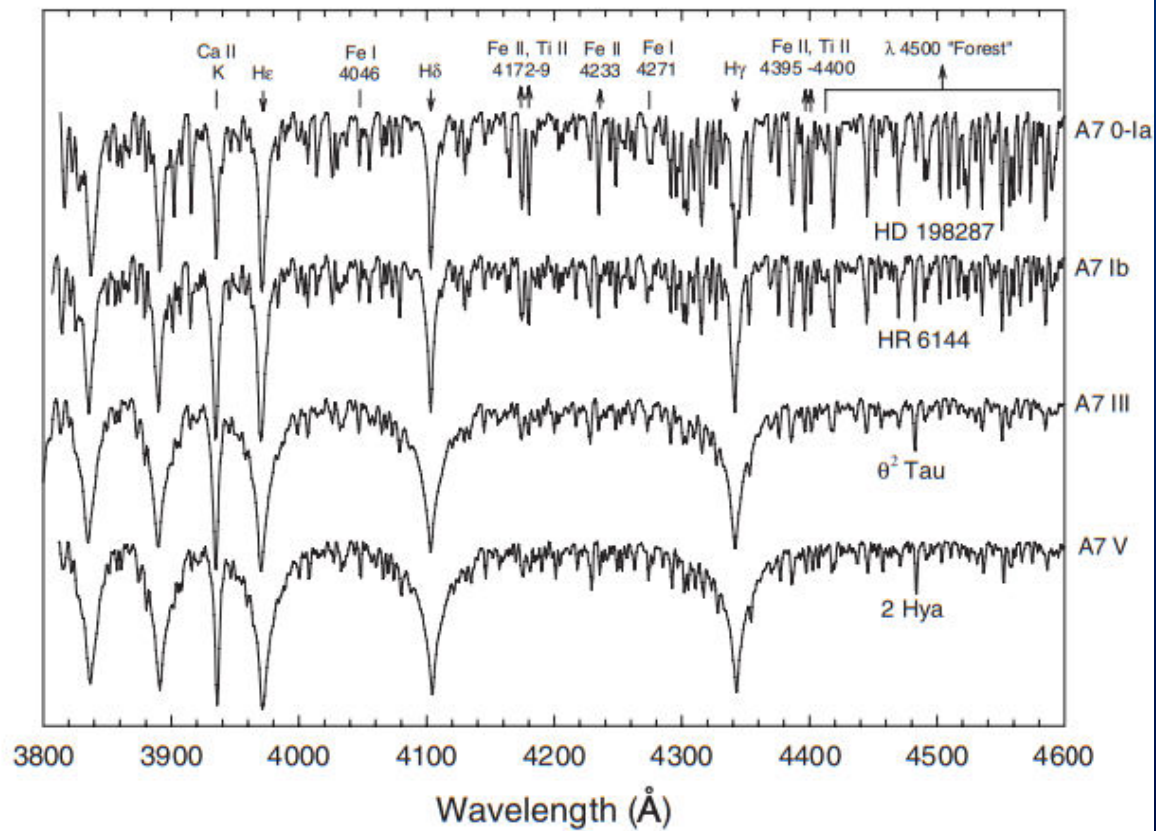




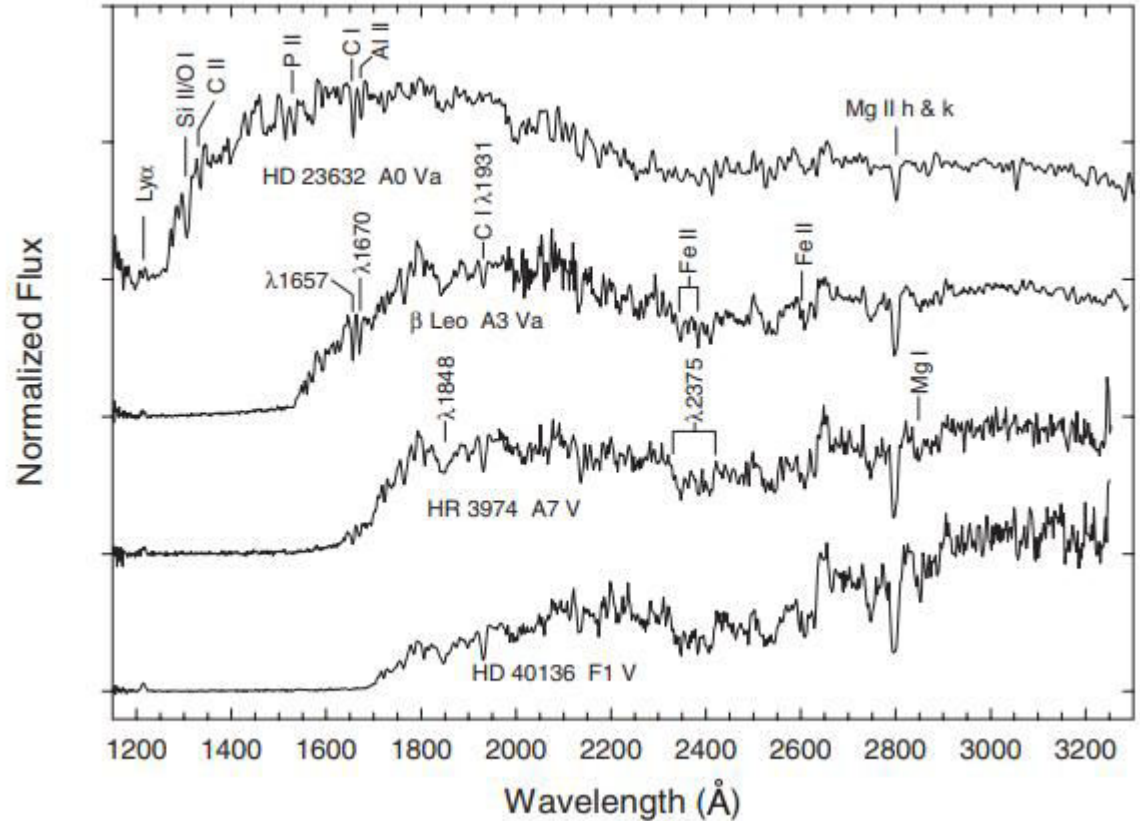

$$\frac{N_{(i+1)}}{N_{(i)}} = \frac{U_{(i+1)}}{U_{(i)}} \frac{1}{N_e} \frac{2(2\pi mkT)^{3/2}}{h^3} \exp(-E_I/kT)$$

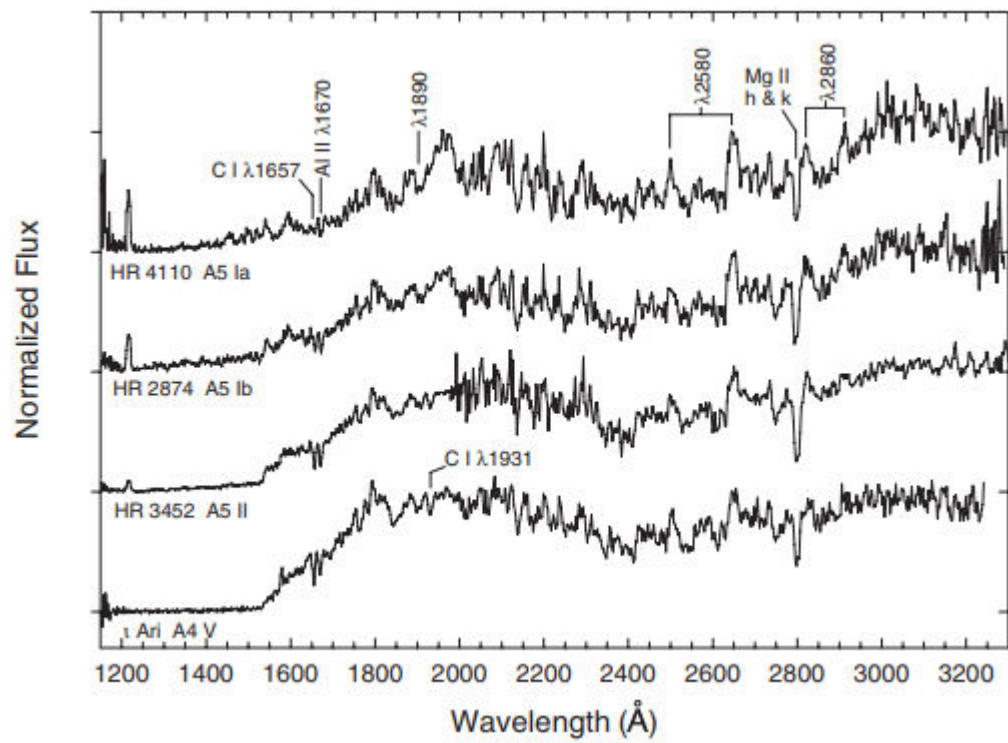


Rectified Intensity

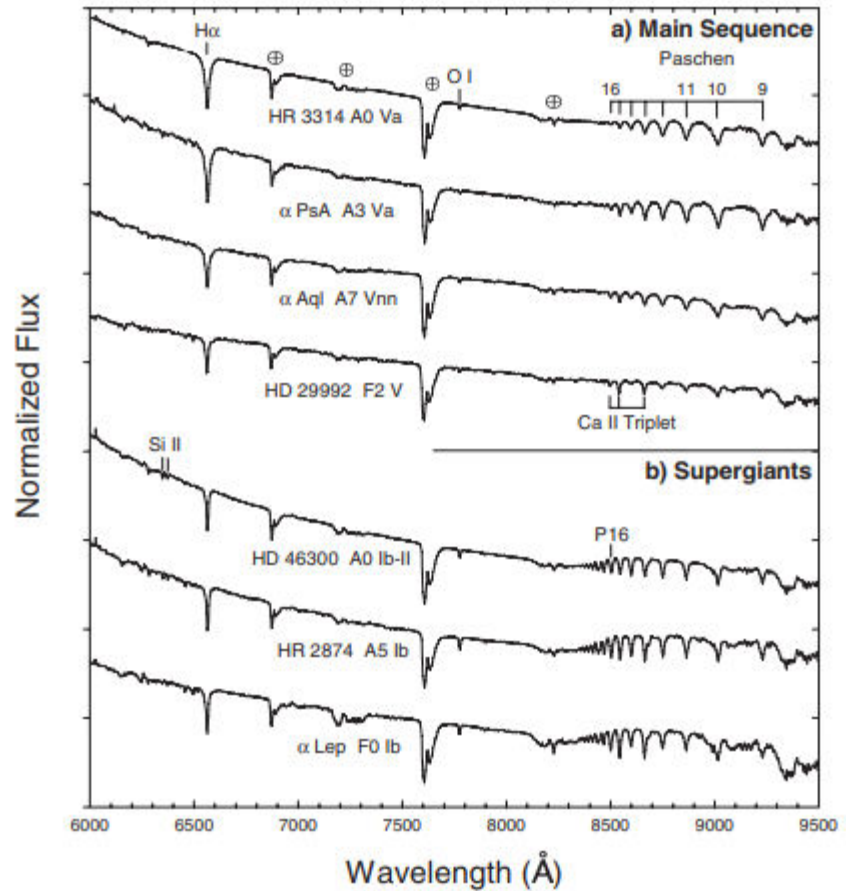


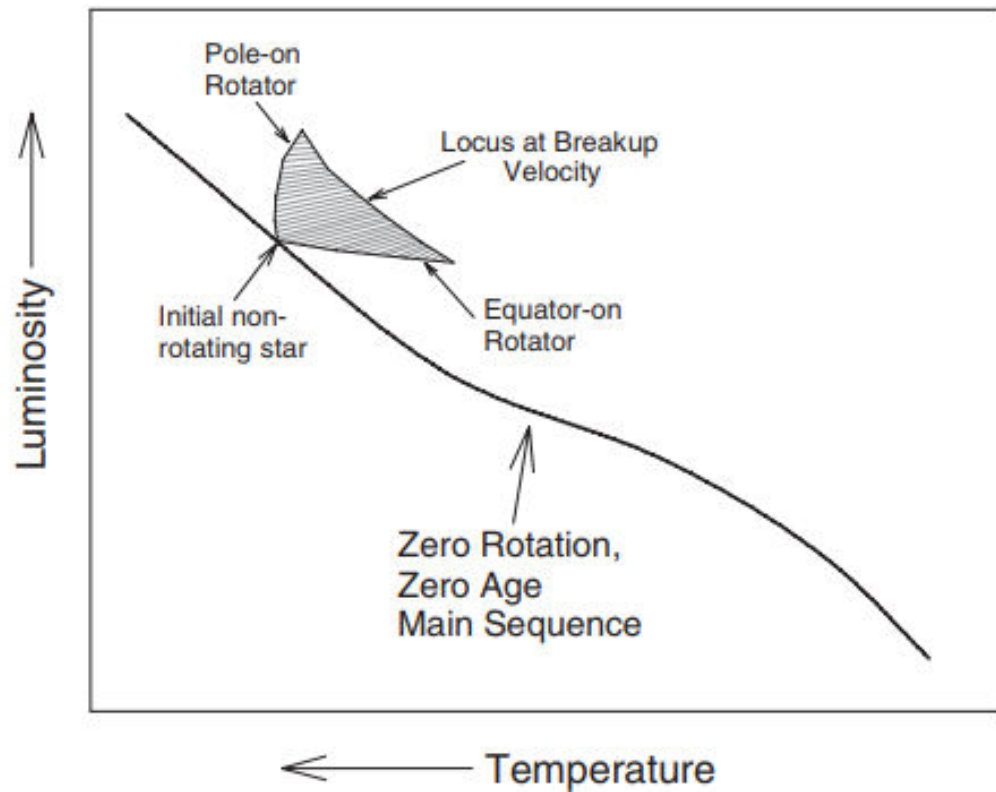
Ultraviyole Değişimi





Infared Bölgedeki Değişimi





Tuhaf Kimyasal Yıldızlar (CP)




Am Yıldızları



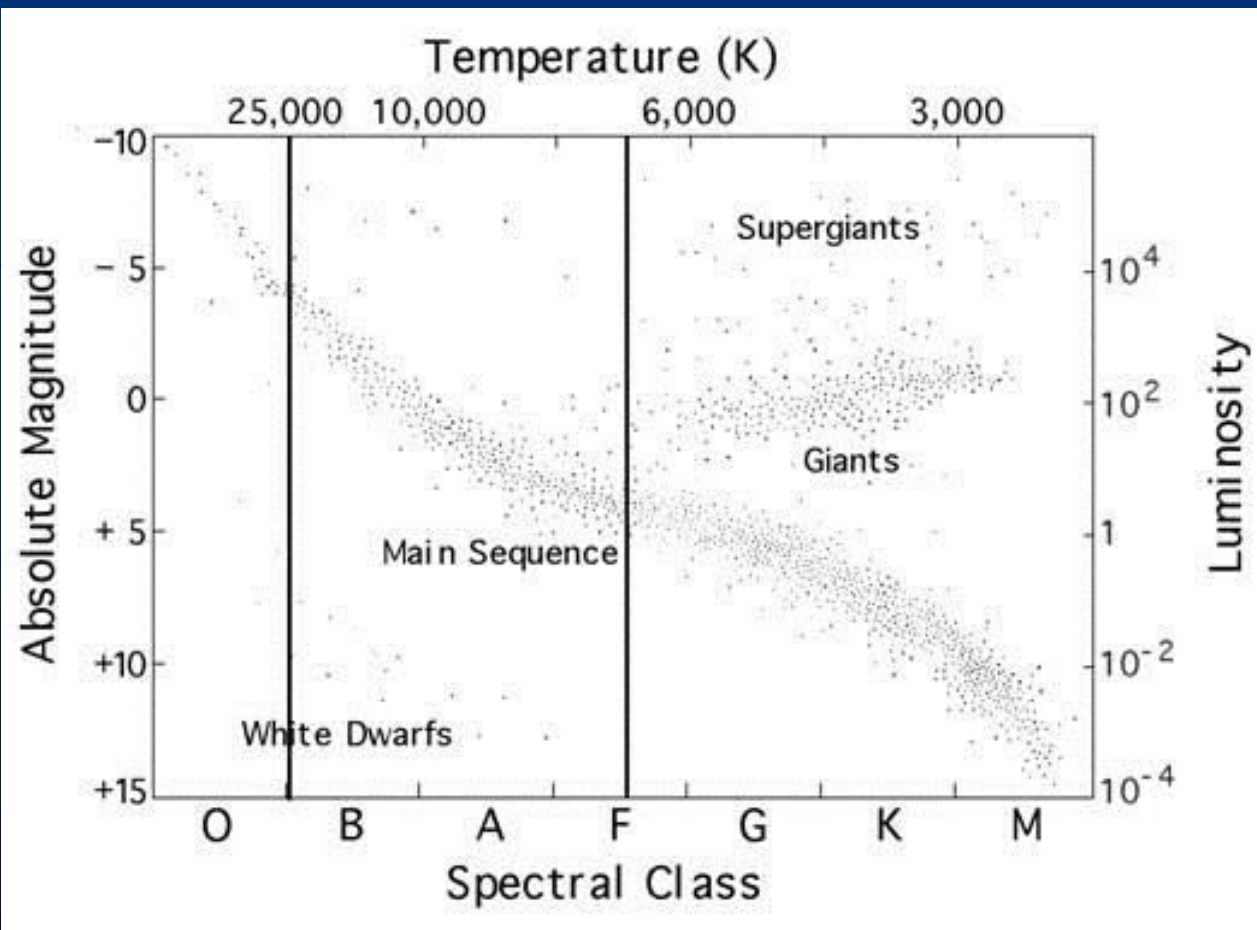
Ap Yıldızları

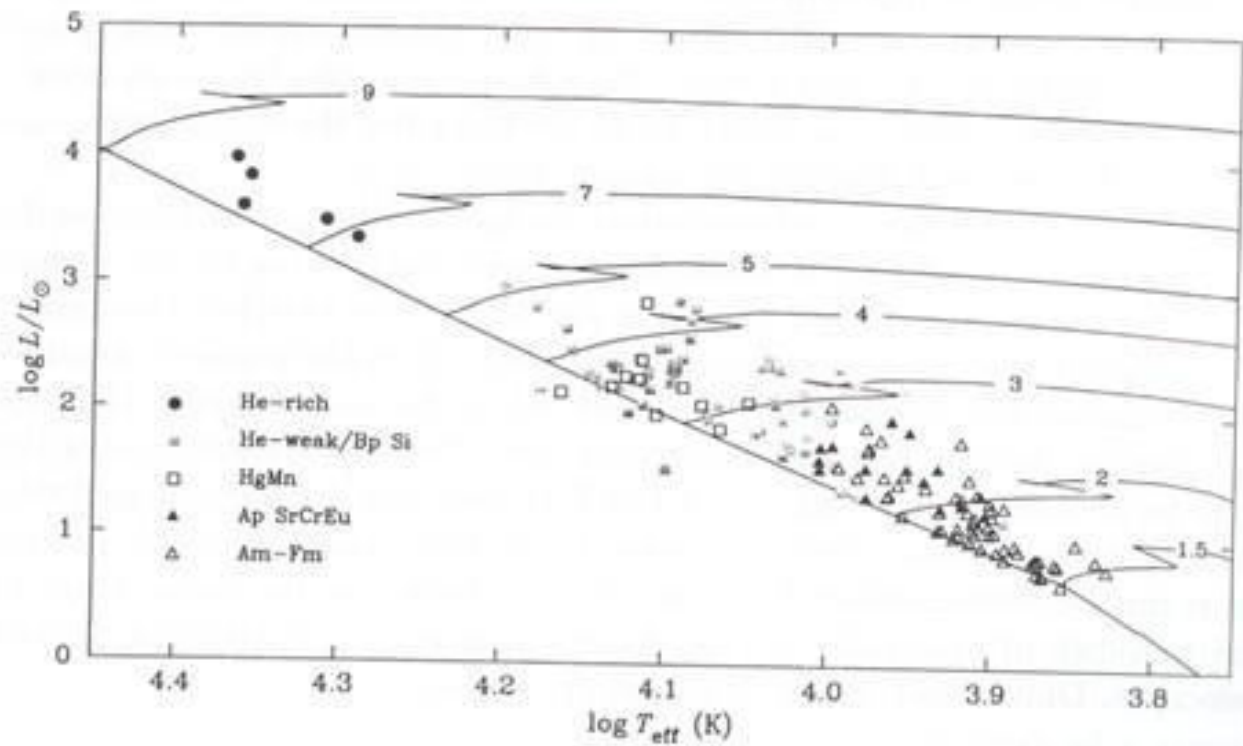


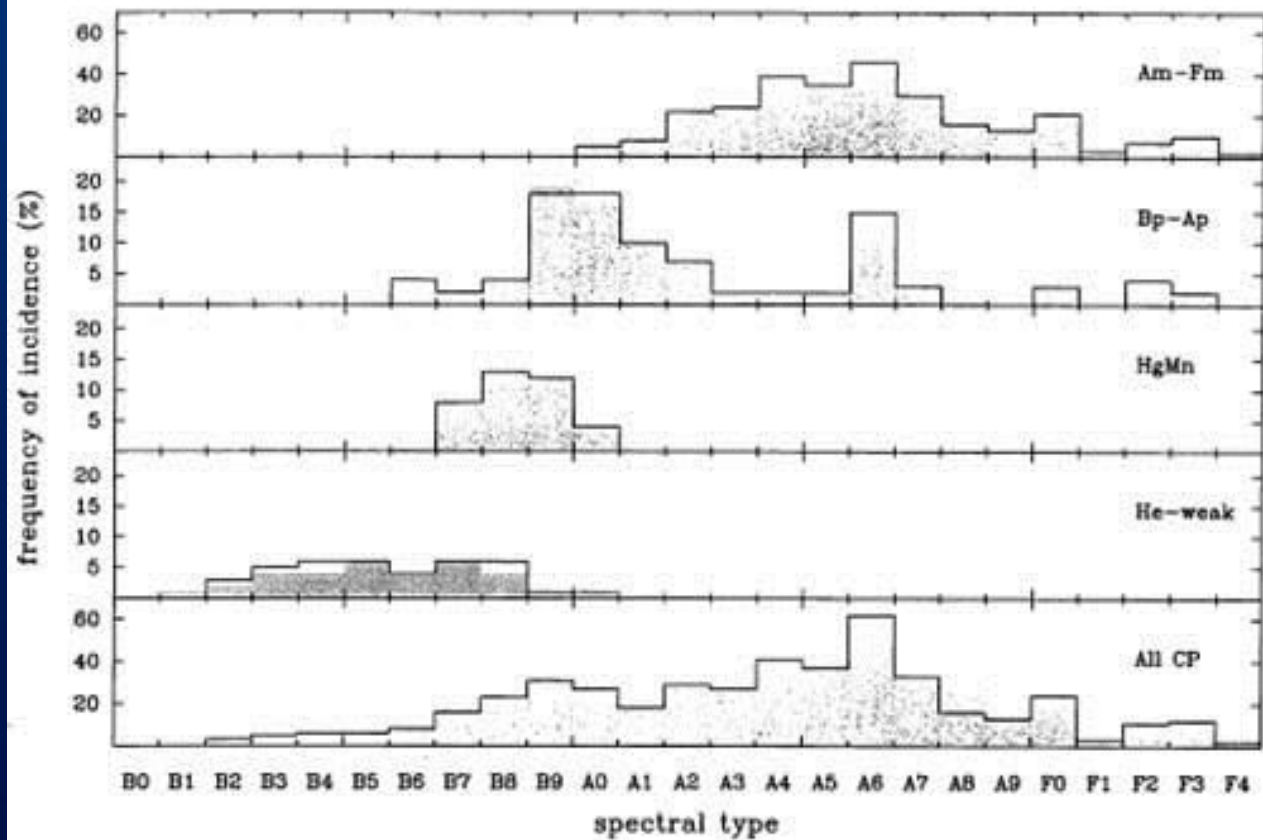
λ Bootis Yıldızları



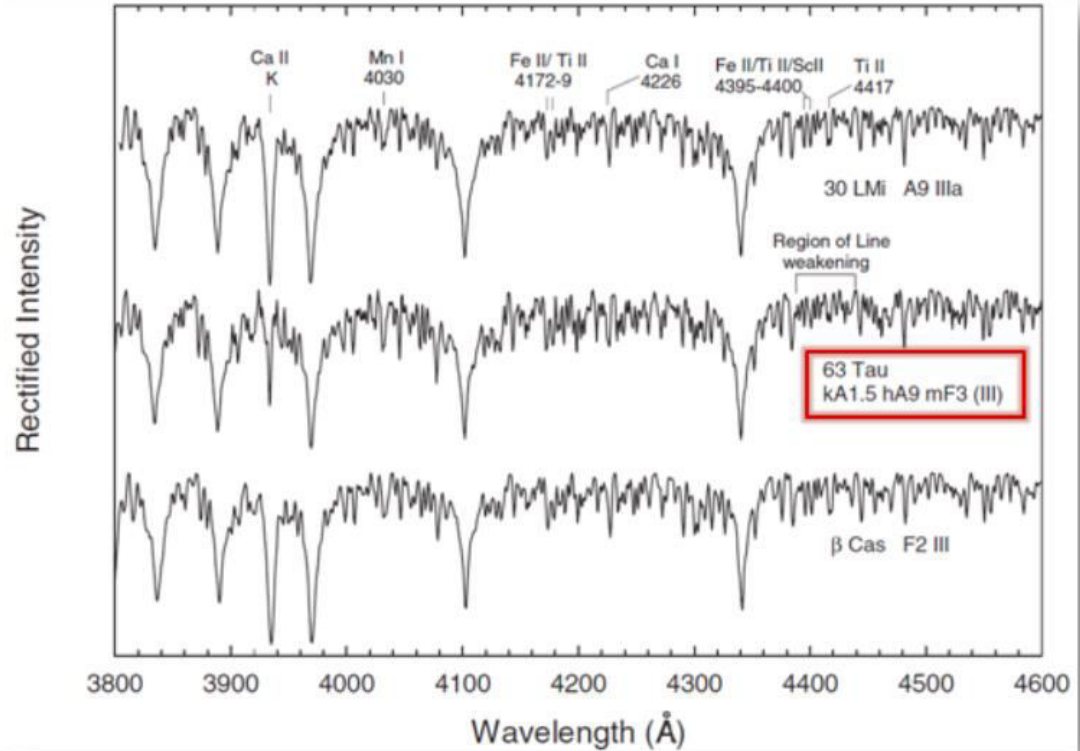
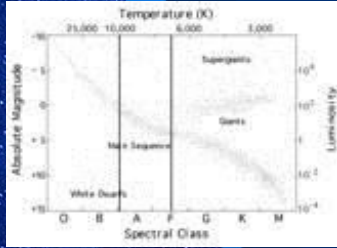
Classical Name	Preston Group	Discovery criteria	Spectral Types	Temp (K) Range
λ Boo		Weak Mg II, weak metals	A0-F0	7500-9000
Am-Fm	CP1	Weak Ca II, Sc II, enhanced metals	A0-F4	7000-10,000
Bp-Ap	CP2	Enhanced Sr, Cr, Eu, Si	B6-F4	7000-16,000
HgMn	CP3	Enhanced Hg II, Mn II	B6-A0	10,500-16,000
He-weak	CP4	Weak He I	B2-B8	14,000-20,000
He-rich		Enhanced He I	B2	20,000-25,000

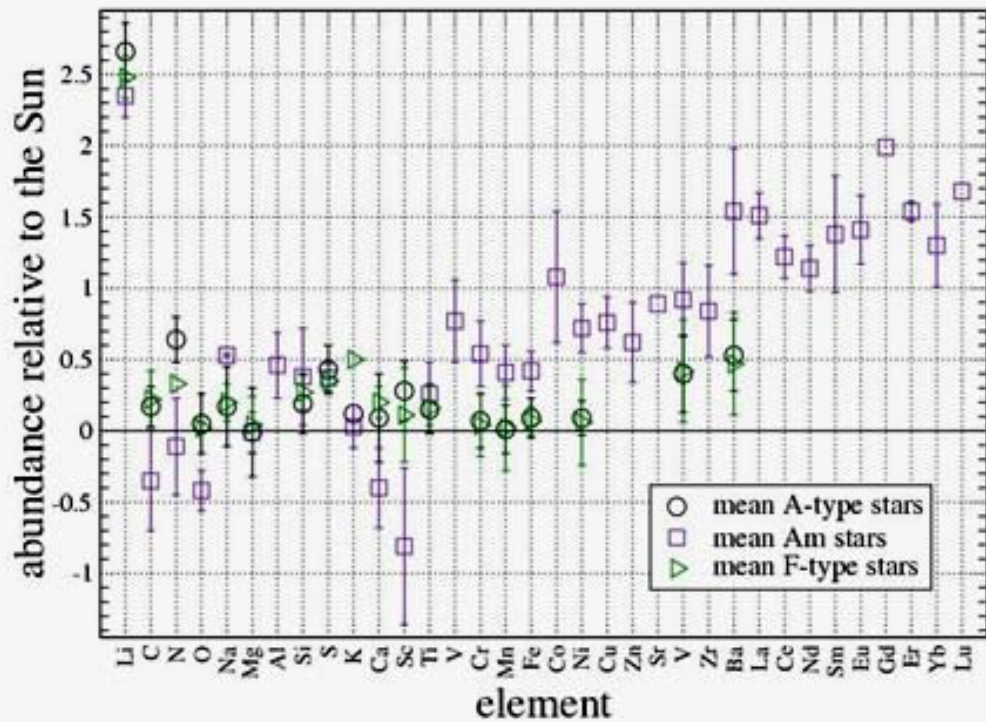


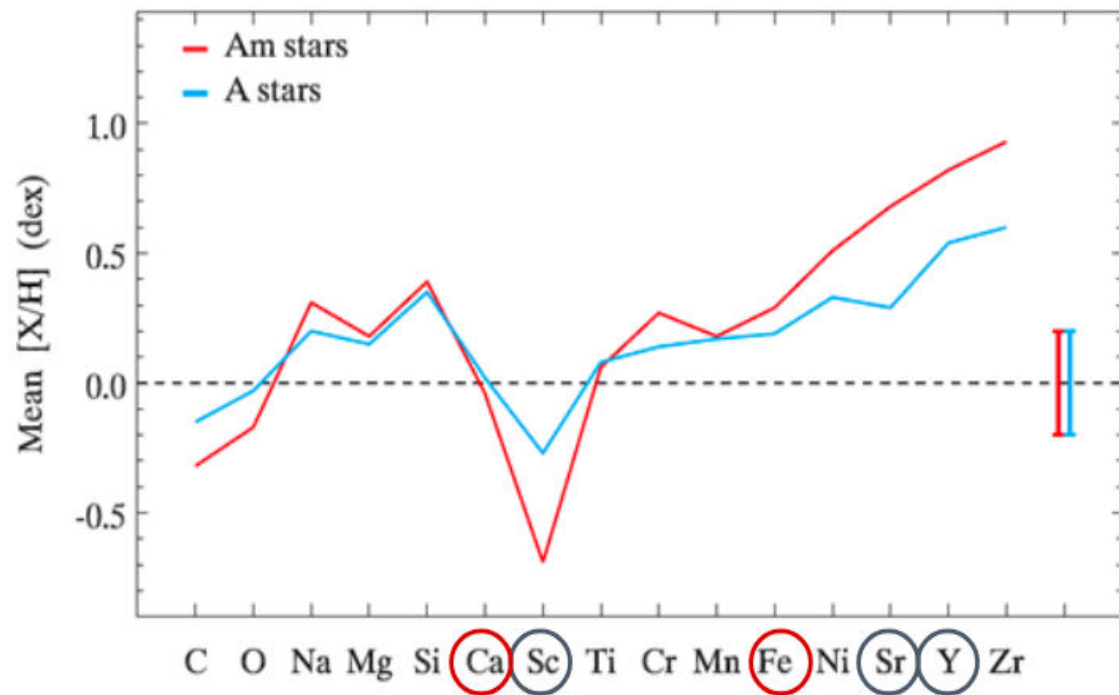


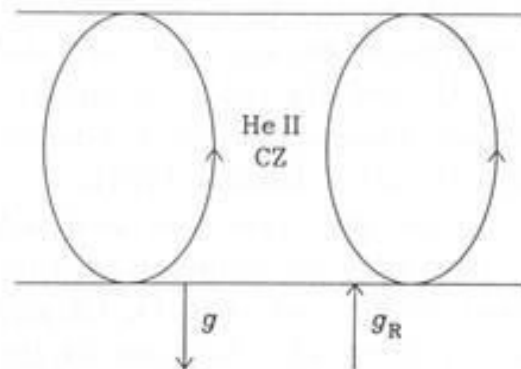


Am Yıldızları

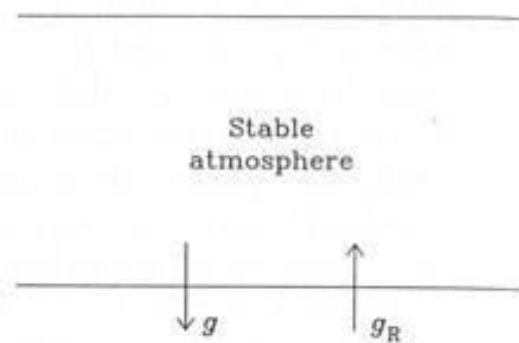






$\tau \ll 1$ 

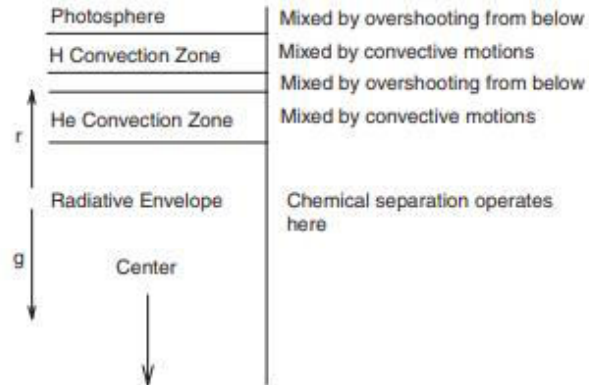
Reservoir

 $\tau \ll 1$ 

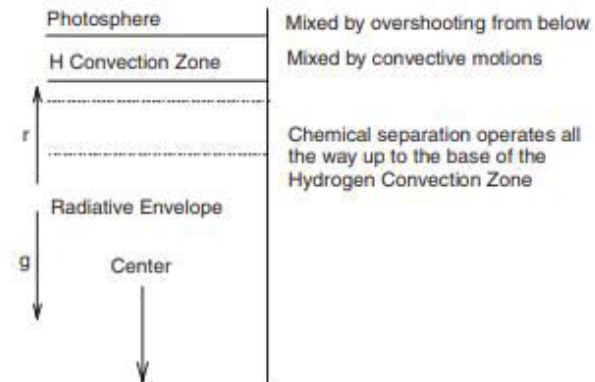
Reservoir



Normal A-type Star



Am Star





Normal Yıldızlarında



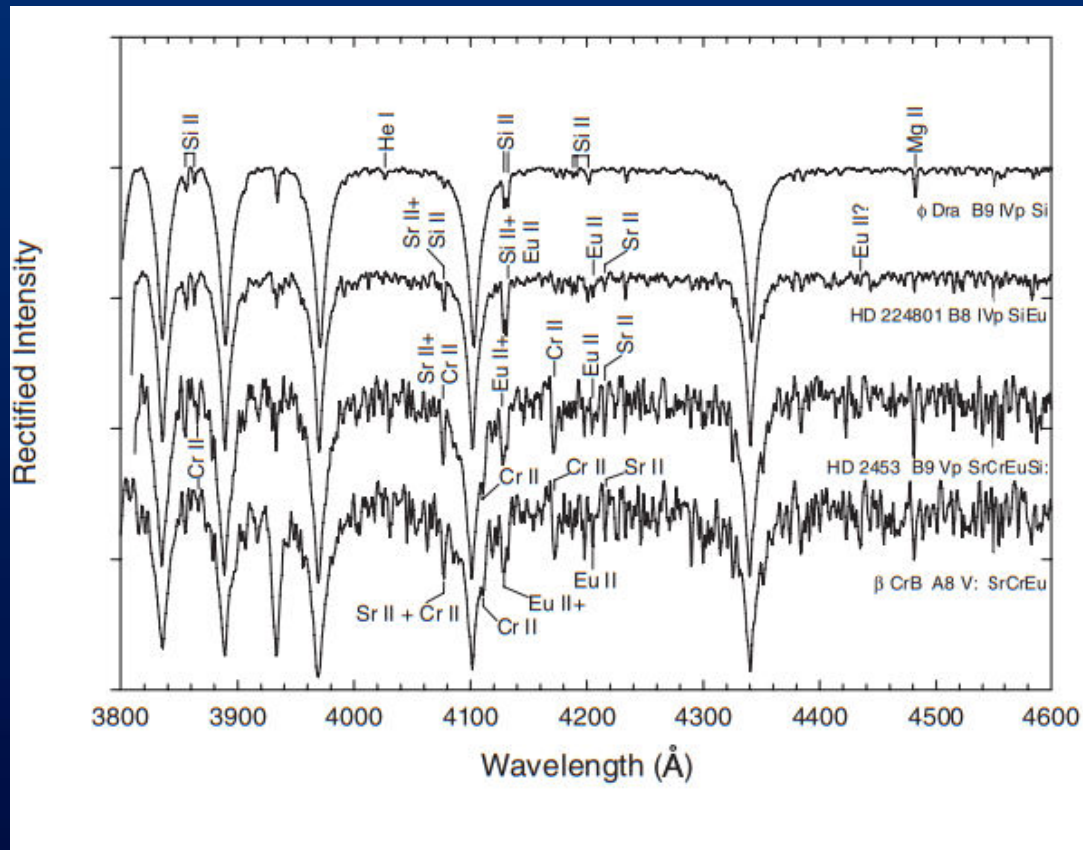
Kimyasal Ayrışma < meridyonel sirkülasyon

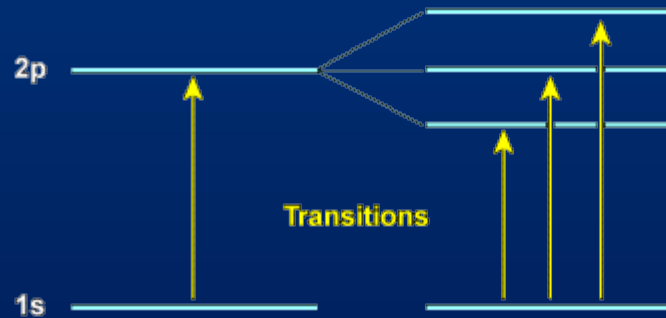
Am Yıldızlarında



Kimyasal Ayrışma > meridyonel sirkülasyon

Manyetik Tuhaf A Yıldızları (Ap)





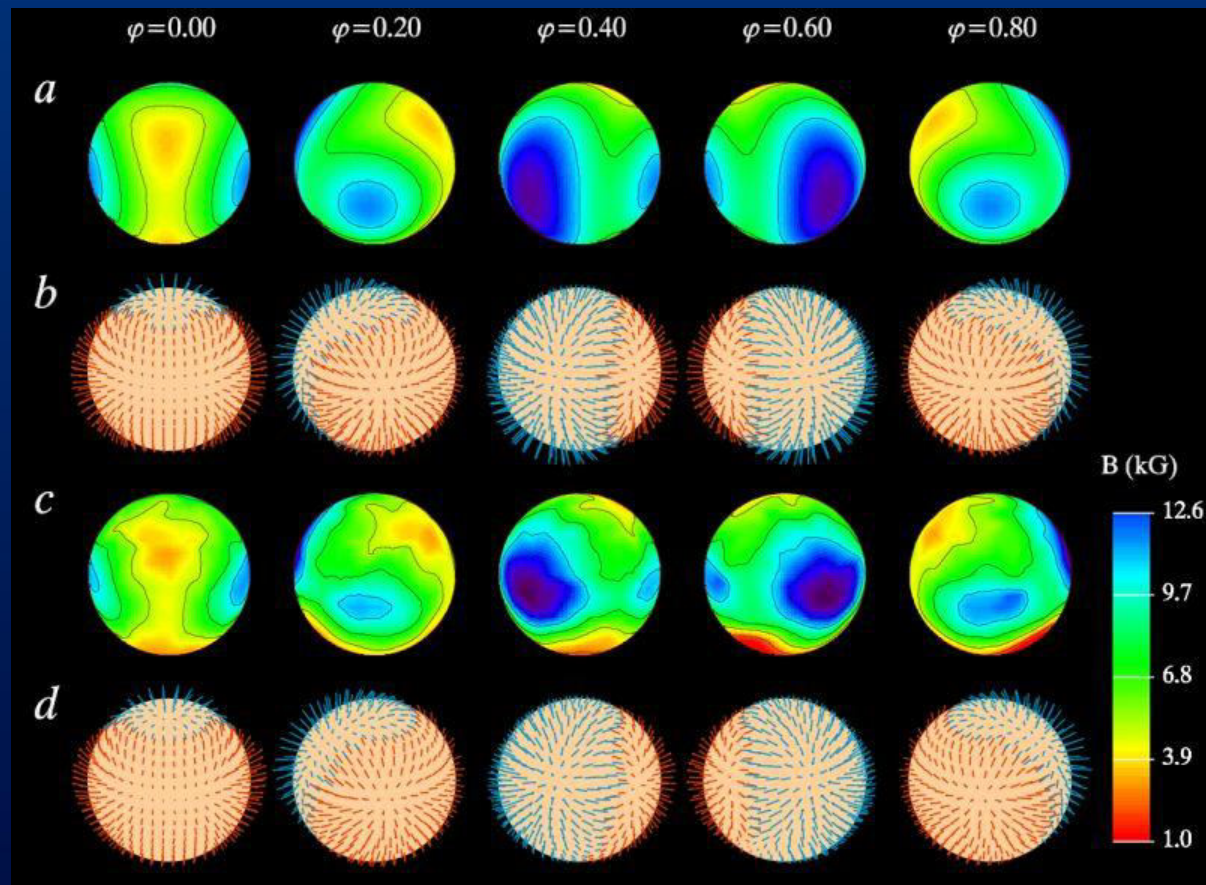
Energy
Levels



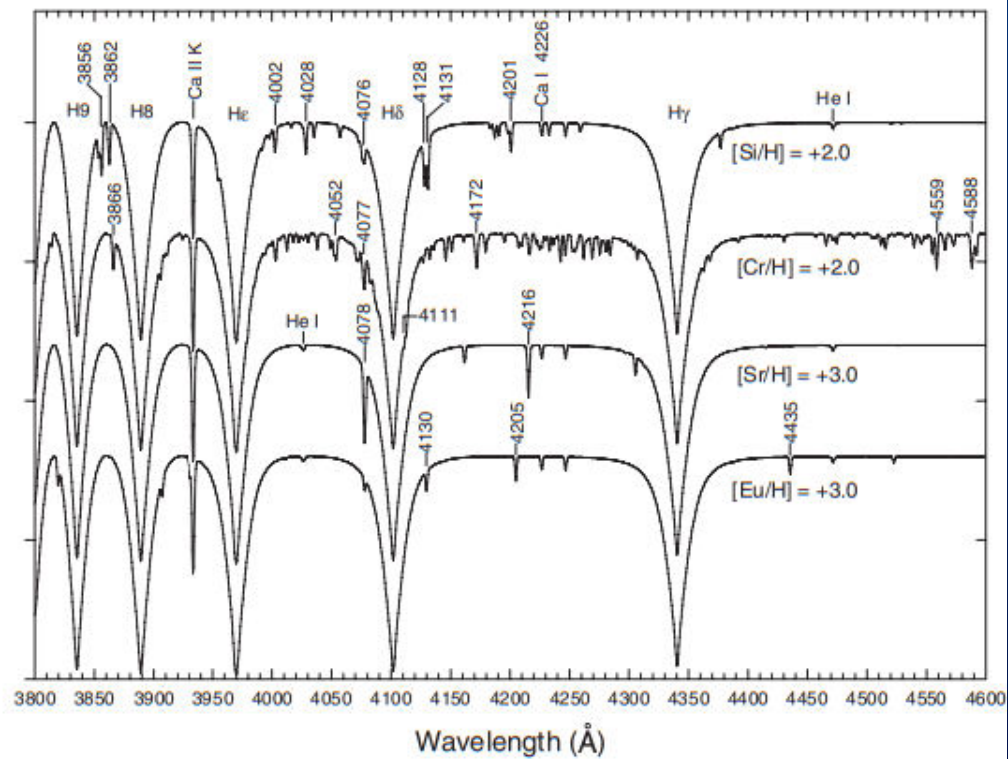
Spectra

No Magnetic Field

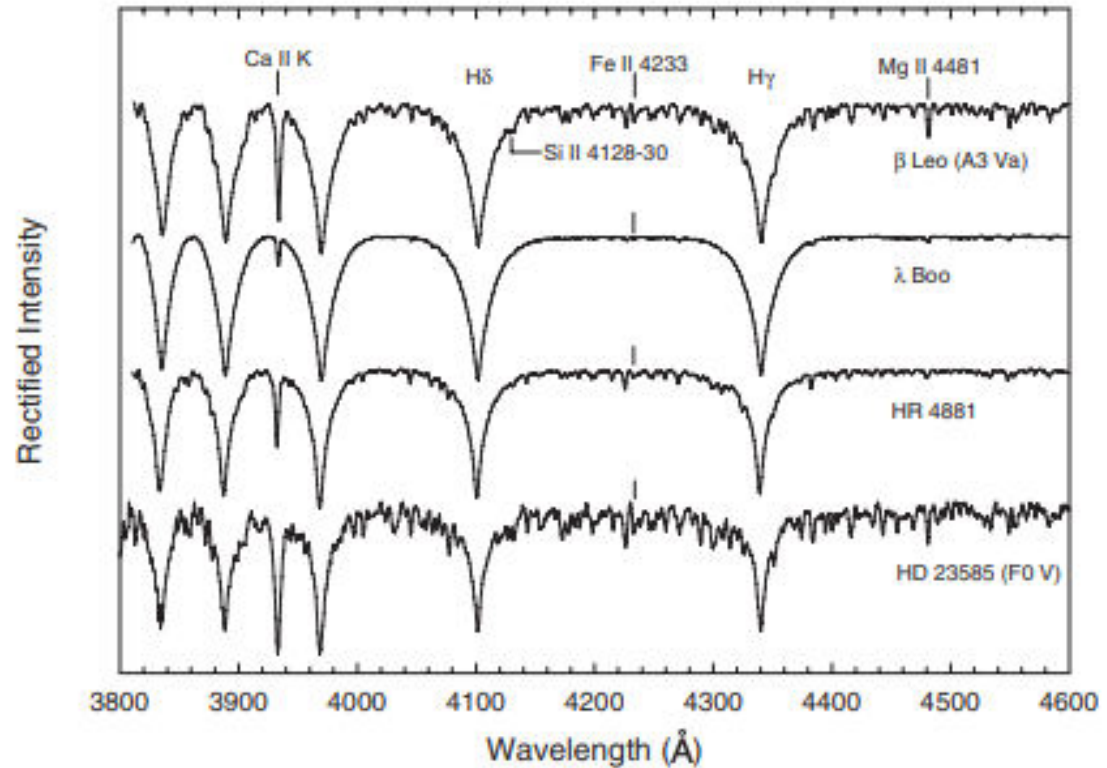
Magnetic Field



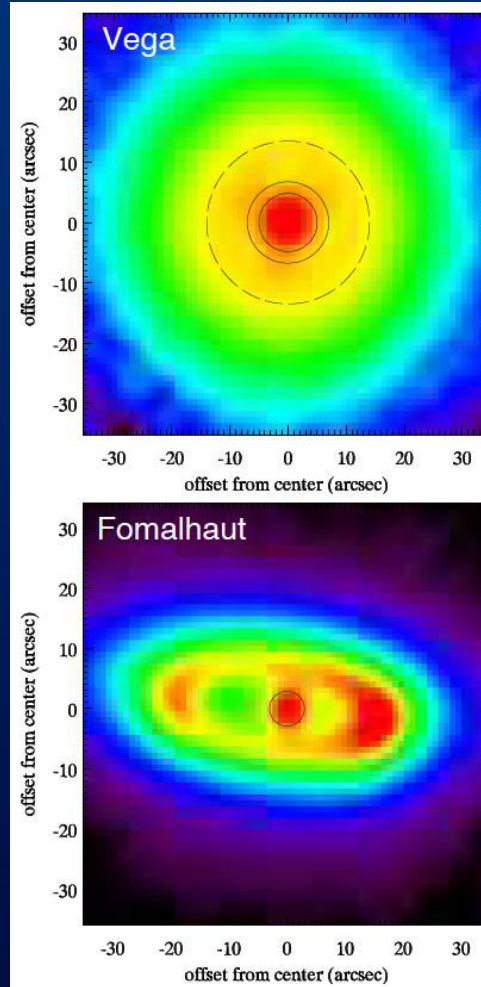
Rectified Intensity



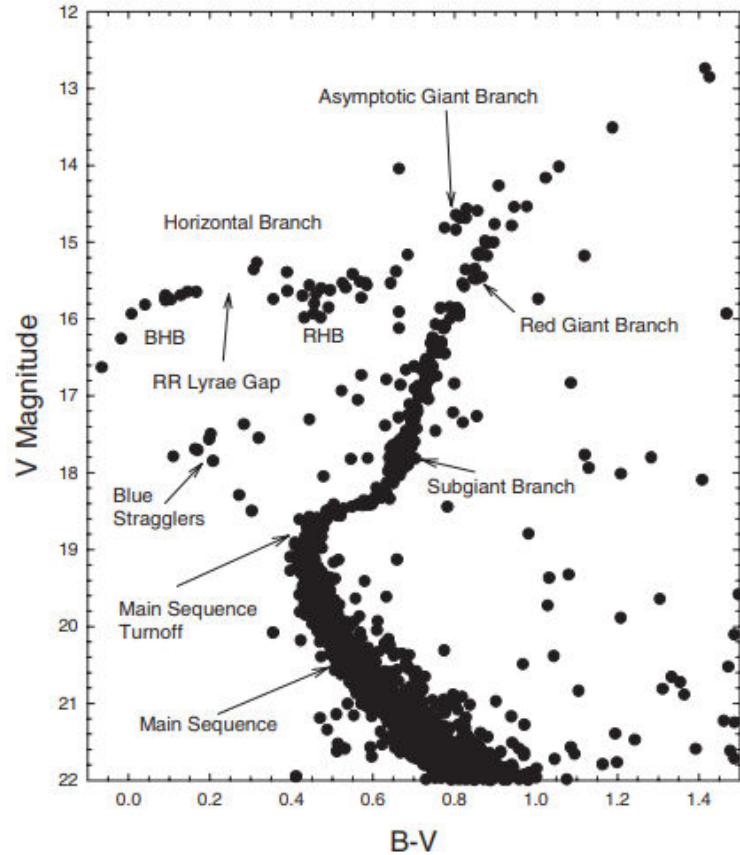
λ Bootis Yıldızları



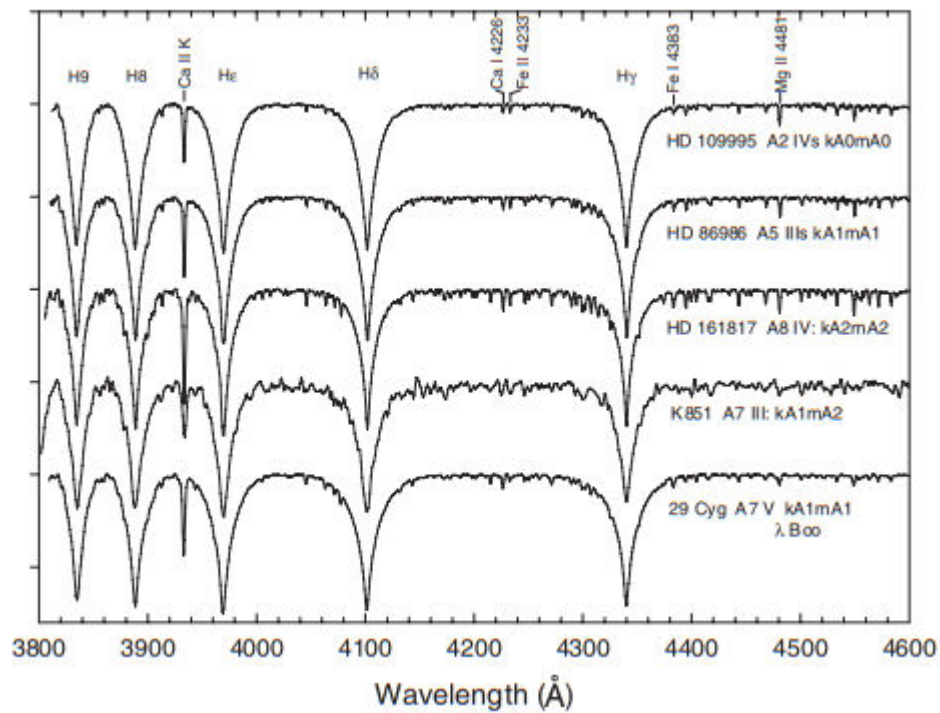
A Yıldızlarda Disk

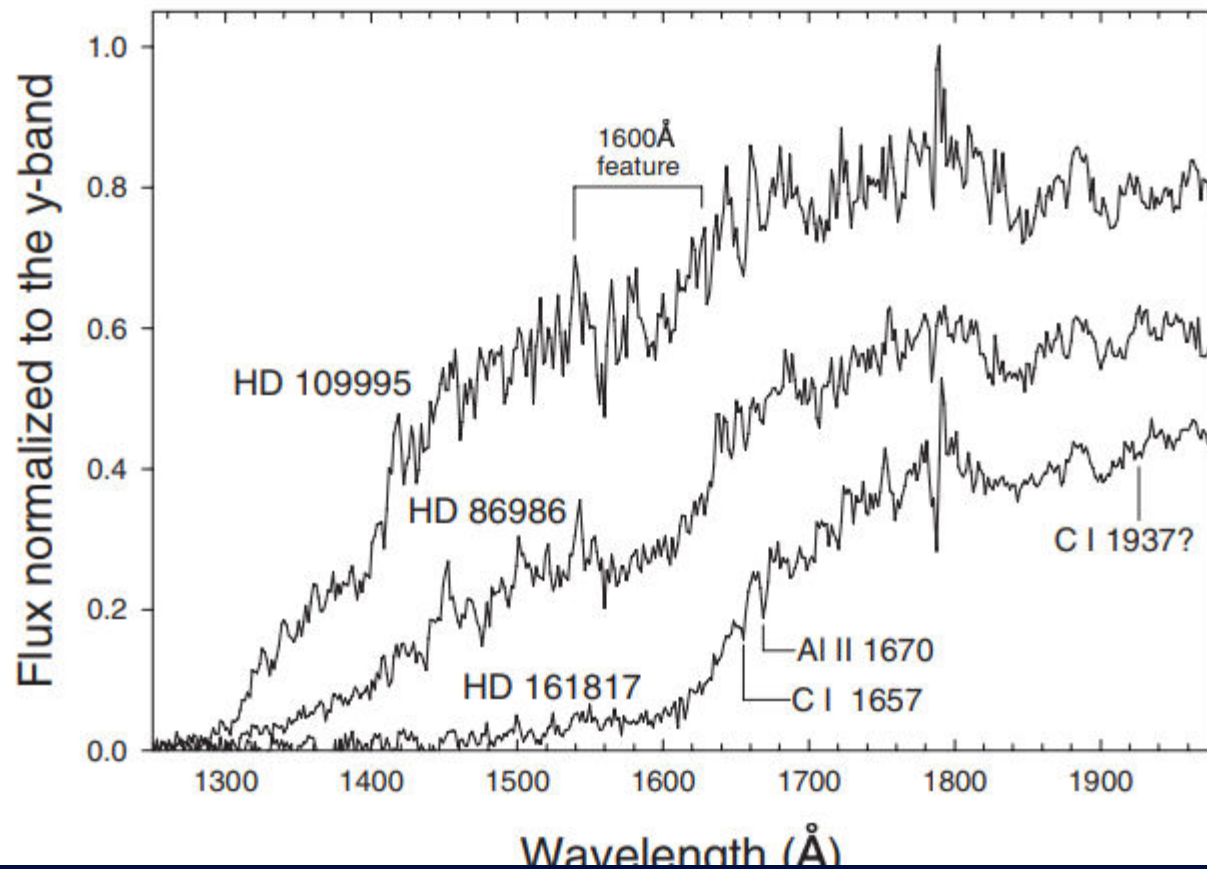


İleri Evrim Aşamalarında A Yıldızları

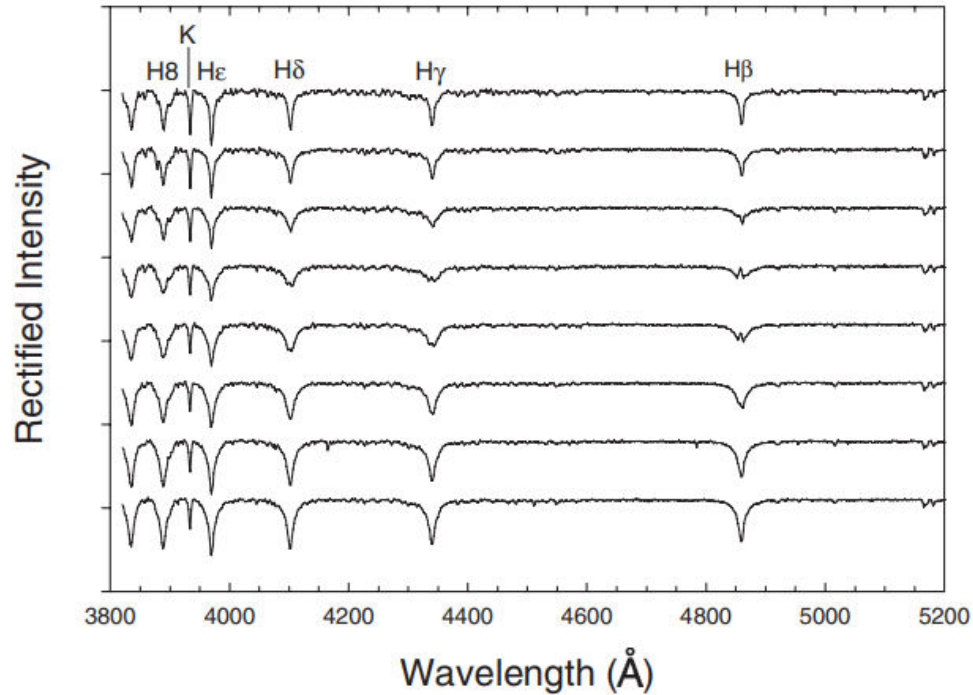


Rectified Intensity

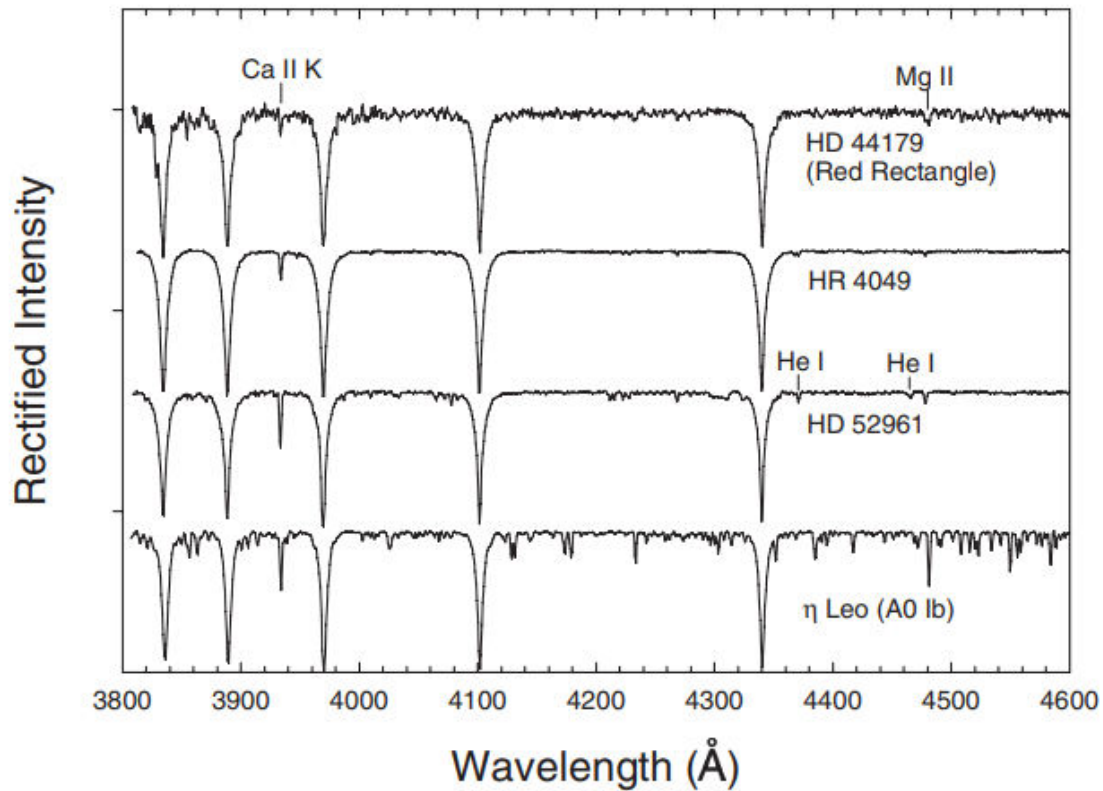




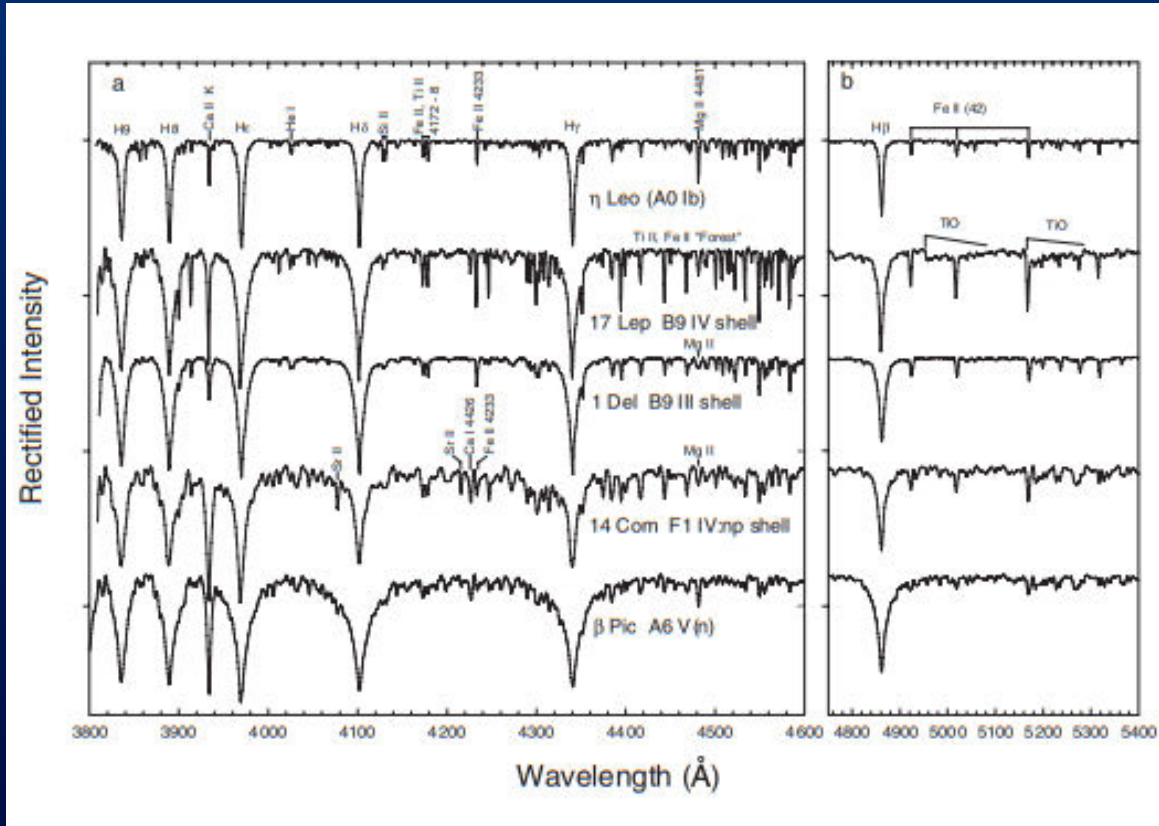
RR Lyrae Değişenleri



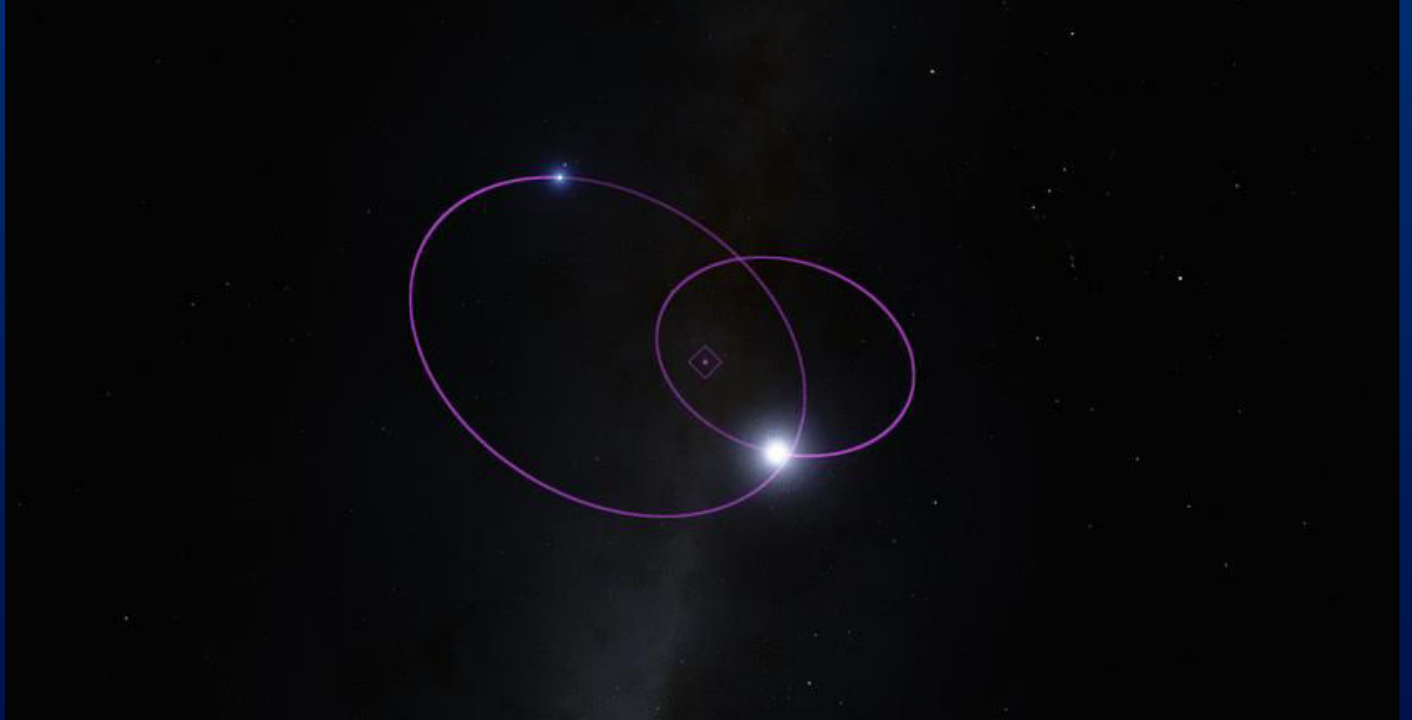
Post-AGB Yıldızları



A Tipi Kabuk Yıldızlar



Beyaz Cüceler



$$L_A = 23.5 L_{\odot}$$

$$T_A = 9910 \text{ K}$$

$$M_A = 2.3 M_{\odot}$$

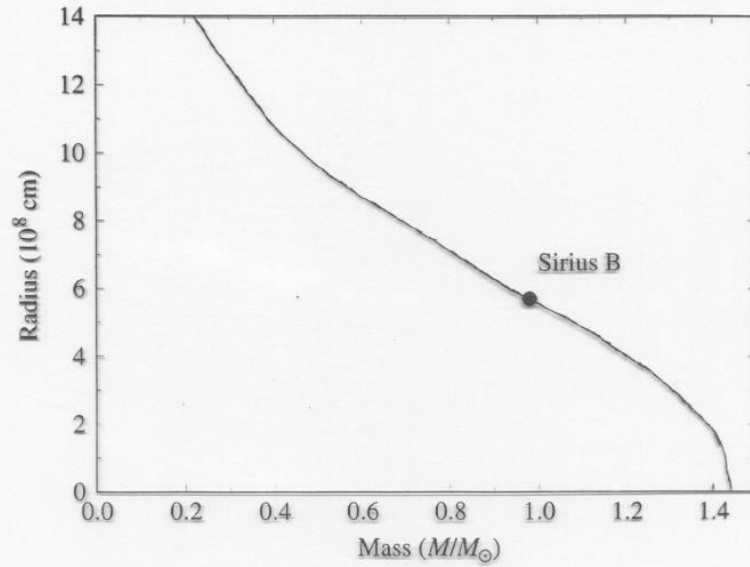
$$L_B = 0.03 L_{\odot}$$

$$T_B = 27,000 \text{ K}$$

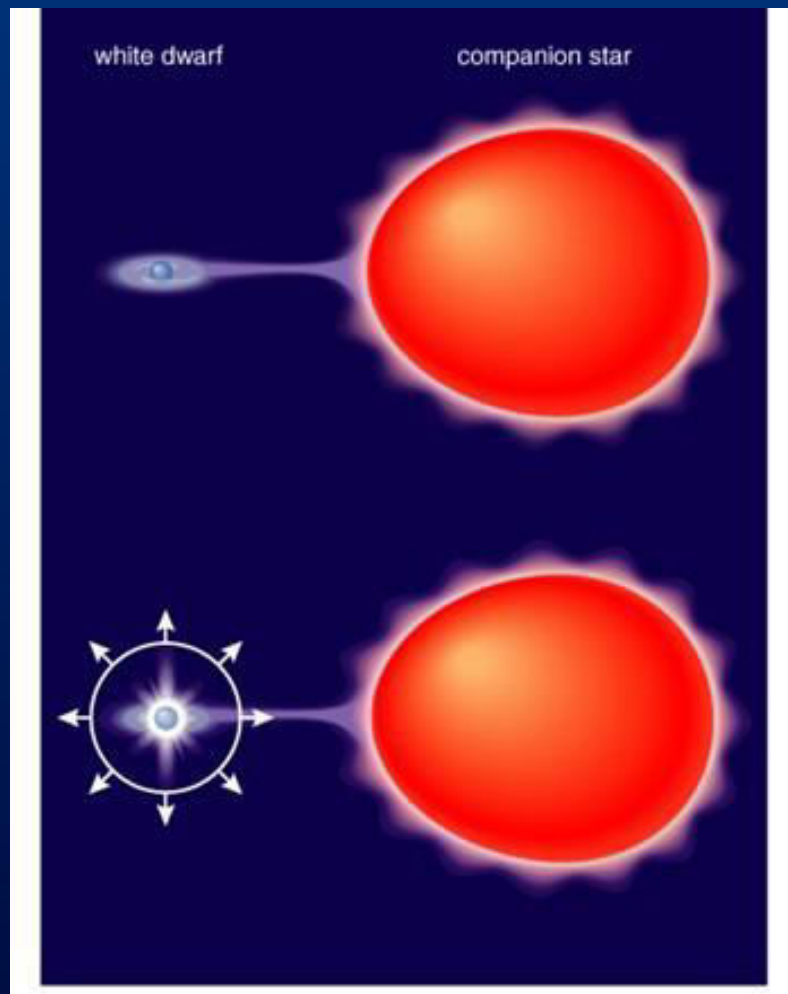
$$M_B = 1.05 M_{\odot}$$



$$R_B = 0.008 R_{\odot}$$



$$M_{Ch} \sim \frac{3\sqrt{2}\pi}{8} \left(\frac{\hbar c}{G} \right)^{3/2} \left[\frac{Z}{A} \frac{1}{m_H} \right]^2 = 1.44 M_{\text{güneş}}$$



Beyaz Cücelerde Tayfsal Sınıflama

DA



- Tayflarında genişlemiş (basınç kaynaklı) Hidrojen soğurma çizgileri
- En fazla bulunan tür (yaklaşık 2/3)

DB



- H çizgileri kaybolmuştur
- He soğurma çizgilerine sahip

DC



- Çizgi görülmüyor, (tayf çizgilerinin olmadığı bir süreklilik)

DQ

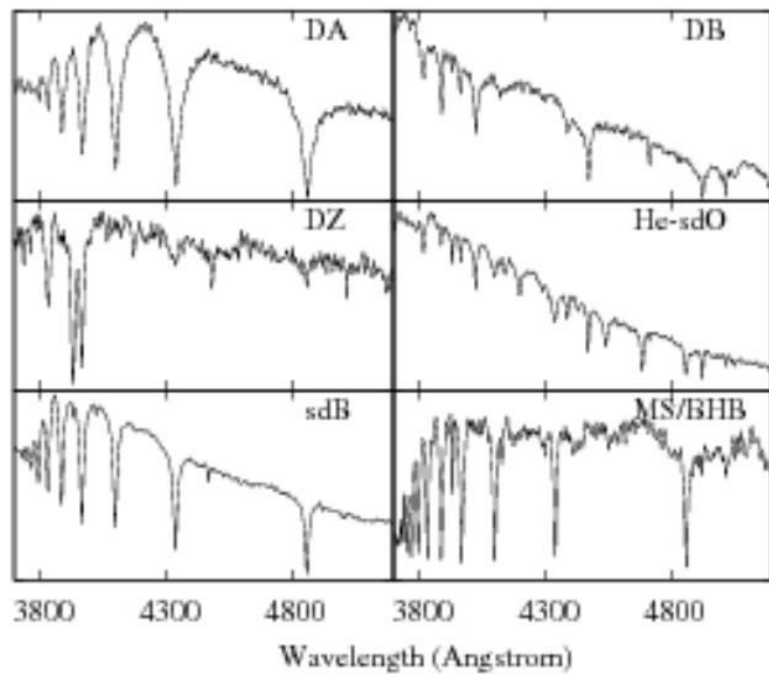


- Tayflarında karbon çizgileri görülüyor

DZ



- Metal çizgilerinin varlığına ilişkin deliller sergiliyorlar





TEŞEKKÜR EDERİM...