Uzay Bilimleri ve Teknolojileri Bölümü, Akdeniz Universitesi, Antalya, TUKİYE
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GALAKTİK OB OYMAKLARININ KİNEMATİĞİ VE EVRİMİ

Volkan BAKIŞ

Akdeniz Üniversitesi

Uzay Bilimleri ve Teknolojileri Bölümü

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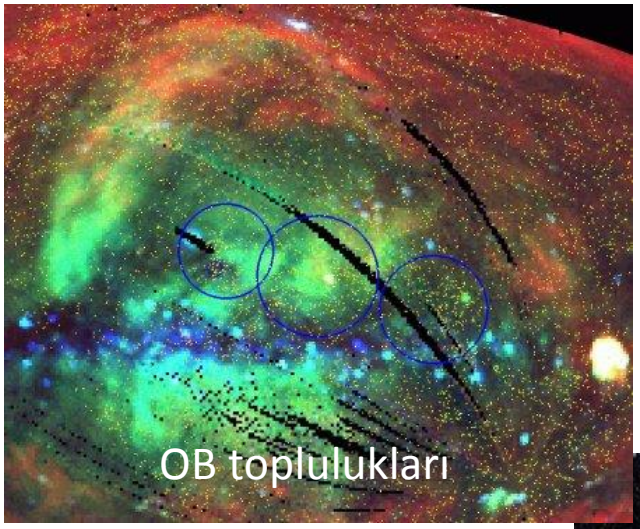
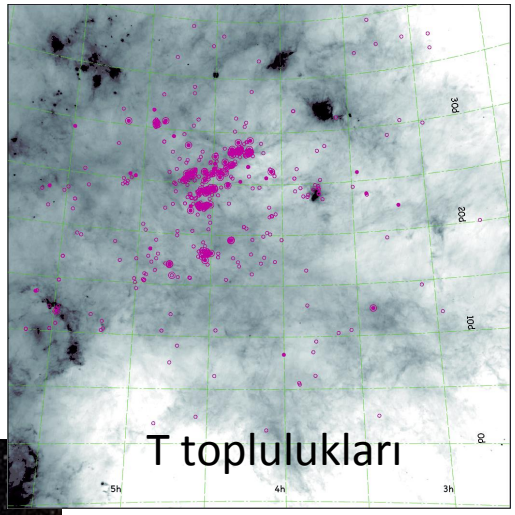
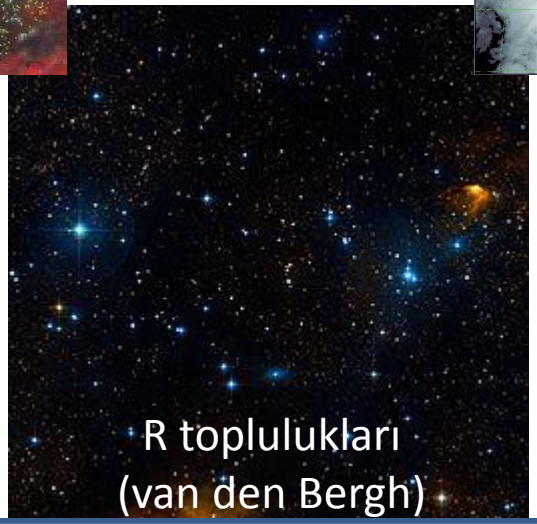
Türler

Zayıf yıldız grupları Ambartsumian (1947)







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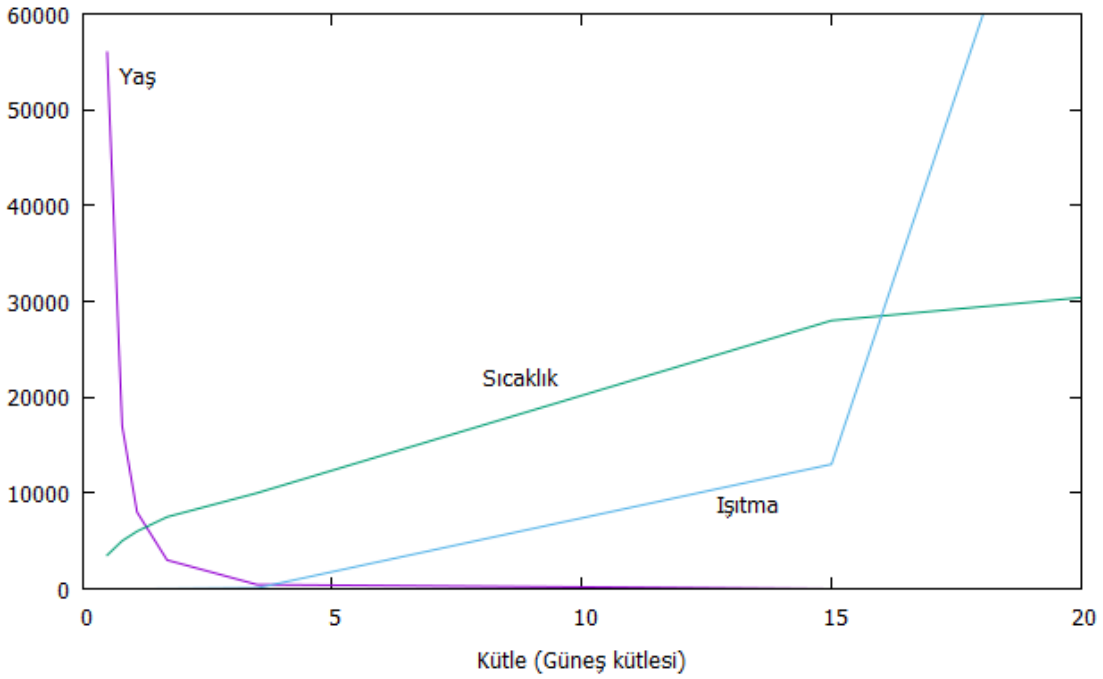
Neden OB toplulukları?

Anakol Tayf Sınıfı Özellikleri		
Tayf Sınıfı	Kütle (M⊙)	Anakol Ömrü (Milyon yıl)
O5	40	1.0
B0	15	11
A0	3.5	440
F0	1.7	3000
G0	1.1	8000
K0	0.8	17000
M0	0.5	56000



Neden OB toplulukları?

- Yüksek ışıtma güçleri sebebiyle uzak galaksilerde bile çalışma imkanı sağlıyor.

- Aynı zamanda oluşmaları tüm üyelerin aynı yaş, uzaklık, kimyasal ve evrimsel özellikleri gerektiriyor.

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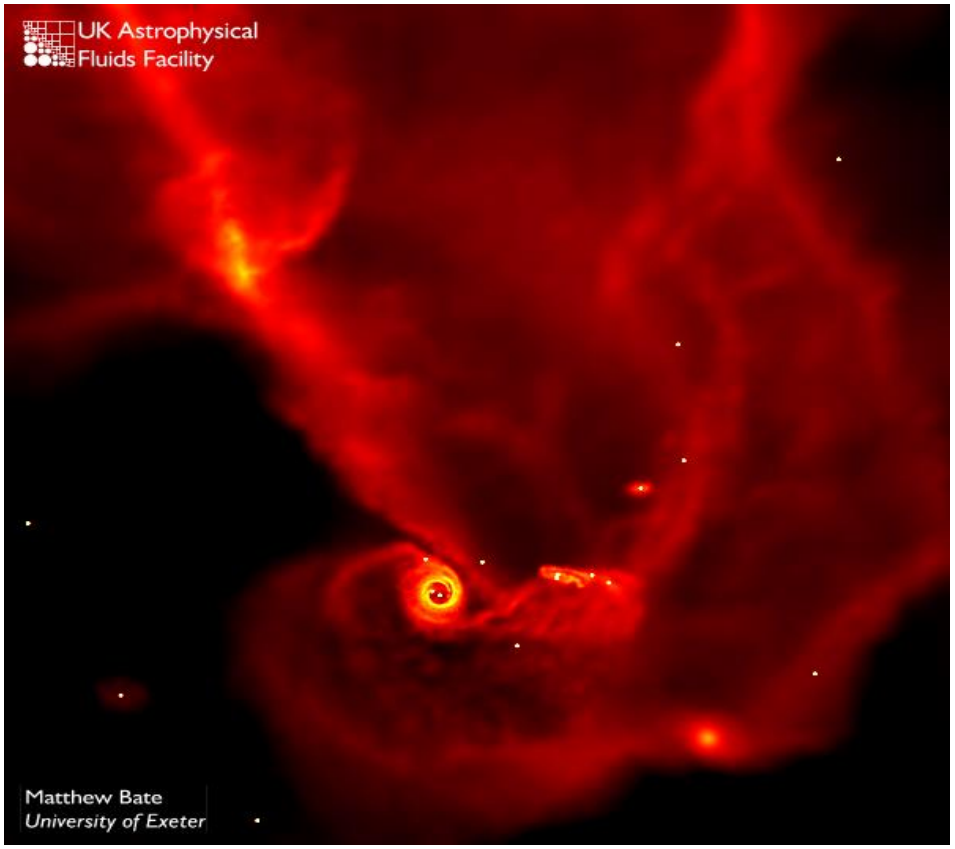
Neden OB toplulukları?

- Henüz fiziksel bağlı değiller, bu yüzden galaktik ivmelenmelere karşı zayıflar.



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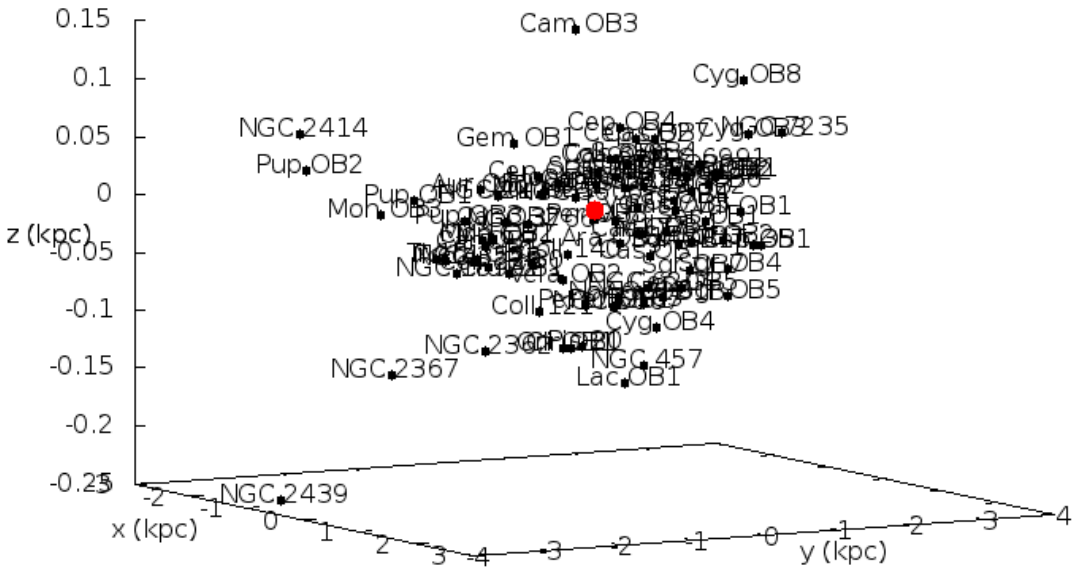

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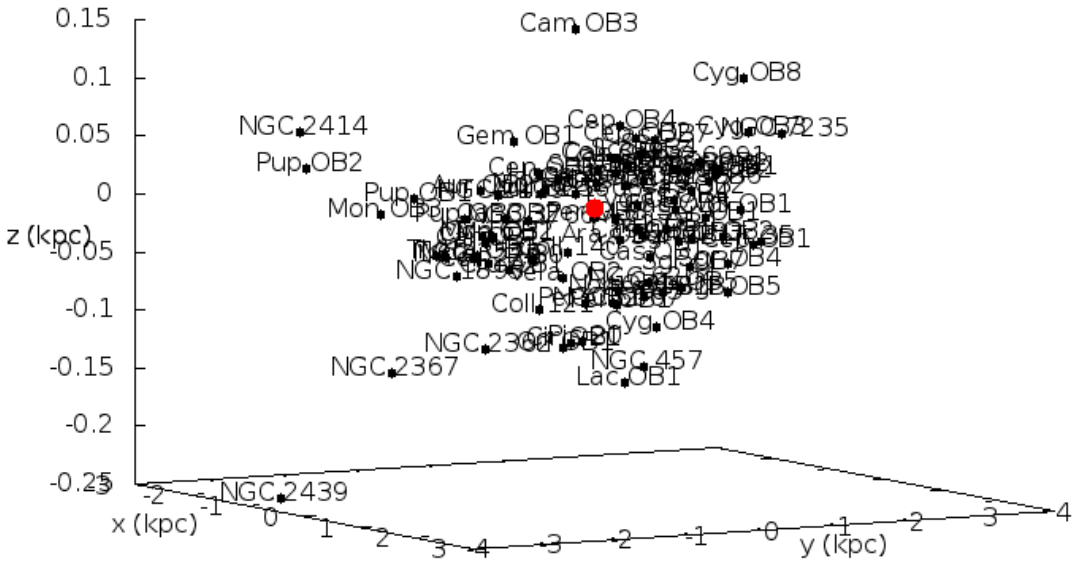

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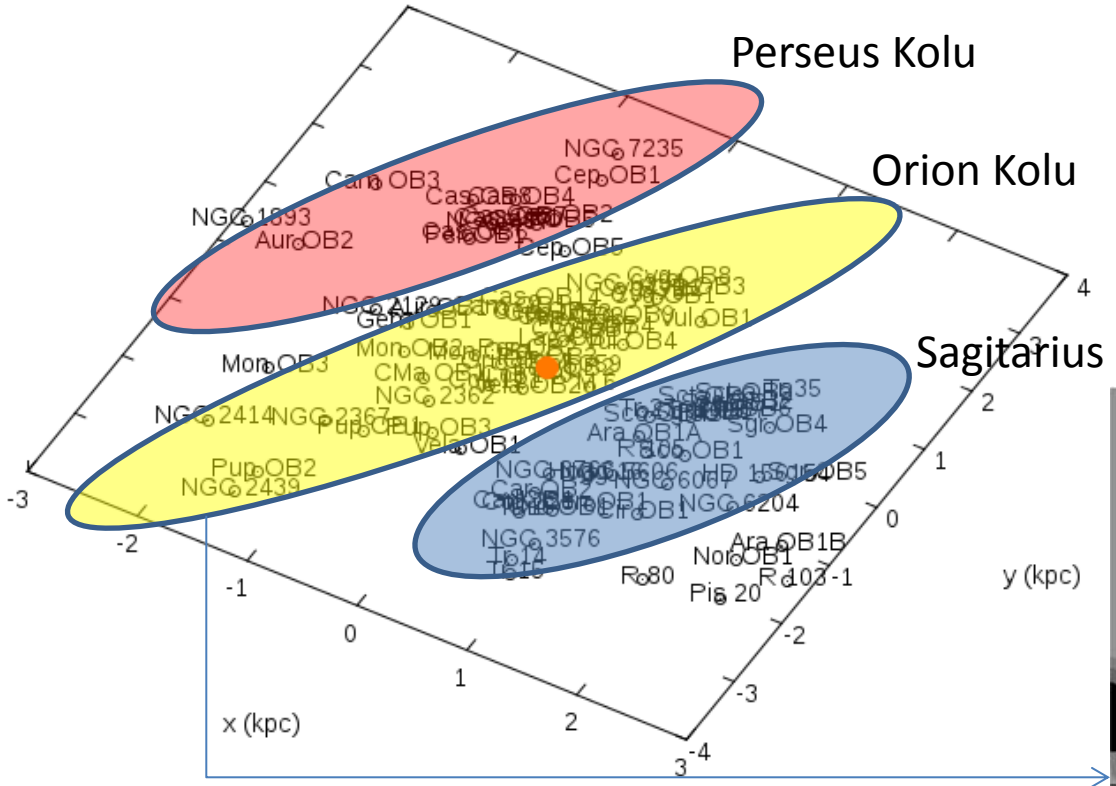
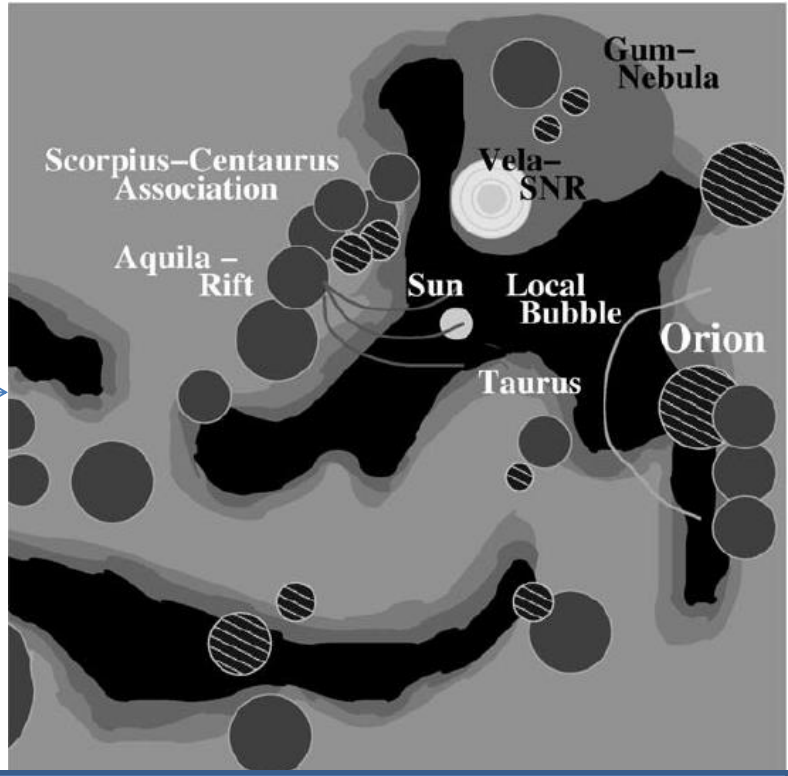
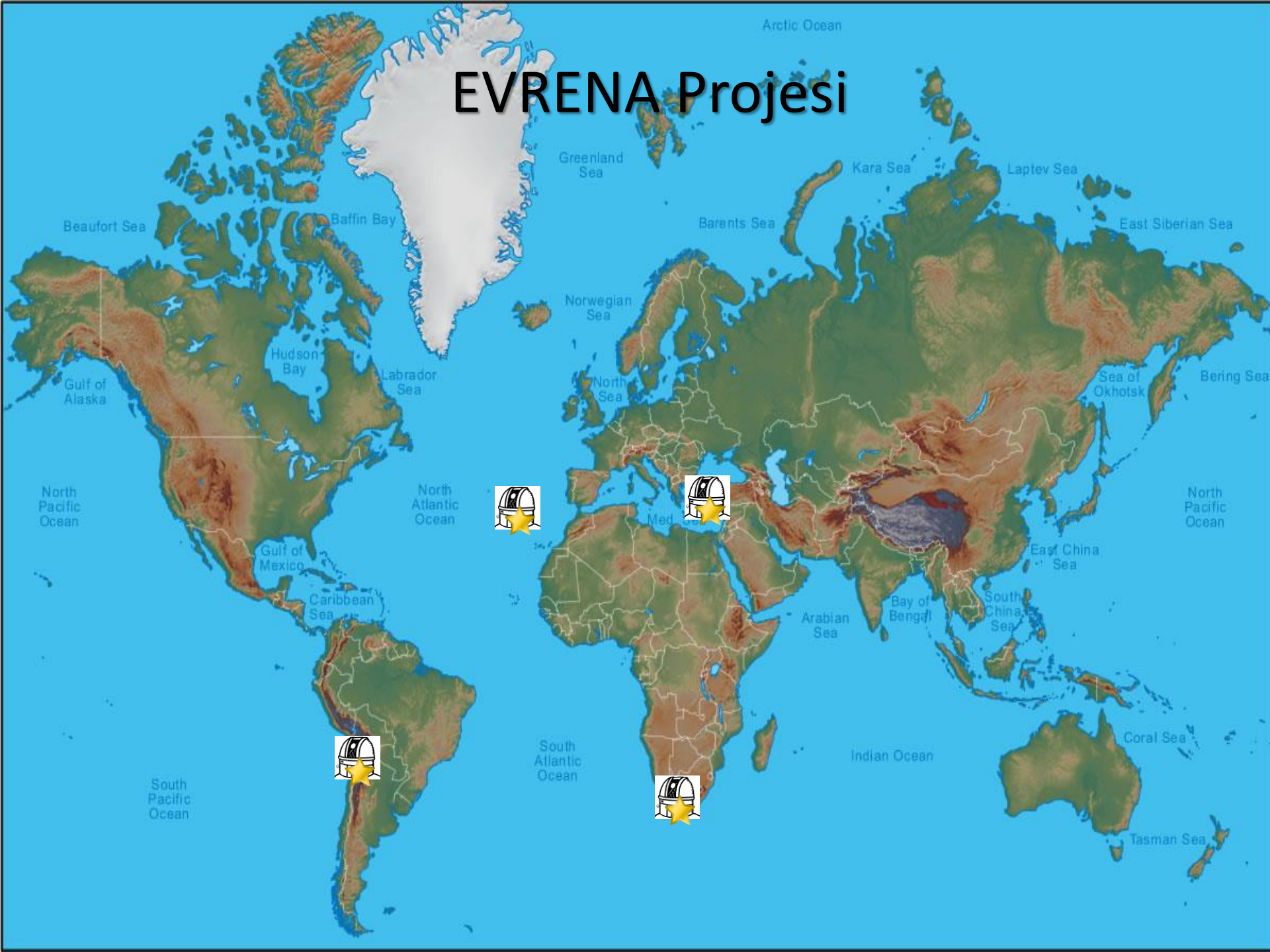




Local Bubble,
Ölçek 1500 ıy
(Schulz, 2005)

EVRENA Projesi



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Proje Künye

Başlık: Çift ve Çoklu Sistemlerin Çok Yönlü Analizlerinden İçinde Bulundukları Yıldız Oluşum Bölgelerinin Özelliklerinin Belirlenmesi

Motivasyon:

- **OB oymaklarının kinematik ve evrimsel parametrelerinin elde edilmesi**
- **Çiftlerin uzak bileşenlerinin özelliklerinin belirlenmesi**
- **Eksen dönmesi gösteren sistemlerin OB oymakları ile ilişkisinin incelenmesi**

Proje Künyesi

- **Çalışanlar:** V.BAKIŞ (Yür.), H.HENSBERGE, M.ZEJDA, S.BİLİR, H.BAKIŞ, C.NITSCHELM, İ.BULUT, O.DEMİRCAN, E.YAZ
- **Resmi süre:** 3 yıl (2010-2013)
- **Destek:** TÜBİTAK
- **Gözlemevleri:** - TÜBİTAK Ulusal Gözlemevi, ÇOMÜ Gözlemevi, European Southern Observatory, Roque de los Muchachos Observatory, South Africa Astrophysical Observatory

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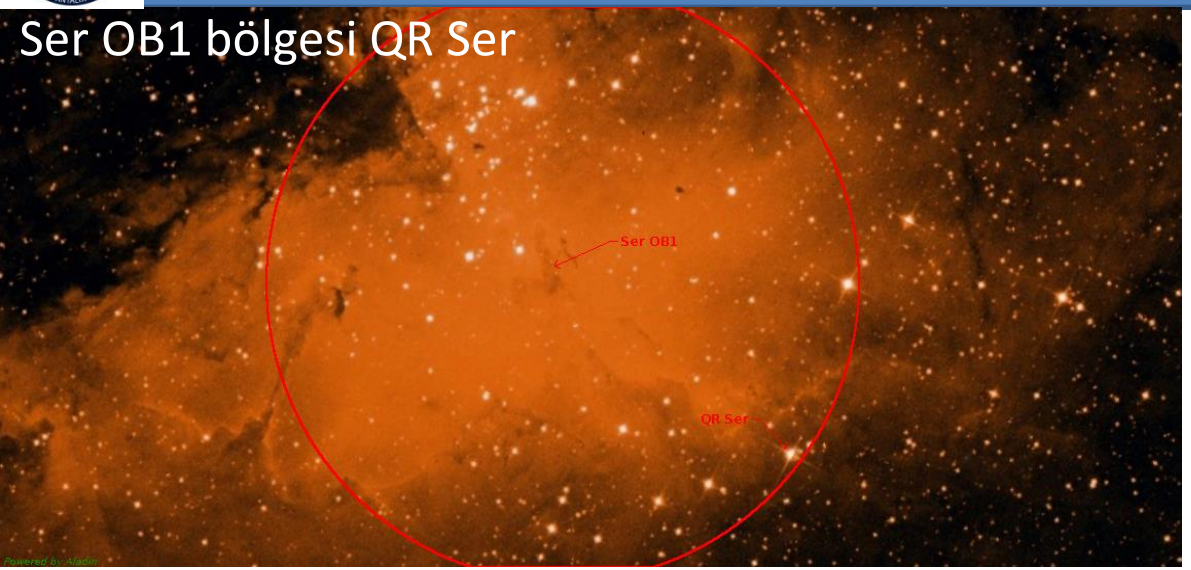
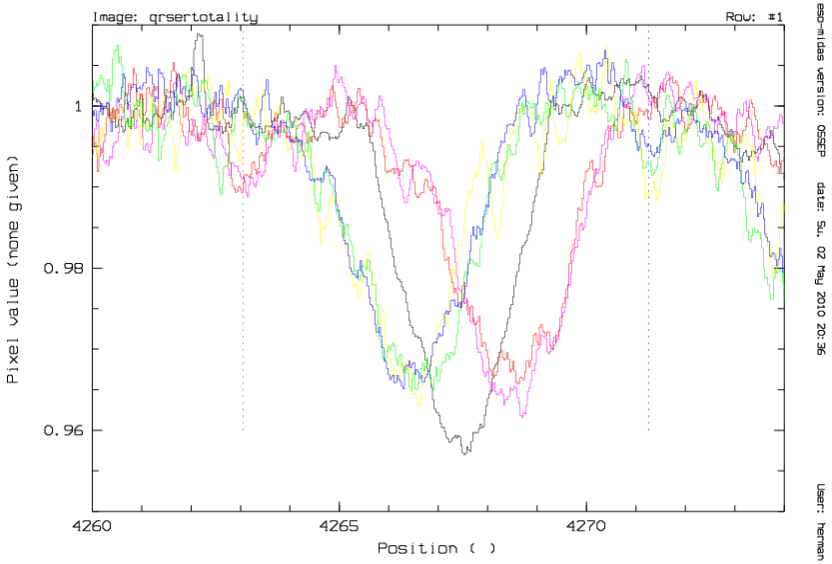
Ser OB1 bölgesi QR Ser

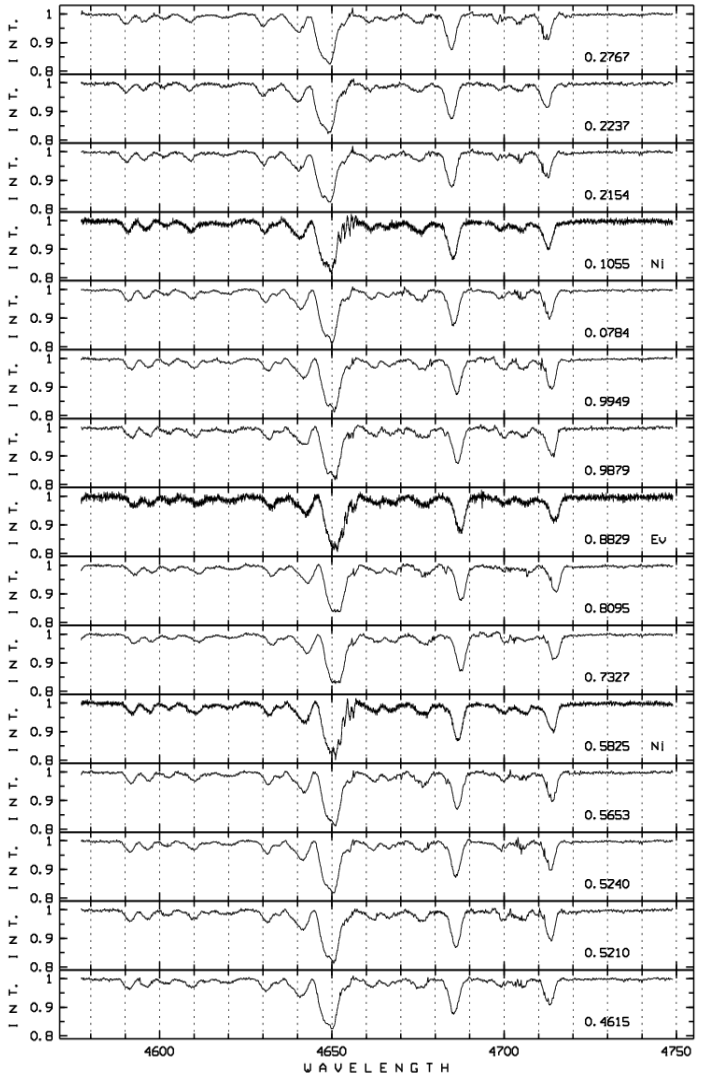




Iş.Kat.

.98 Baş

.2 Yoldaş



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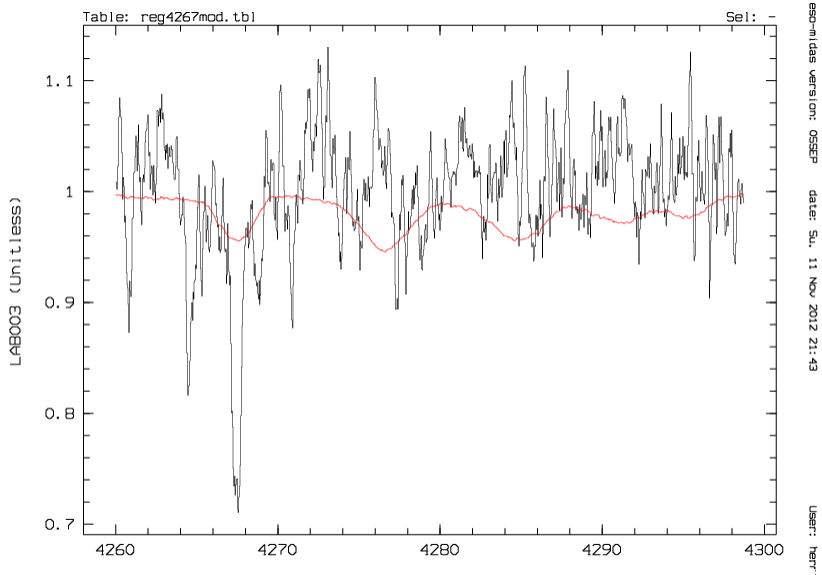

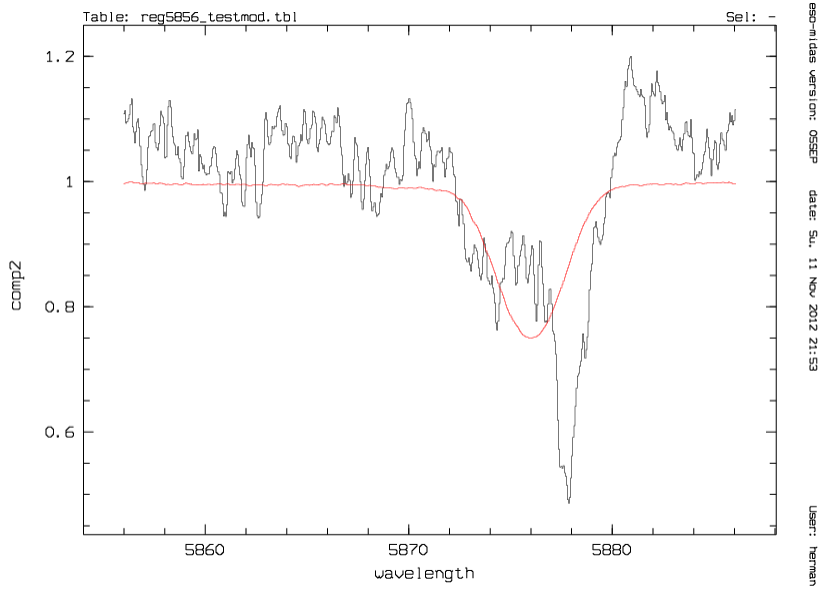

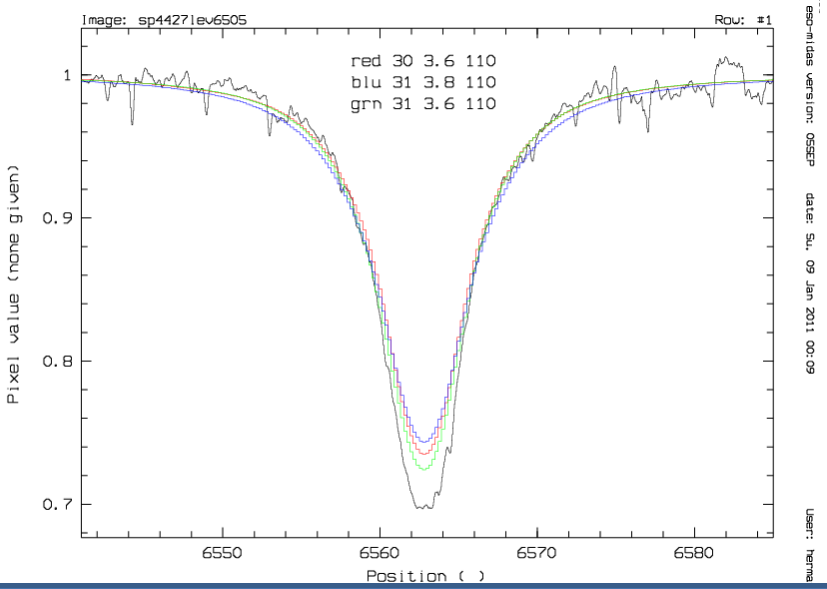

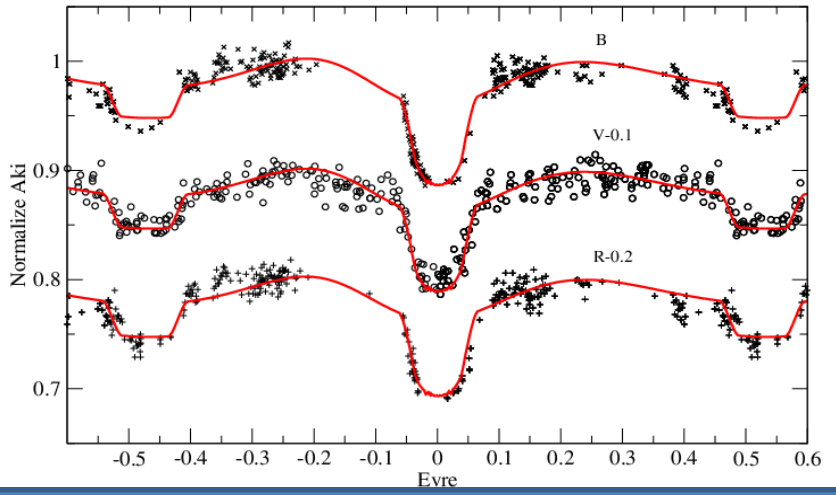

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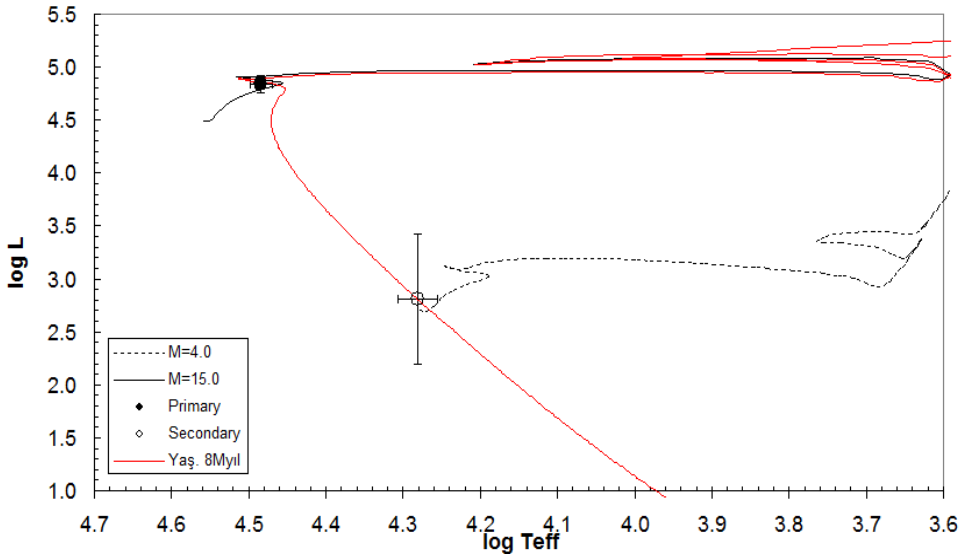
Ser OB1 bölgesi QR Ser



d=1.6±0.2 kpc

Yaş 8 Myr

Ser OB1 (U, V, W)= (-4.3±4.9 -3.1±1.6 -2.1±1.3)
NGC 6611 (U, V, W) = (17.2±0.6, 5.5±0.7, -5.6±0.8) km/s
QR Ser (U, V, W)= (17.53±2.24, 6.26±7.54, -7.57±10.02) km/s

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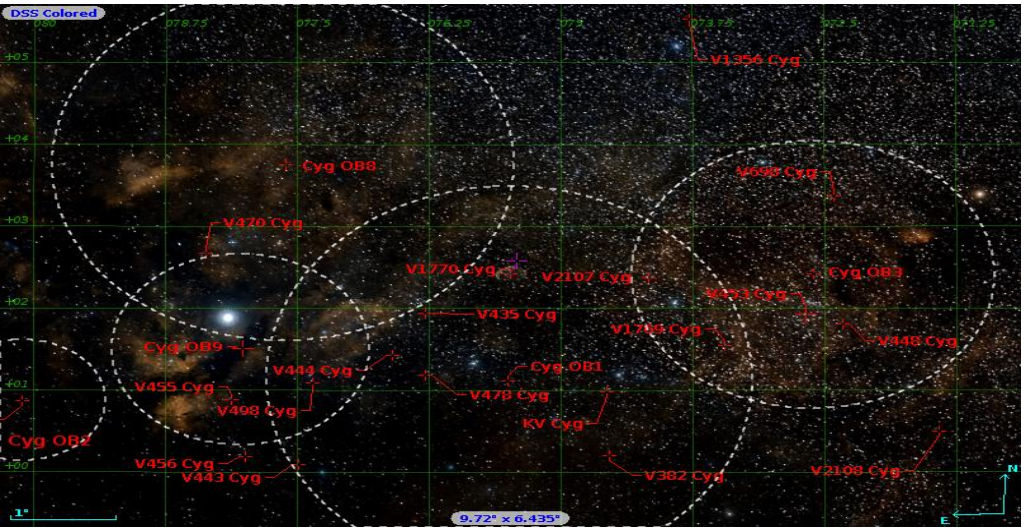
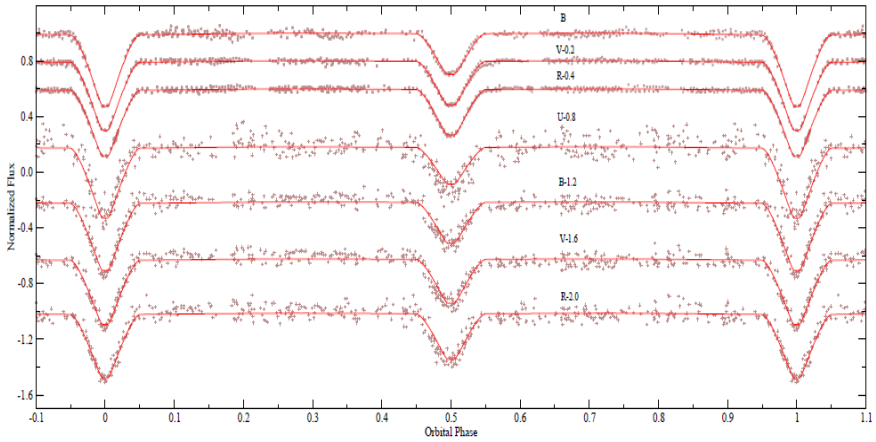
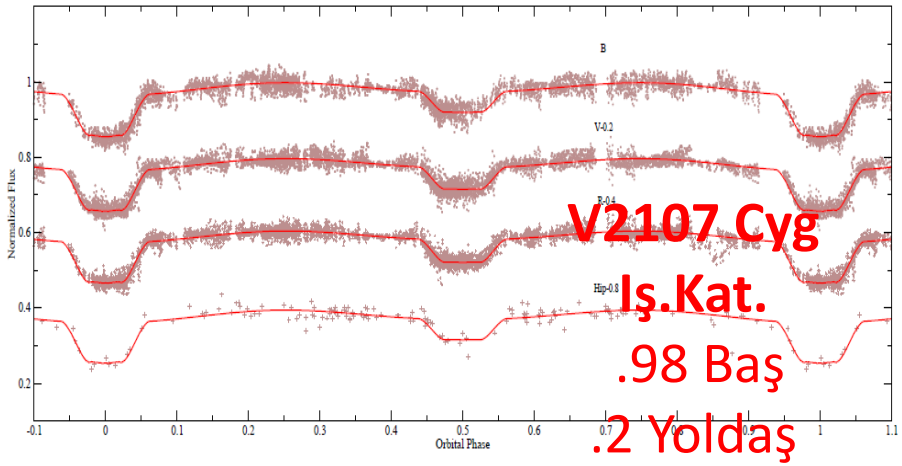
Cyg OB1 bölgesi V443 Cyg, V456 Cyg and V2107 Cyg (Bakış et al. 2014)





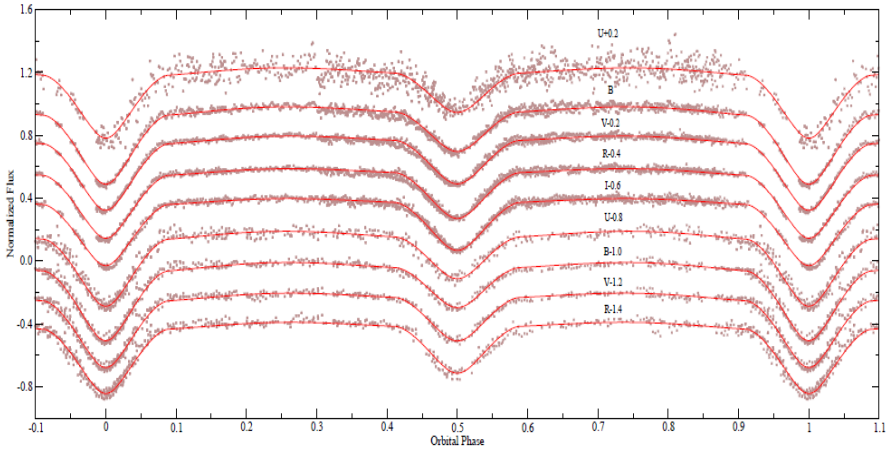


V2107 Cyg

Iş.Kat.

.98 Baş

.2 Yoldaş



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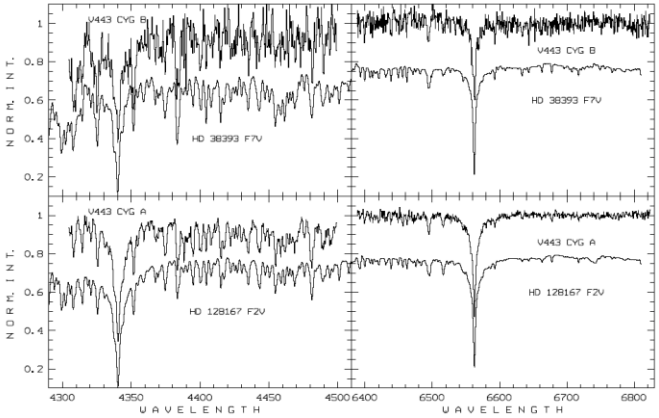
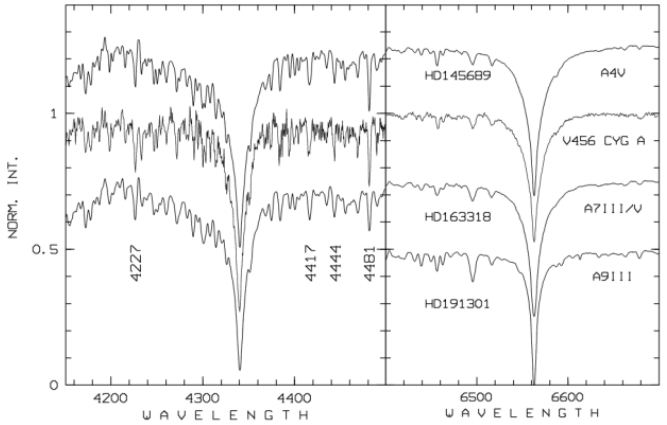
Cyg OB1 bölgesi V443 Cyg, V456 Cyg and V2107 Cyg (Bakış et al. 2014)

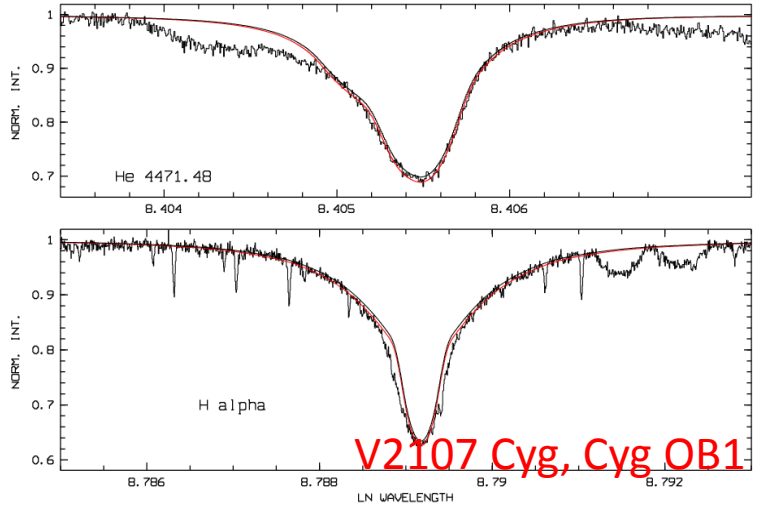
V443 Cyg, d=600±200 pc



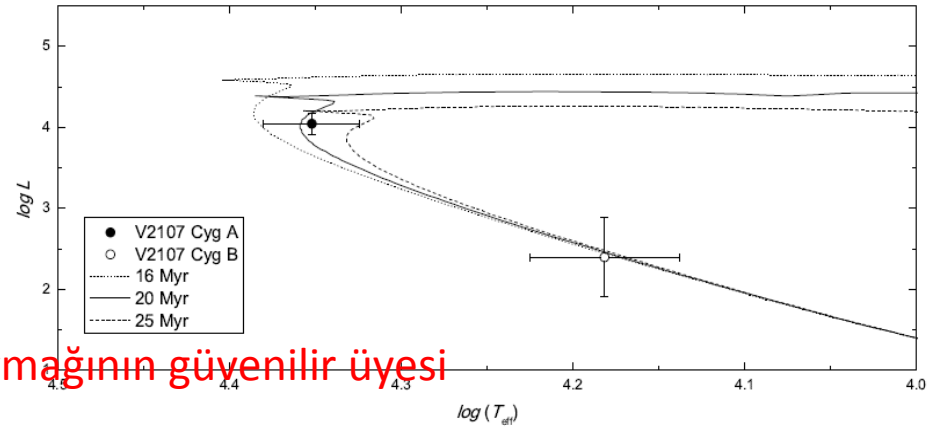
V456 Cyg, d=500±30 pc



V2107 Cyg, d=1400±400 pc



Yaş 20 ± 5 Myr



V2107 Cyg, Cyg OB1 oymağının güvenilir üyesi

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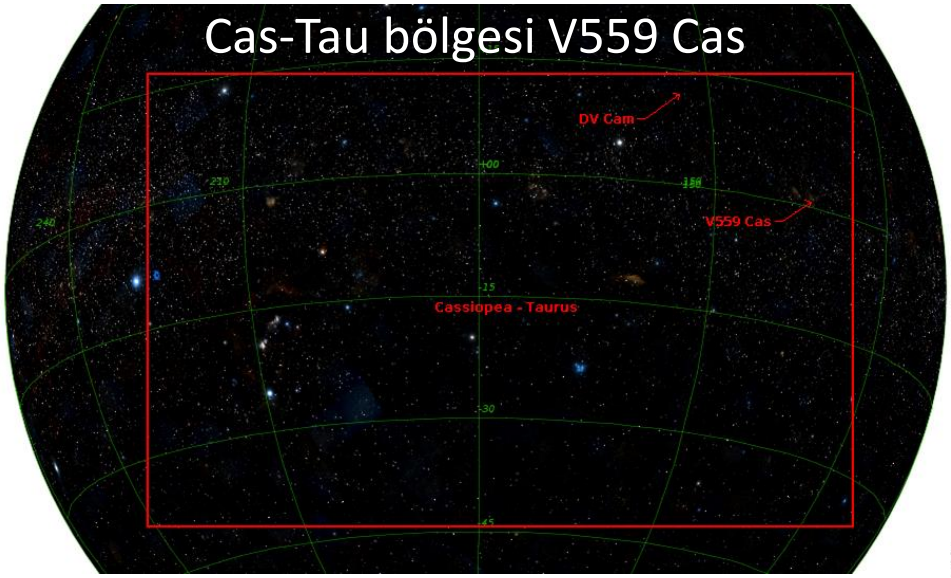

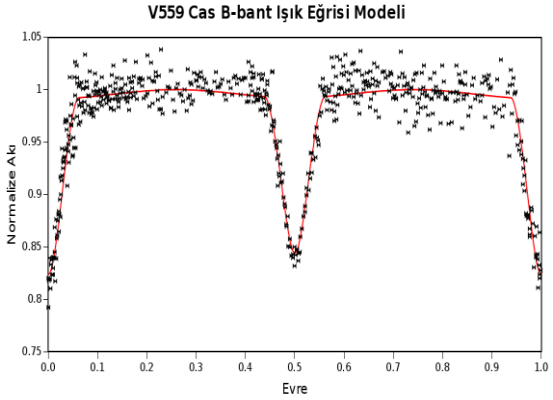

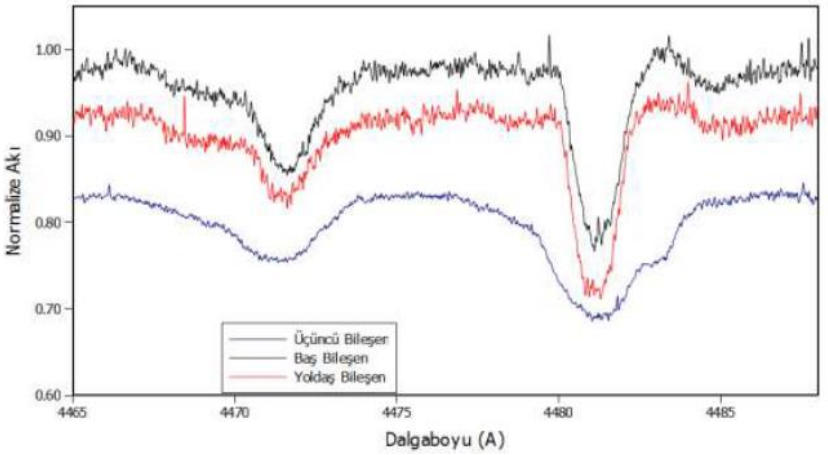

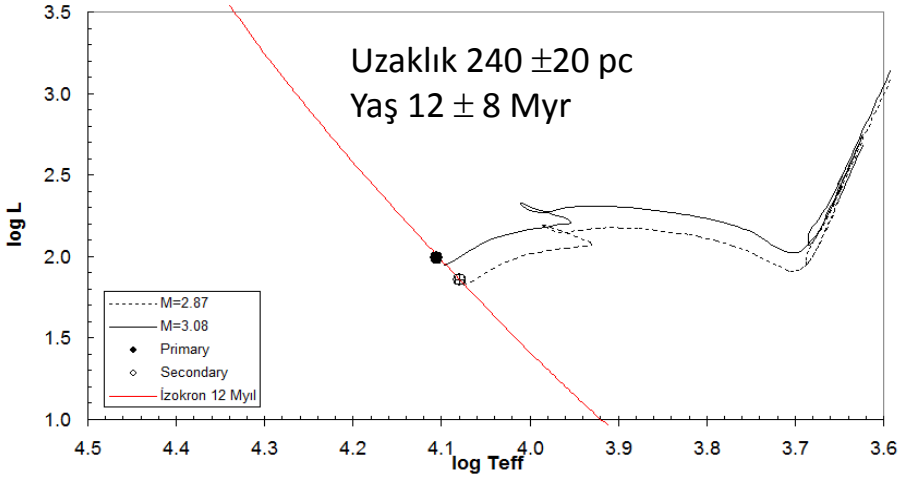

Iş.Kat.

.45 Baş + Yol.

.55 Uzak bil.+ ?

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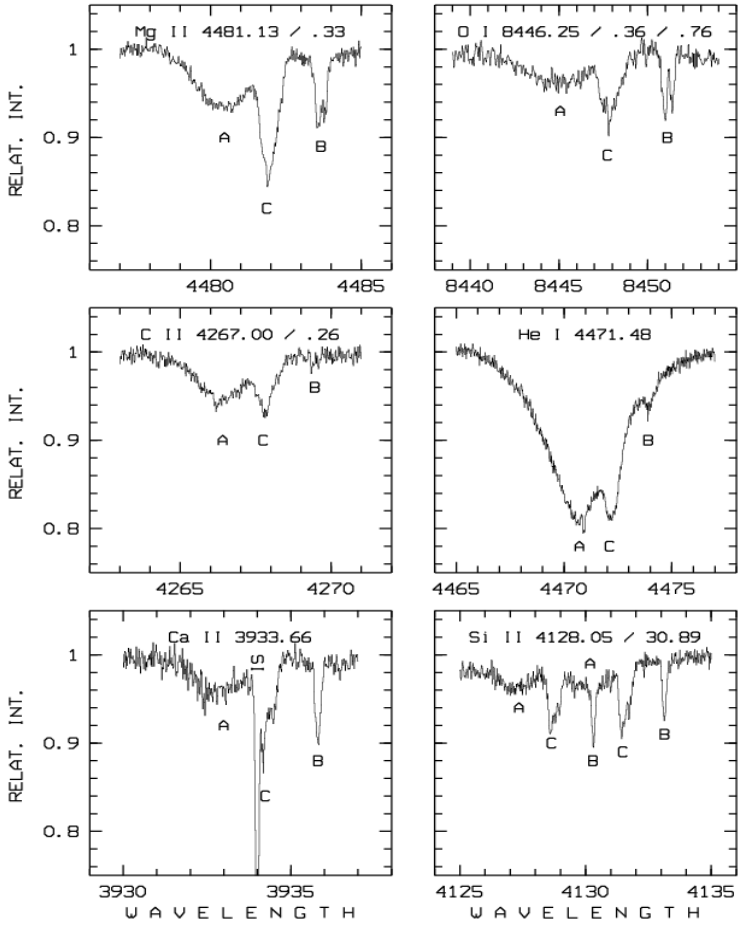
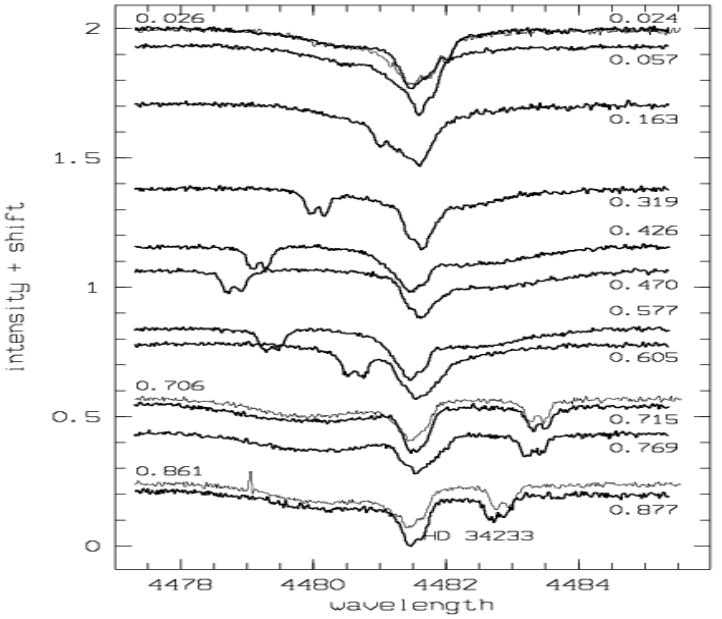
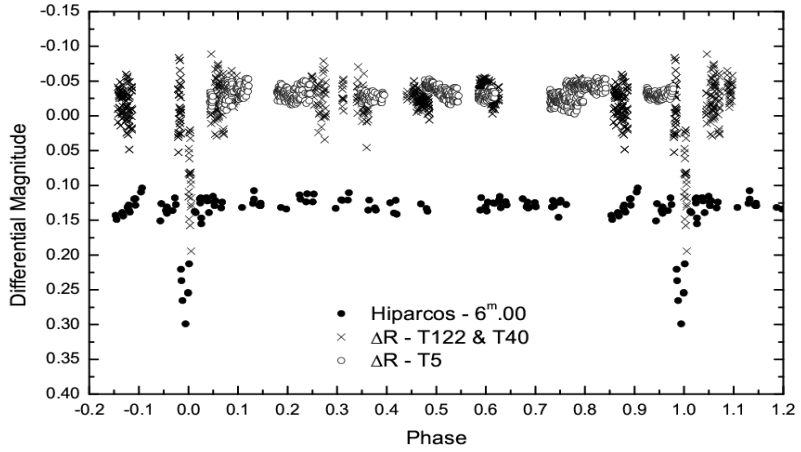
Cas-Tau bölgesi DV Cam (Hensberge & Bakış et al. 2013)







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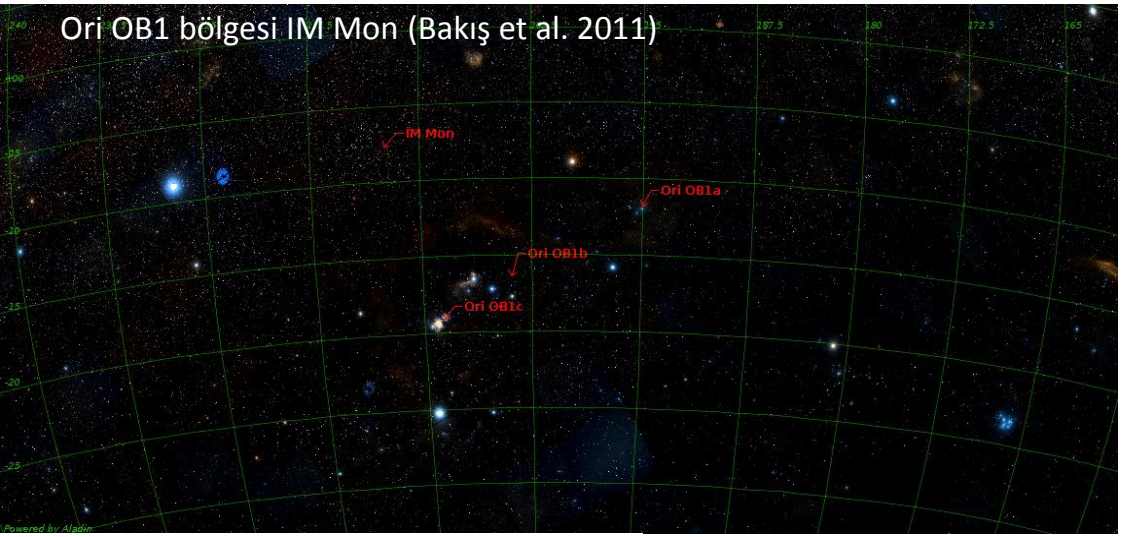

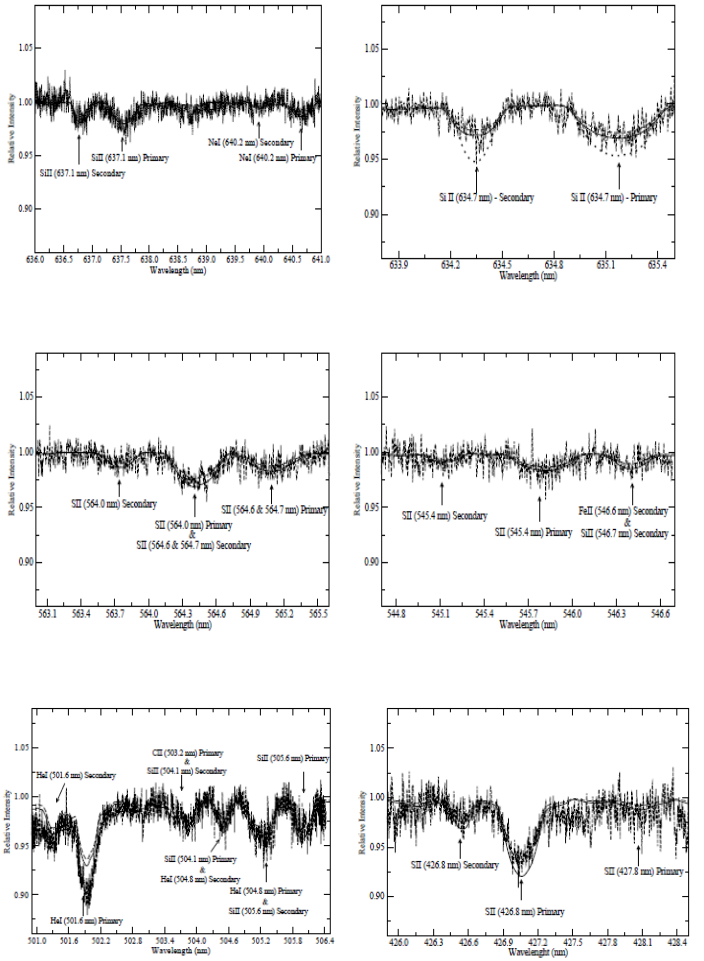

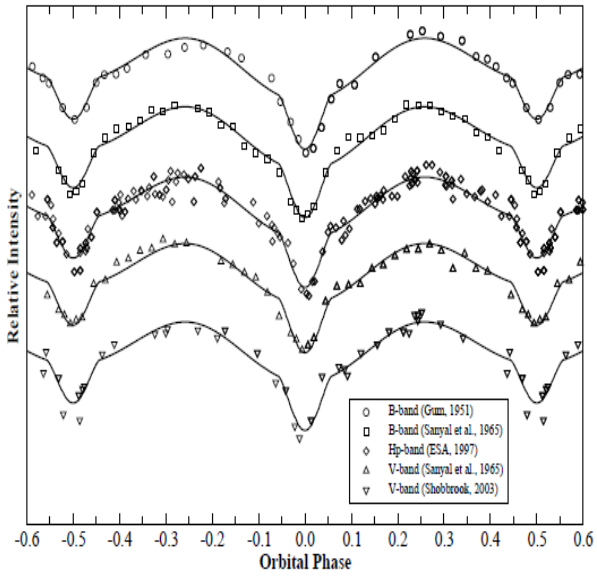

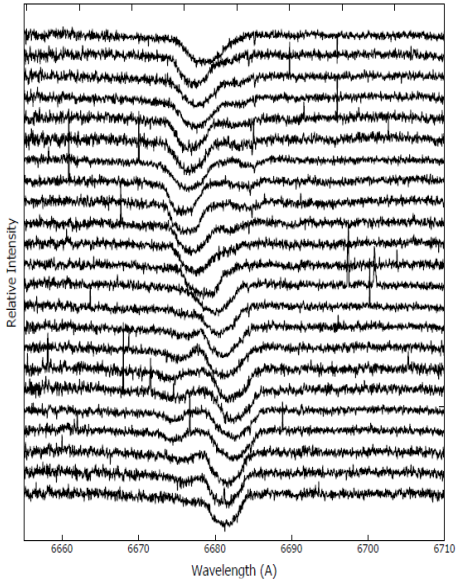

Uzaklık 350±60 pc, Yaş 12 ±2 Myr

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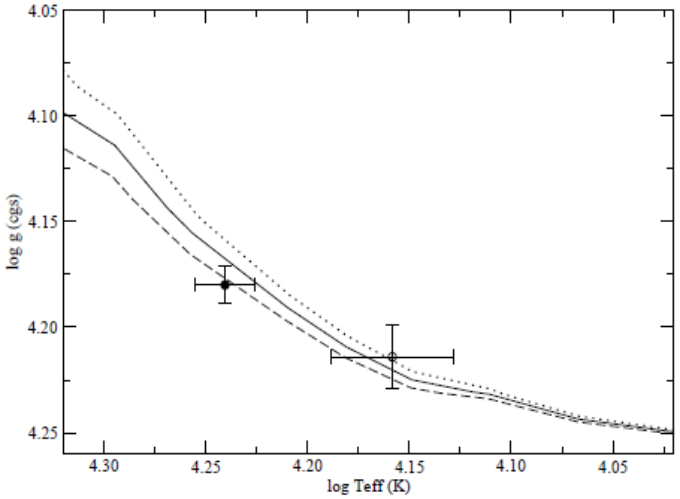

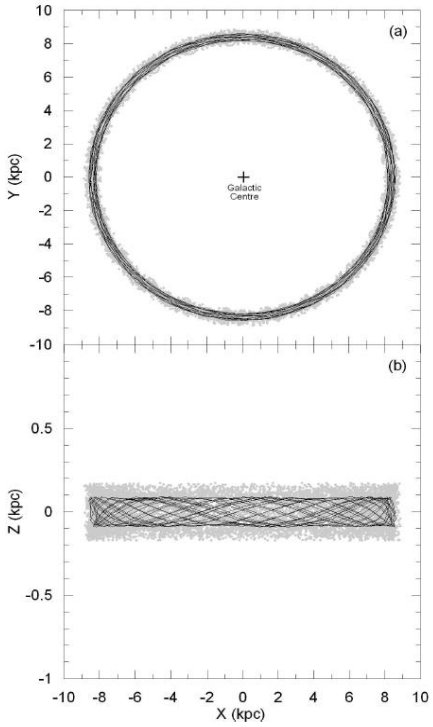

Age (Myr)		Distance (pc)		Chemical Abundance (dex)		V_γ (km s^{-1})	
This Study	Literature	This Study	Literature	This Study	Literature	This Study	Literature
11.5(1.5)	12 (a)	353(59)	336(16) (b)	0.20(0.15)	–0.01(0.04) (c)	22.1(2.1)	23.0 (b)
	11 (b)		400 (d)				25.4(1.0) (d)
	[7-10] (f, g)		304(36)(e)				

(a) Blaauw (1991), (b) Brown et al. (1999), (c)D'Orazi et al. (2009), (d)Melnik & Dambis (2009), (e)van Leeuwen (2007), (f) Calvet et al. (2005), (g) Briceno et al. (2005)

(Bakış et al. 2011)

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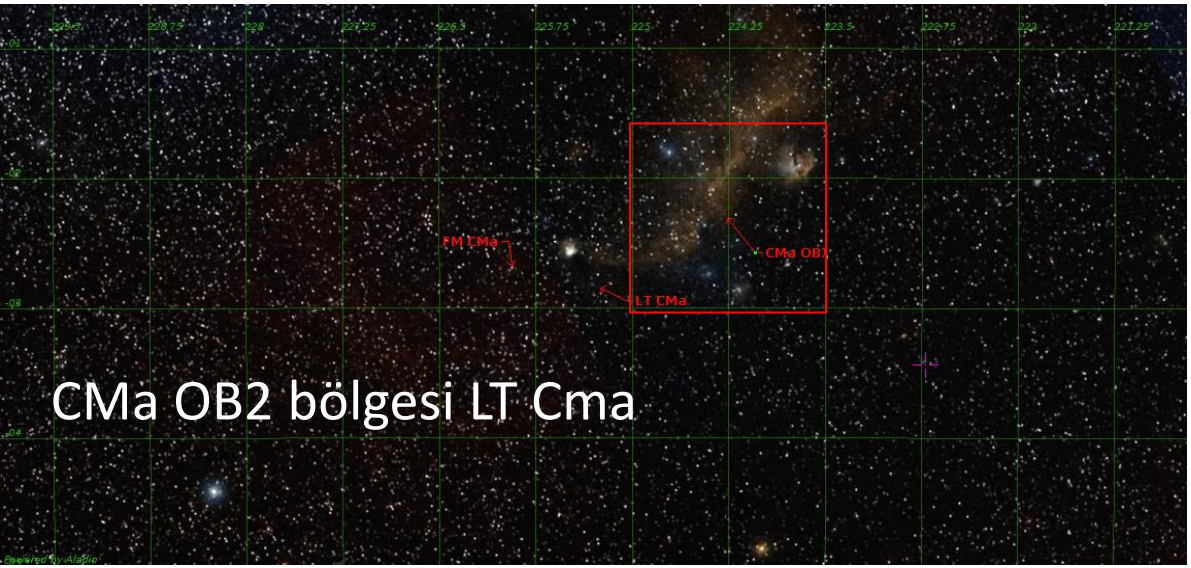
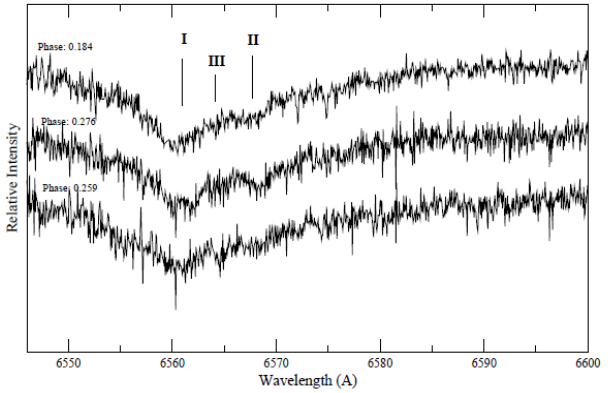
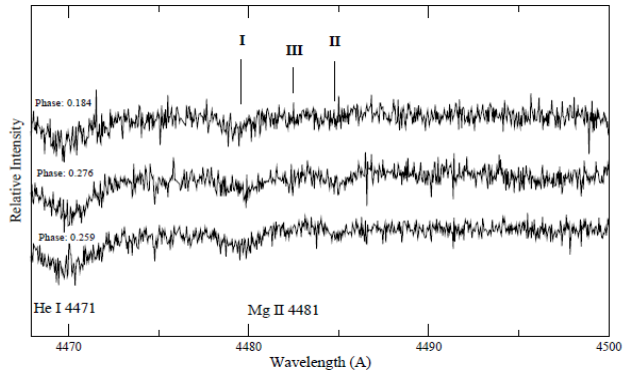
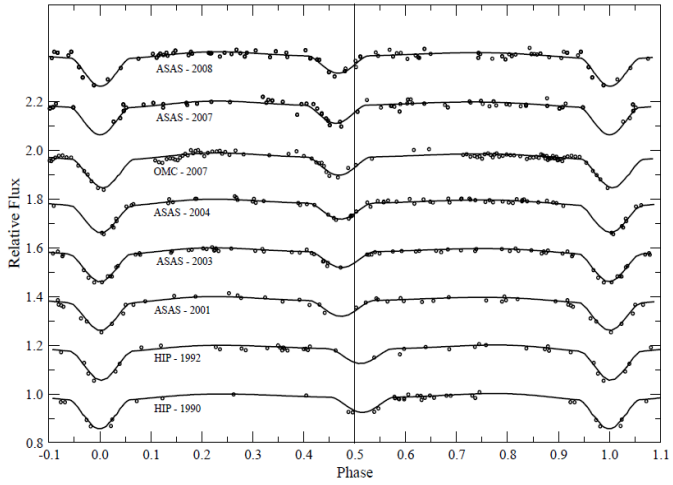


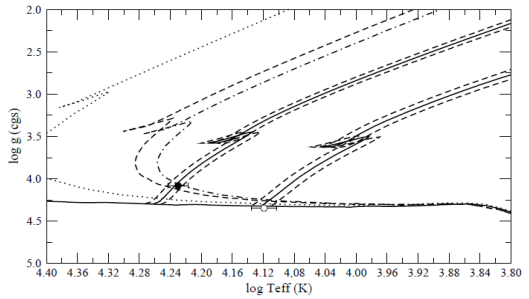
CMa OB2 bölgesi LT Cma







Uzaklık 535±45 pc,
Yaş 35 ± 5 Myr



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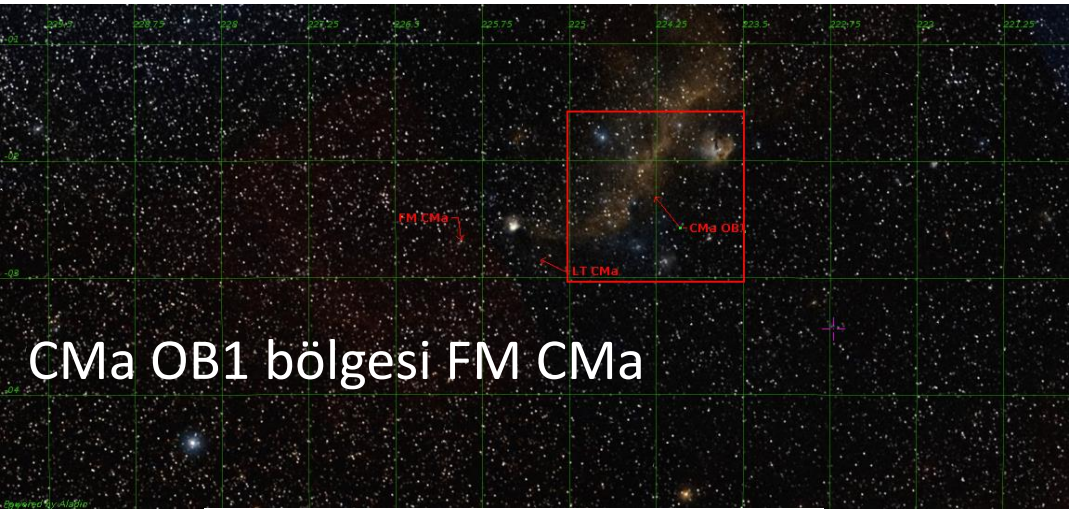
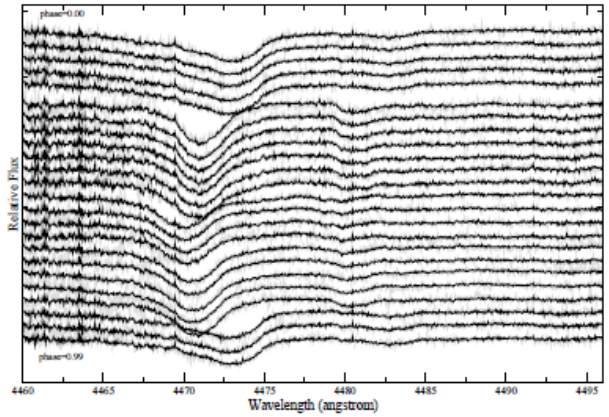
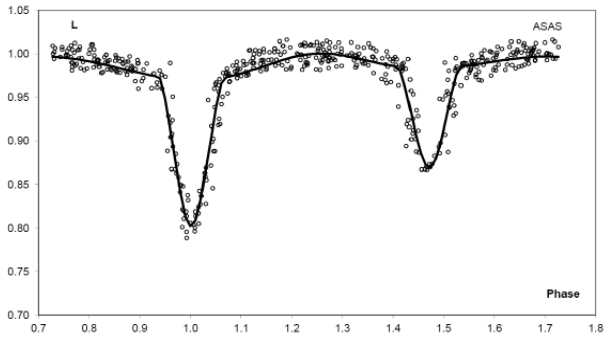
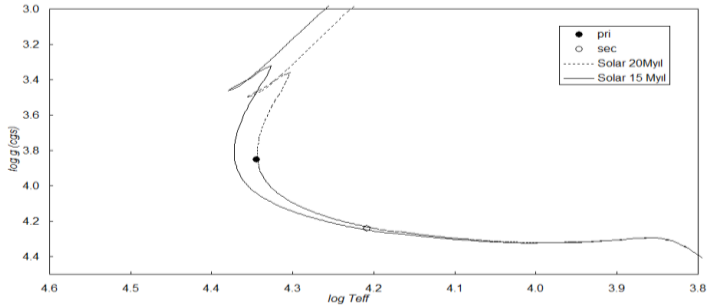
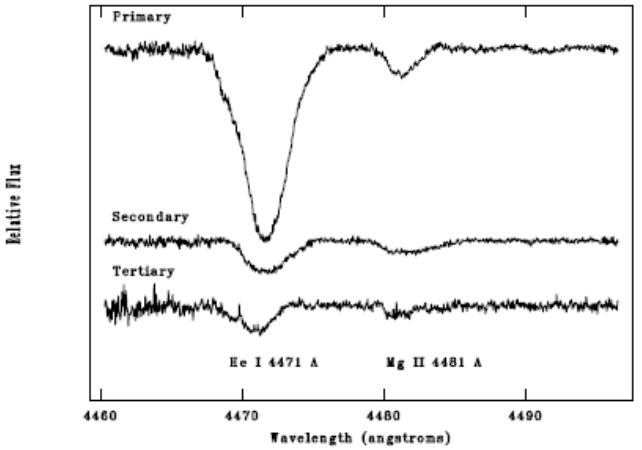


CMa OB1 bölgesi FM CMa









Uzaklık 930±50 pc, Yaş 15 ±5 Myr

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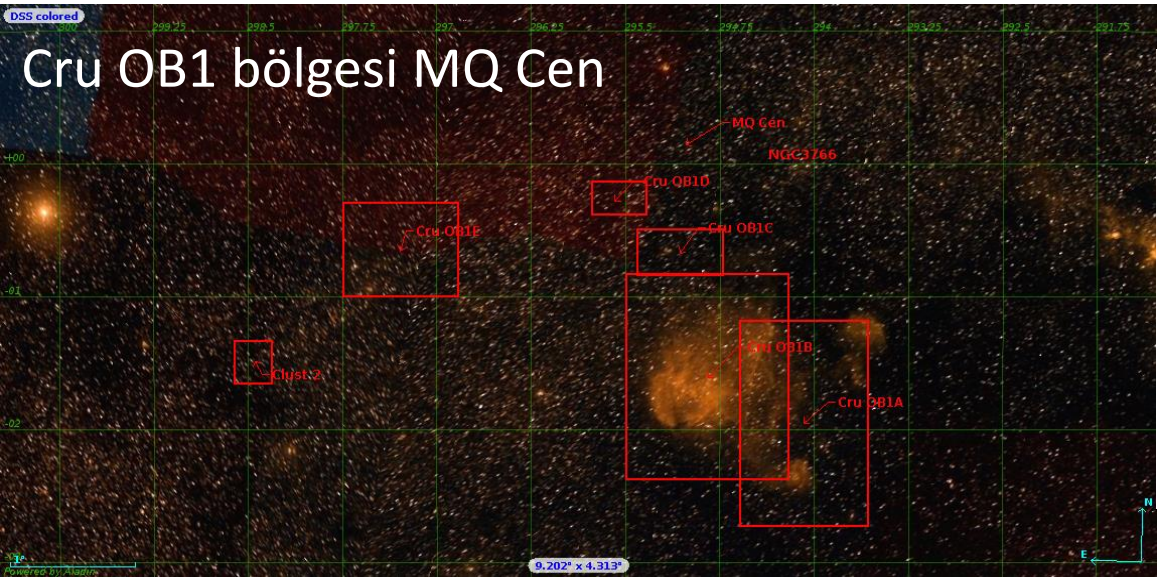

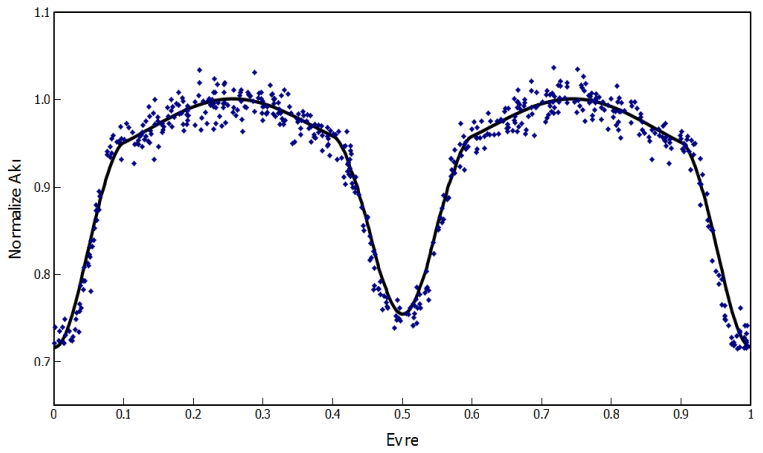

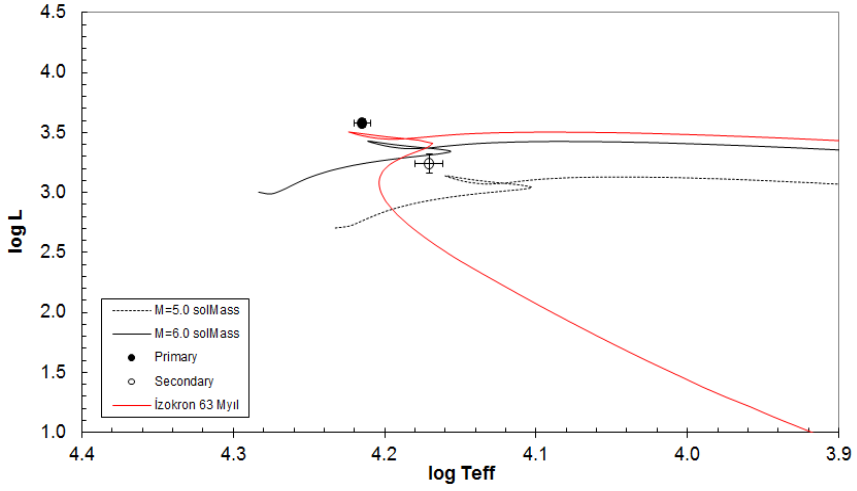

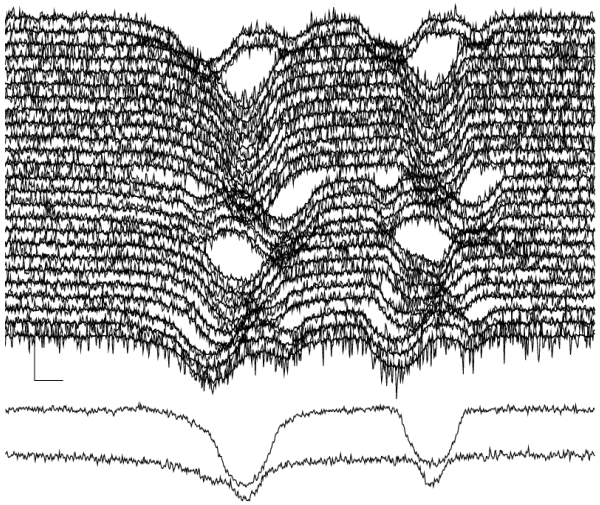

Uzaklık 2.7±0.3 kpc, Yaş 65 ± 10 Myr

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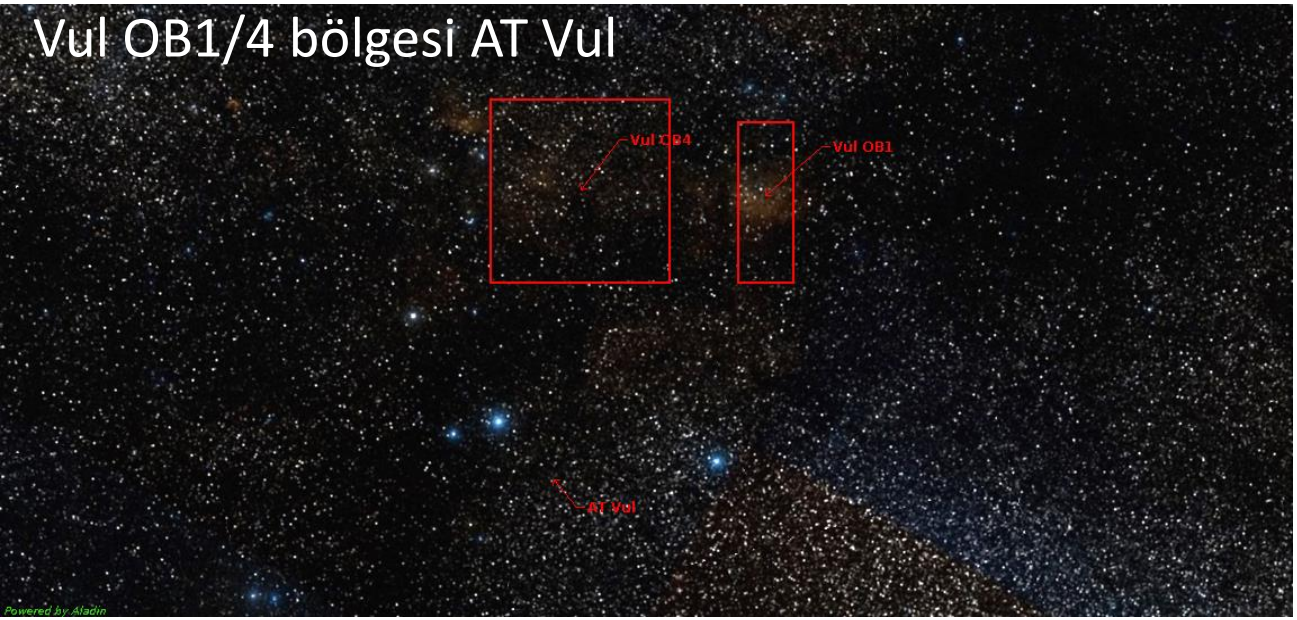
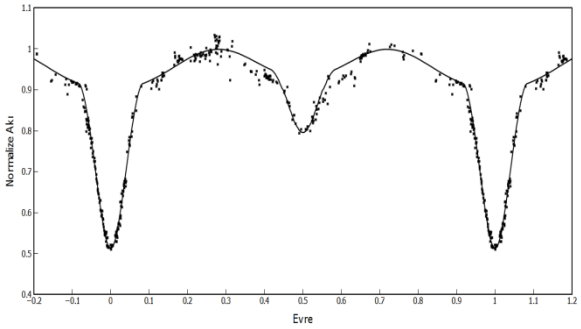
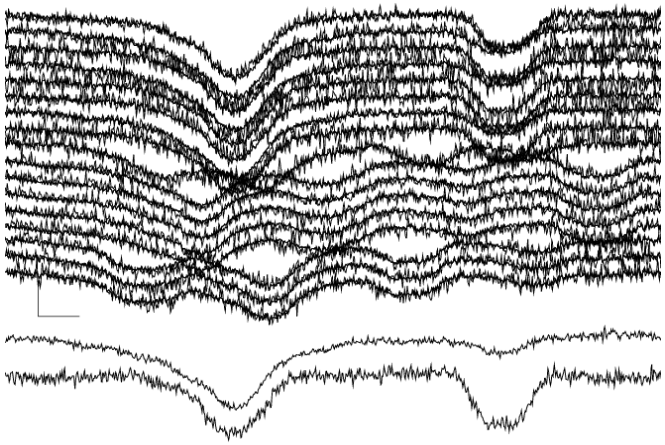
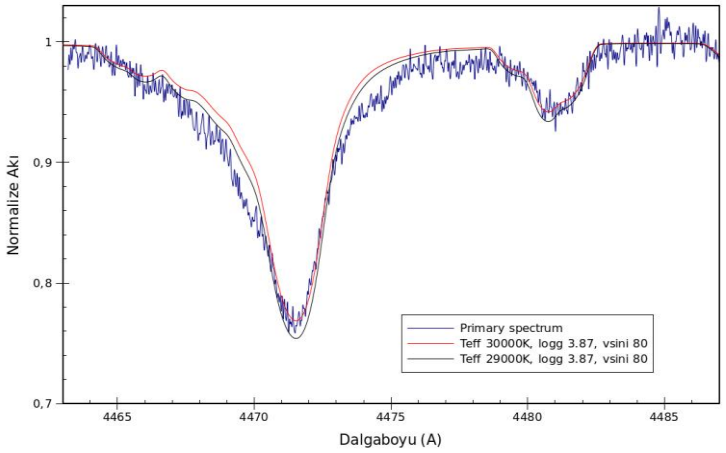
Vul OB1/4 bölgesi AT Vul



d=1360±240 pc







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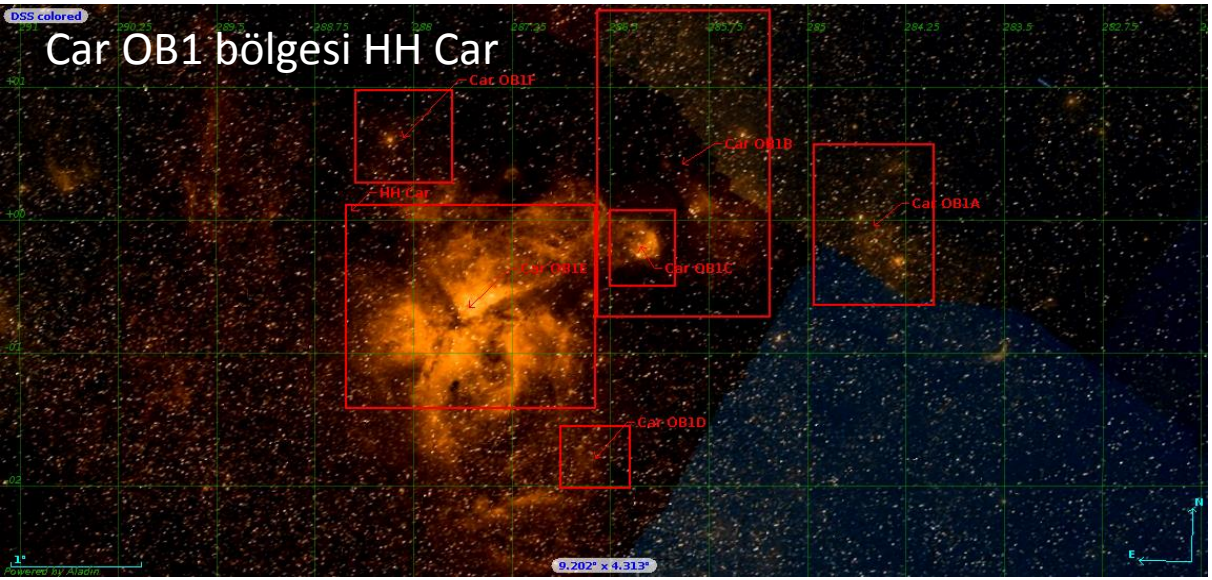

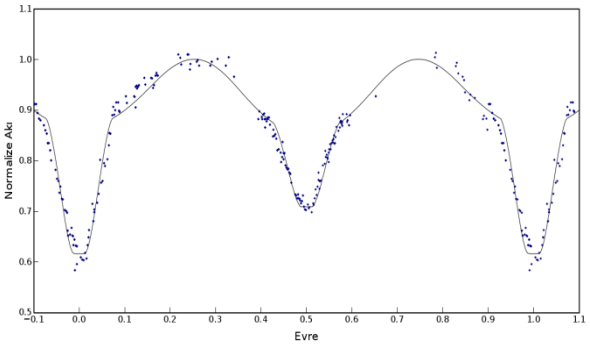

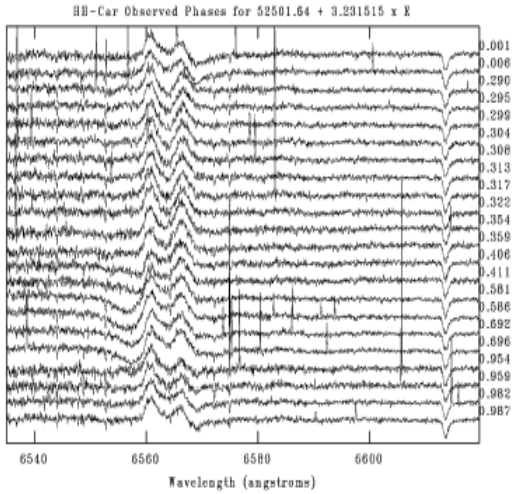

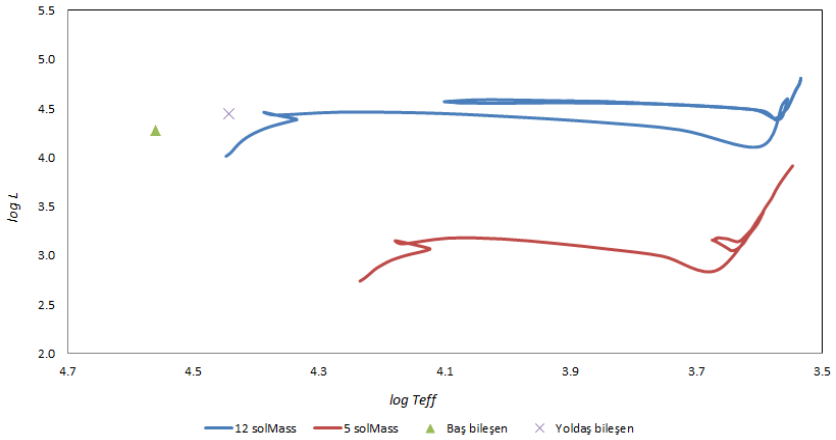

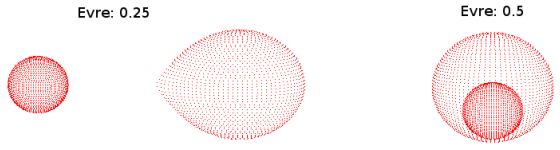

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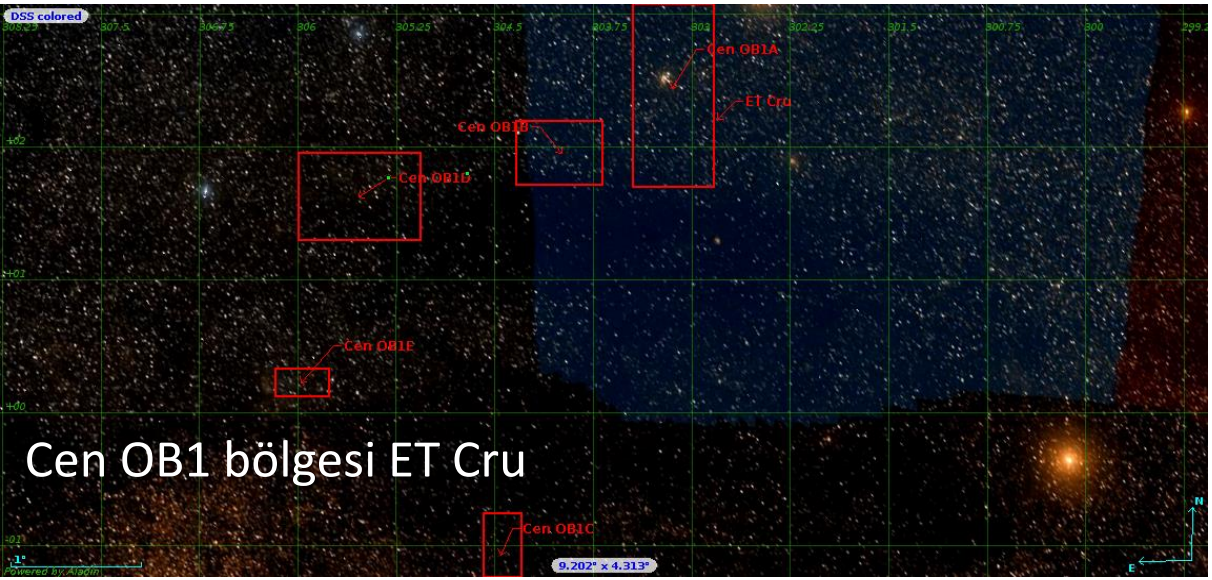
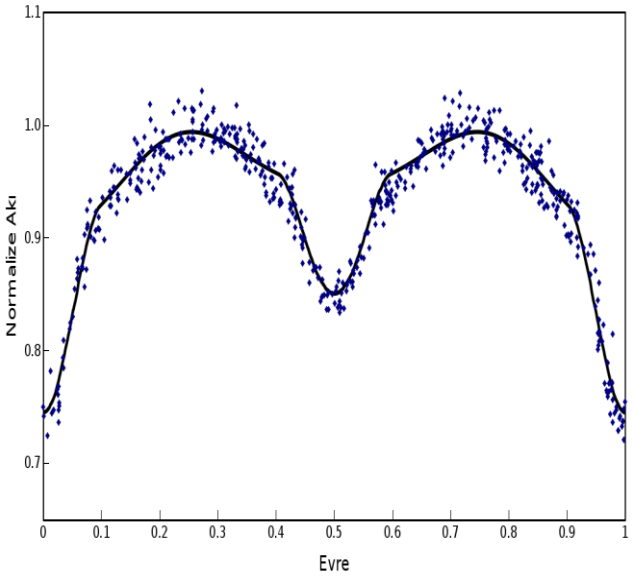
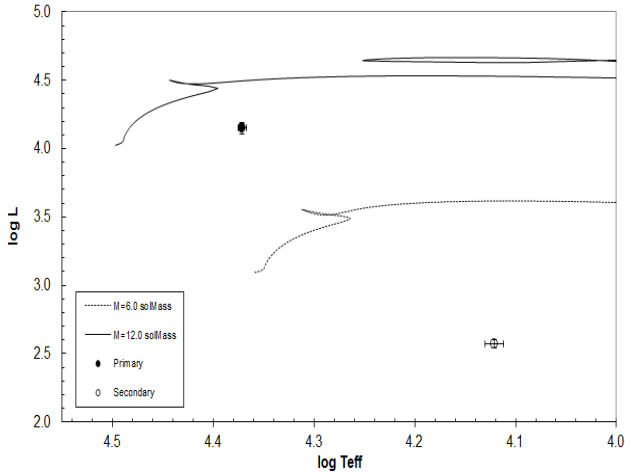
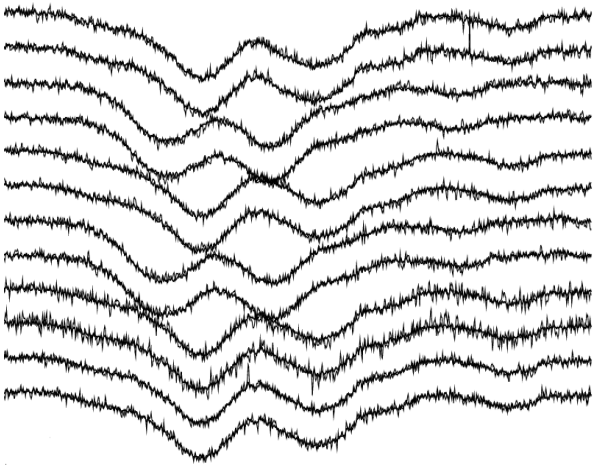


Cen OB1 bölgesi ET Cru







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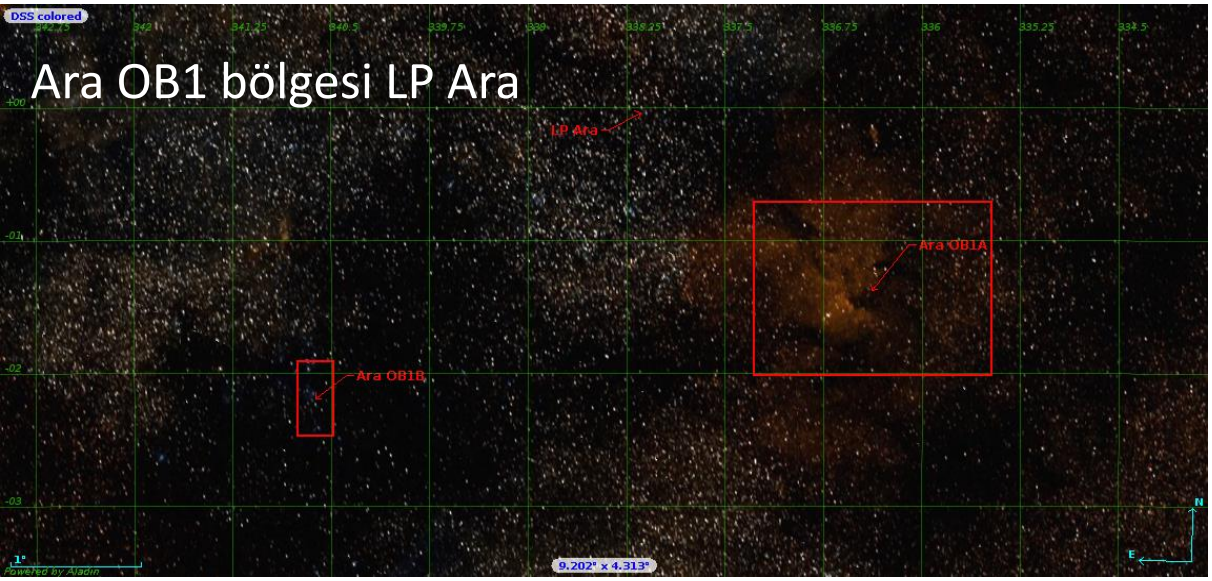
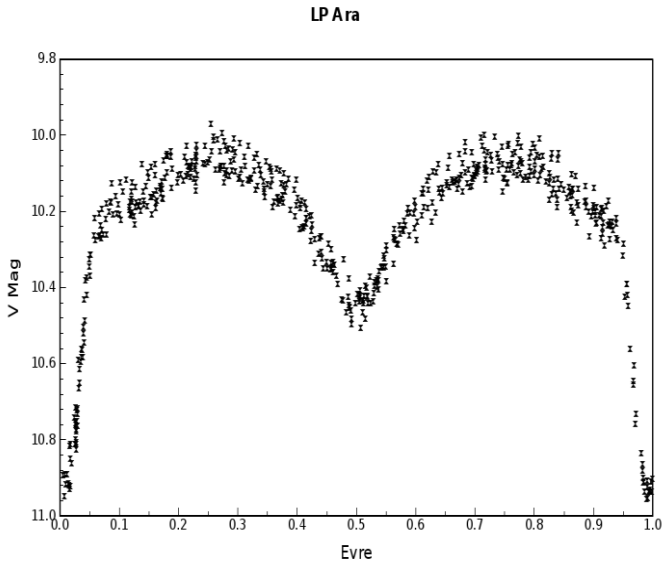
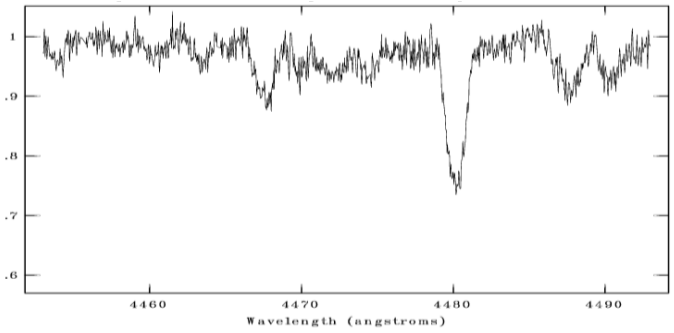
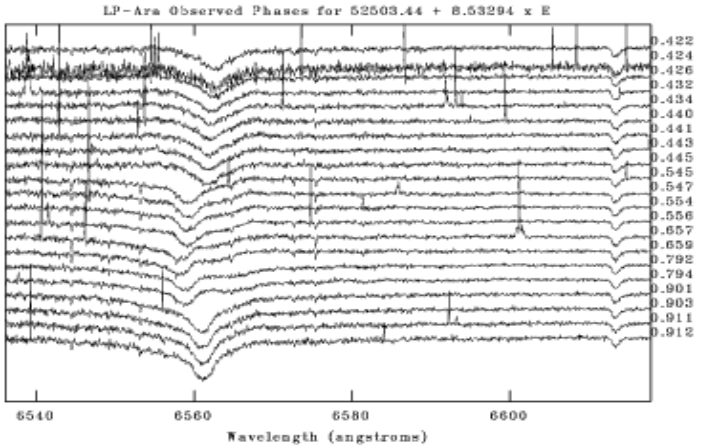
Ara OB1 bölgesi LP Ara









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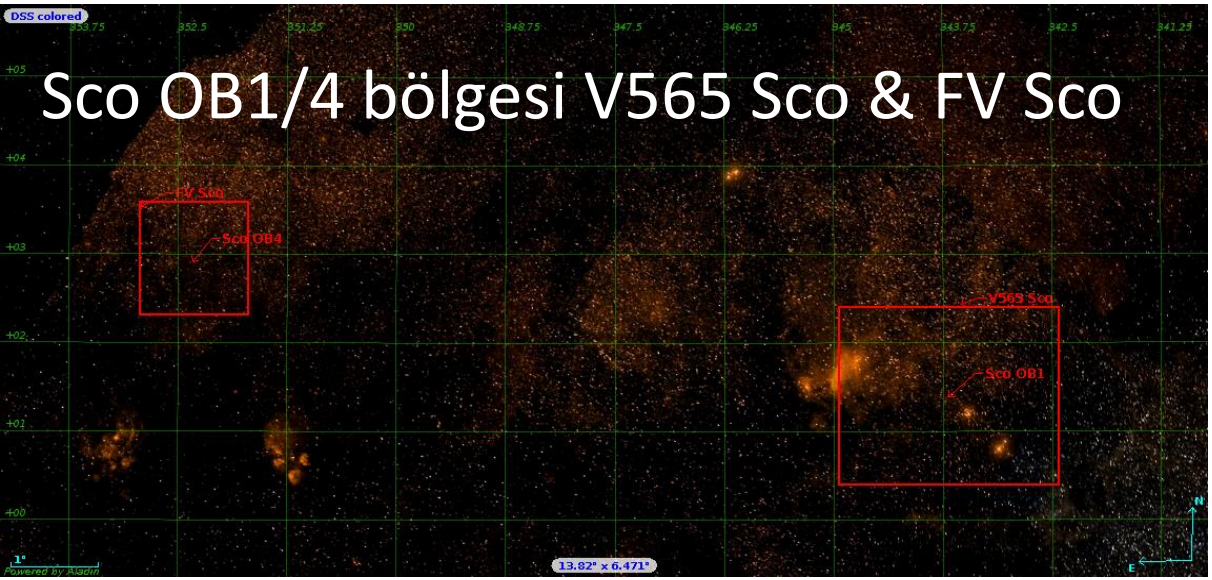
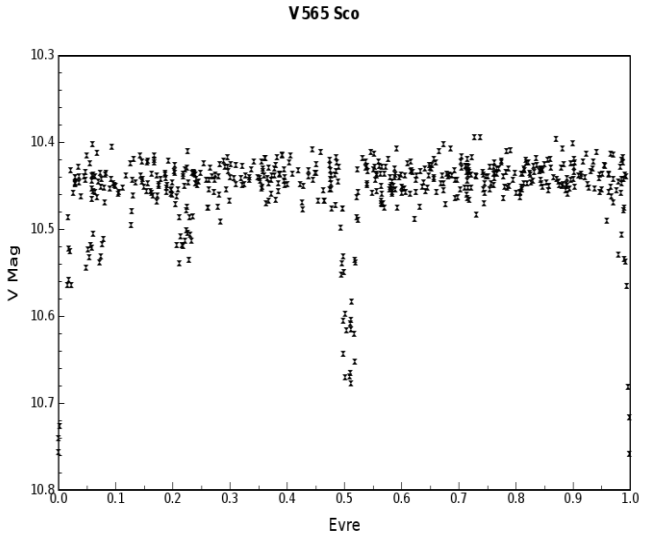
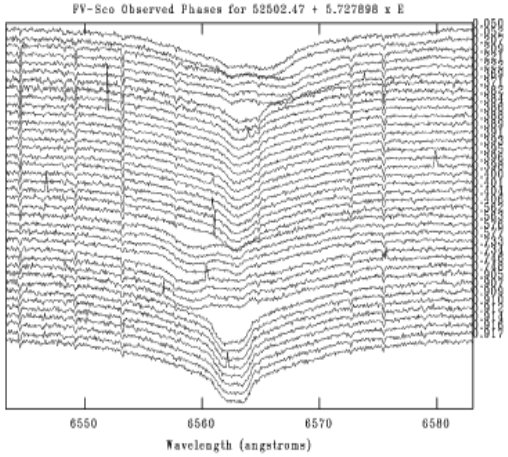
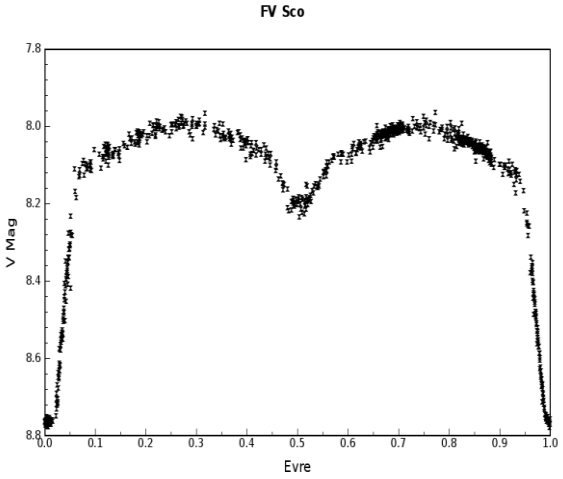
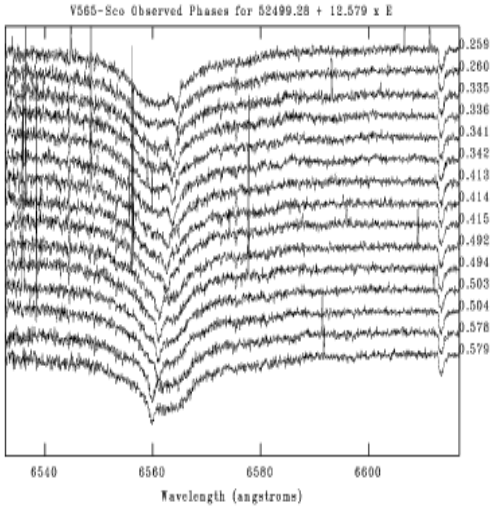
Sco OB1/4 bölgesi V565 Sco & FV Sco











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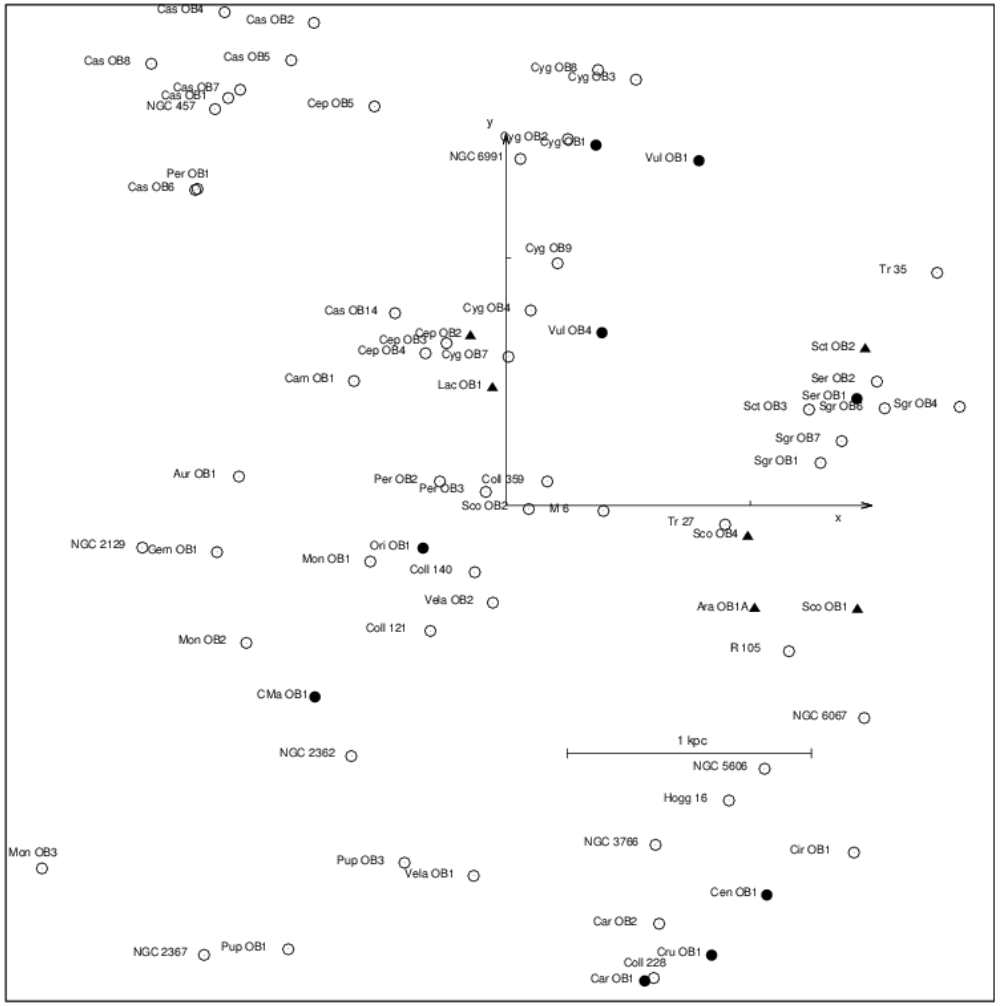
YOBlerinin Galaktik Düzlemdeki İzdüşümleri

Şimdiye kadar gözlenenler & gelecekte gözlenecekler



Özet

- 13 YOBdeki 16 çift/çoklu sisteme çalışıldı:

a) Bu sistemlerin 6 tanesinde en az bir uzak bileşen bulundu (ilk),

b) 12 sistemin bileşenlerinin fiziksel parametrelerin duyarlı bir şekilde belirlendi. 4 sistem için daha fazla gözleme ihtiyaç var (LP Ara, V565 Sco, FV Sco, DV Cam). ESO'dan önümüzdeki dönemde yeni gözlem zamanı alındı.

- 7 YOB'nin yaş, uzaklık ve kinematik verisi duyarlı bir şekilde belirlendi.

Tartışma

- *YOBlardaki çift sistemlerin çoğu en az bir uzak bileşene ait, tayfın bileşenlerine ayrıştırılması (fourier veya dalgaboyu bölgesinde) gibi modern analiz teknikleri şart,*

- *YOBlardaki güvenilir üye çift sistemlerin tam bir listesi hala eksik, gözlemlere devam! Daha kararlı ve verimli gözlem ekipmanlarına ihtiyaç var.*

- *PMS çift sistemler hassas yaş belirlemesinde kullanılabilirler, IR gözlem ekipmanlarına ihtiyaç var.*

Teşekkürler…