DOPPLER IMAGING OF THE CONTACT BINARY DU BOO

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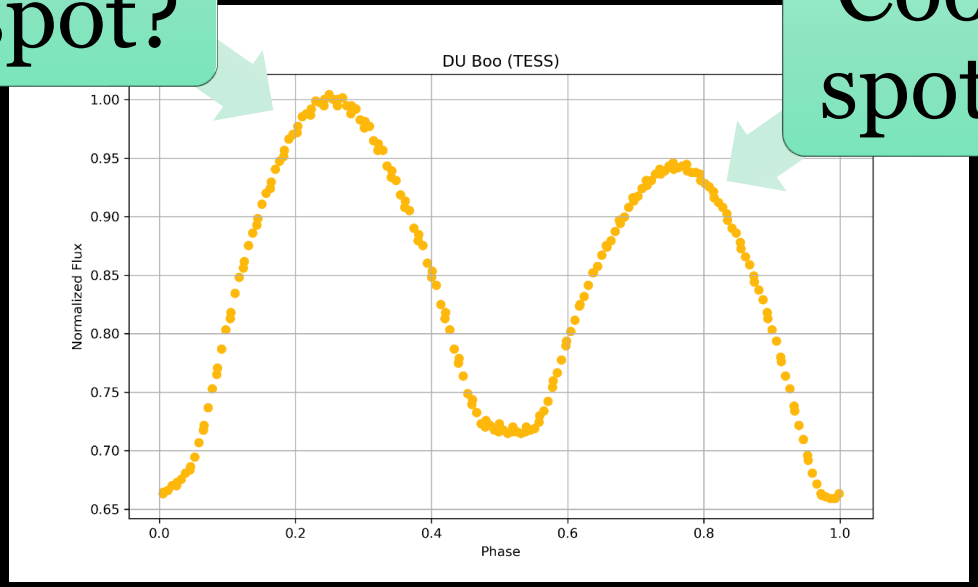
Light Curve of DU Boo

Hot spot?

Cool spot?



DU Boo system, which consists of two hot A7V-type components, exhibits a significant O'Connell effect in addition to the total eclipse in its light curve.

Doppler Imaging

OBSERVATIONS & METHODS

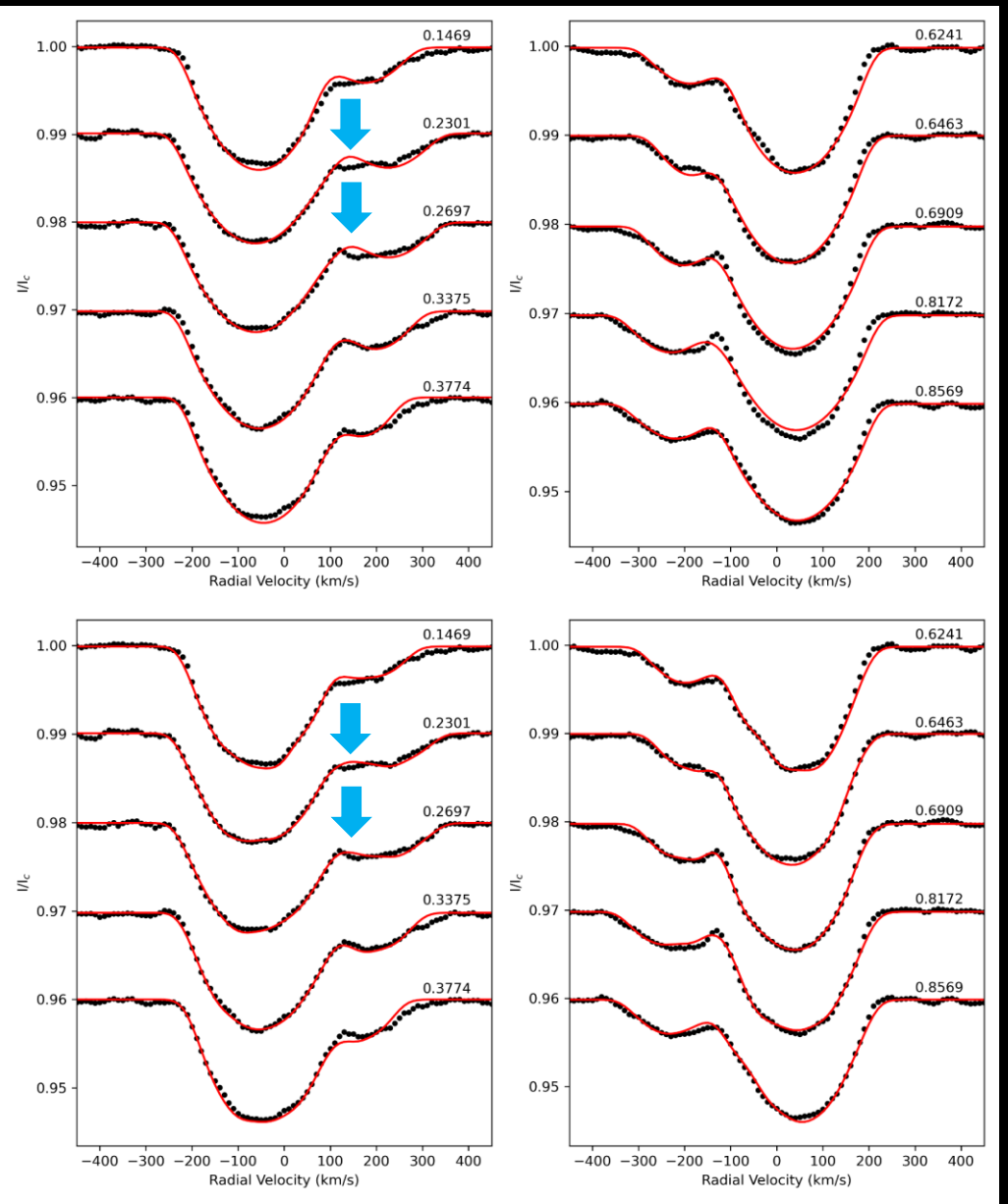
1. Mid-resolution (R ~ 15000) spectra of DU Boo system and standard stars were obtained at the Ankara University Kreiken Observatory to apply the Doppler Imaging technique.

2. The iLSD code was used to create LSD profiles to enhance the SNR values of spectra.

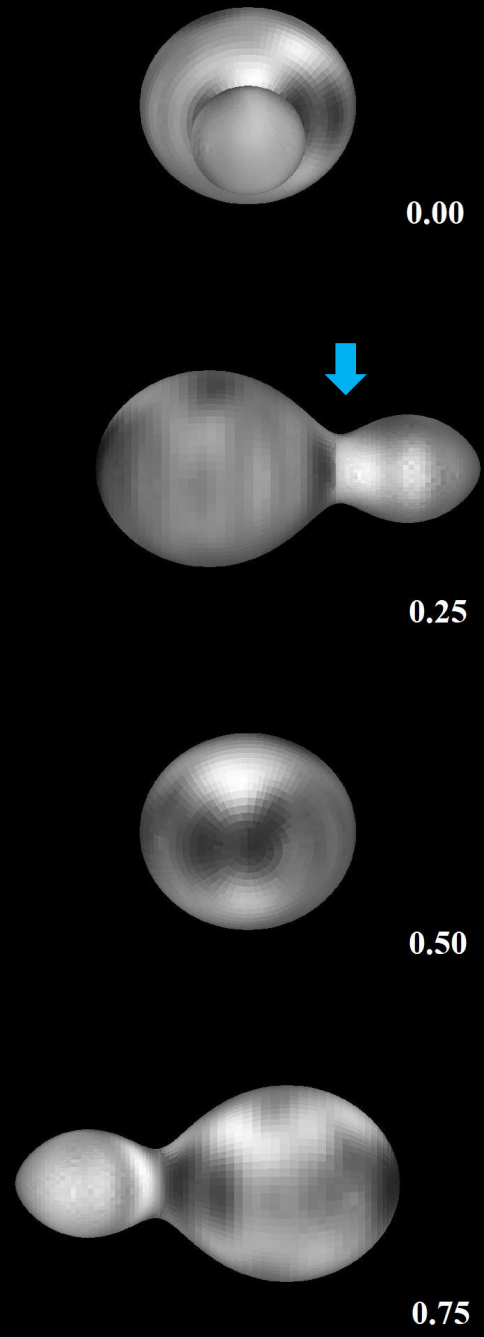
3. The DoTS code has generated the system's surface brightness map using a 3-temperature approximation that represents photosphere, hot and cool spots.

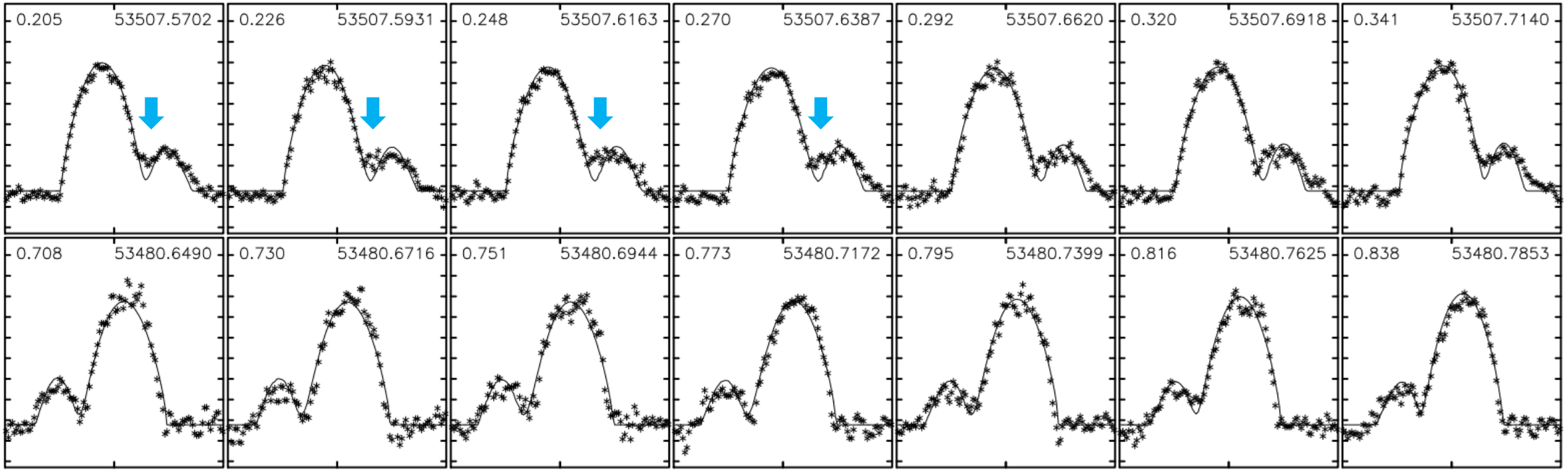
Date	HJD (2450000+)	Phase	Exposure (s)	SNR (Spectra)	SNR (LSD)
16/07/2022	9777.3958	0.1469	3600	56	2355
14/07/2022	9775.3718	0.2301	3600	73	2848
14/07/2022	9775.4136	0.2697	3600	71	2803
12/07/2022	9773.3735	0.3375	3600	75	3891
12/07/2022	9773.4156	0.3774	3600	72	3484
24/04/2022	9694.4844	0.6241	3600	74	3900
20/04/2022	9690.2843	0.6463	3600	83	4580
20/04/2022	9690.3314	0.6909	3600	76	4646
21/07/2022	9782.3271	0.8172	3600	62	3684
21/07/2022	9782.3690	0.8569	3600	56	3587

RESULTS



- The presence of a hot spot in the neck region at a phase of 0.25 is indicated by blue arrows. The right panel presents the surface brightness distribution of the system at four main phases.





(Pribulla, Theodor, et al. "O'Connell effect in early-type contact binaries: DU Boo and AG Vir.“, 2011)

- Pribulla et al., who performed the spectra analysis of the system, suggested that the bumps in the BF profiles, especially at the 0.25 phase, could be due to the presence of a hot spot.

- In this context, the dominant presence of a hot spot at a phase of 0.25 was detected, yielding results consistent with the suggestion by Pribulla et al (2011).

Thank you...