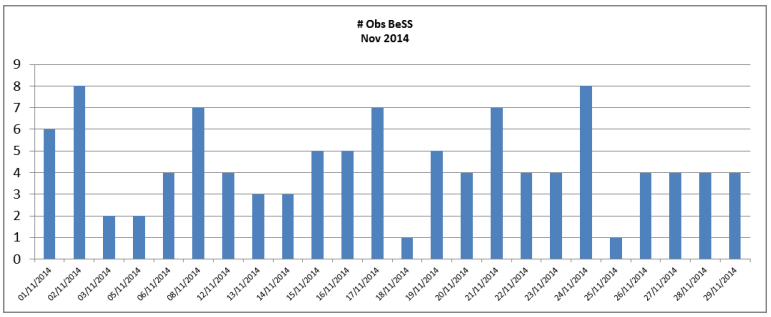
BeSS report – November 2014

Data compiled by Valérie Desnoux
Do not miss the new section on the Be projects by Ernst Pollmann [here]

Observateur	Nb spec
Guarro Fló	21
Sawicki	16
Pollmann	12
Sollecchia	11
Berardi	8
HOUPERT	7
Li	6
Montigiani	
Mannucci	6
Bohlsen	5
Leonardi	4
Lester	4
Graham	3
Powles	2
Locke	1
Total général	**106**

- 106 H-alpha spectra acquired
- 56 objects observed
- 14 observers contributed

The most observed objects were pi Aqr, gam Cas and pleione



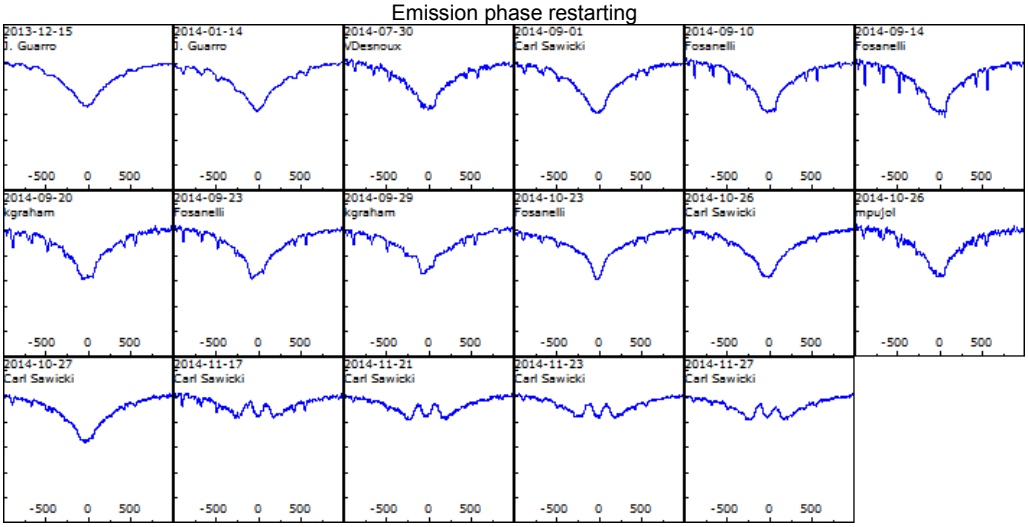
Objects observed

Classique								?	Herbig
pi Aqr	HD 237134	lam Eri	OT Gem	zet Tau	HD 19818	HD 19993	HD 37149		IL Cep
gam Cas	12 Vul	HD 32188	HD 237118	EW Lac	HD 14850	V731 Tau	omi Aqr		SV Cep
PLEIONE	HD 30677	HD 13867	HD 33599	ups Cyg	BG Phe	HD 189689	HD 224905		HD 179218
lam Cyg	eps Cas	HD 26398	HD 237060	V811 Cas	V808 Cas	EM* MWC 709	RW Per		
ACHERNAR	10 Cas	228 Eri	eps Tuc	nu Cyg	HD 223044	HD 20899	bet Psc		
omi And	omi Her	BD+62 2346	HD 36408	BD+62 11	BD+62 285	IU Aur	EE Cep		
31 Peg	tet Ari	HD 232552	HD 42477	V923 Aql					

Emission increase since last observations

Lam Cyg

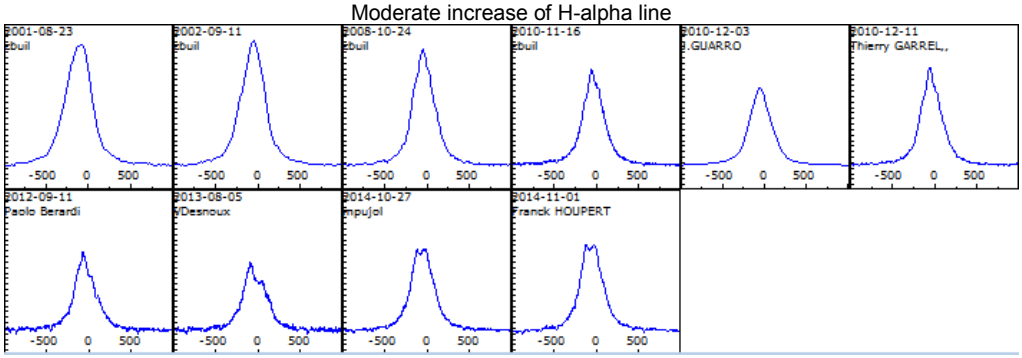
Emission phase restarting



Moderate evolutions of H-alpha line

HD 232552

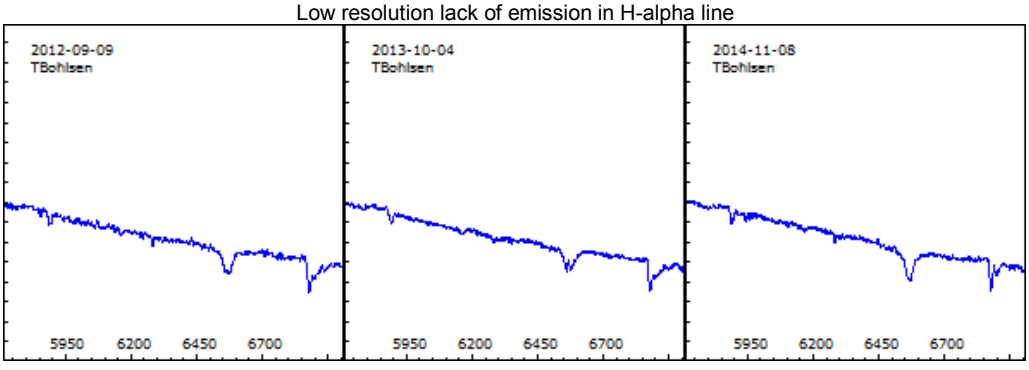
Moderate increase of H-alpha line



Emission decrease of H-alpha line

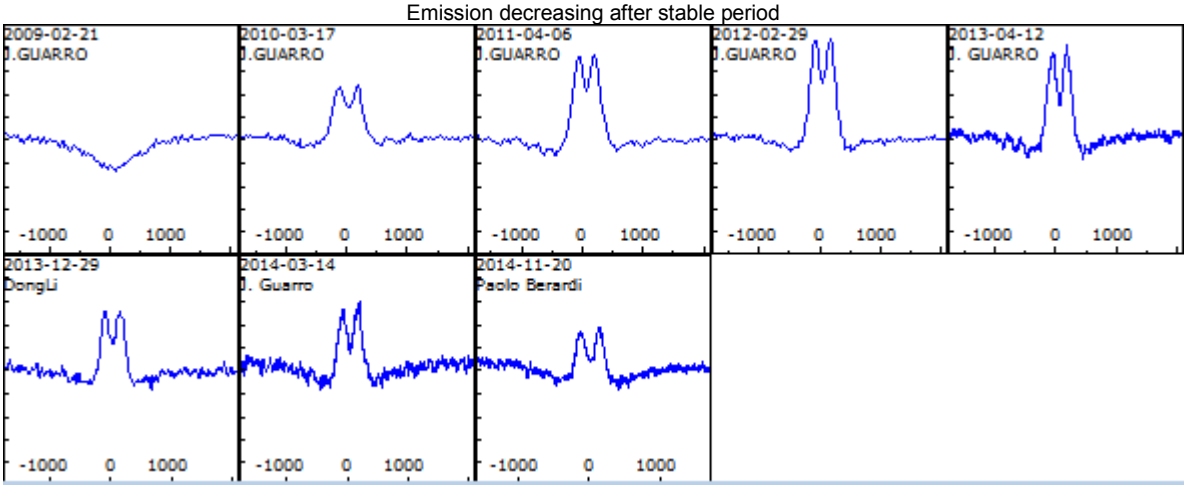
HD 19818

Low resolution lack of emission in H-alpha line



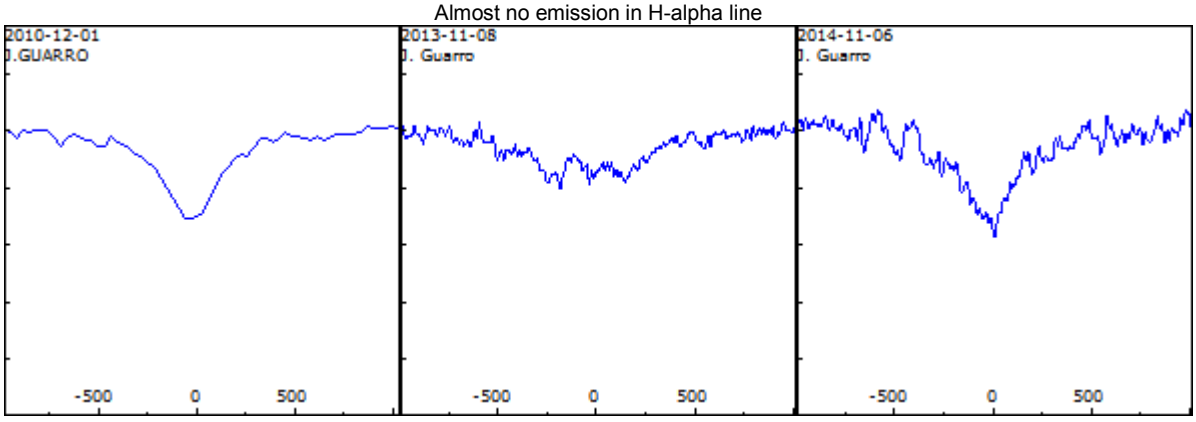
HD 37149

Emission decreasing after stable period



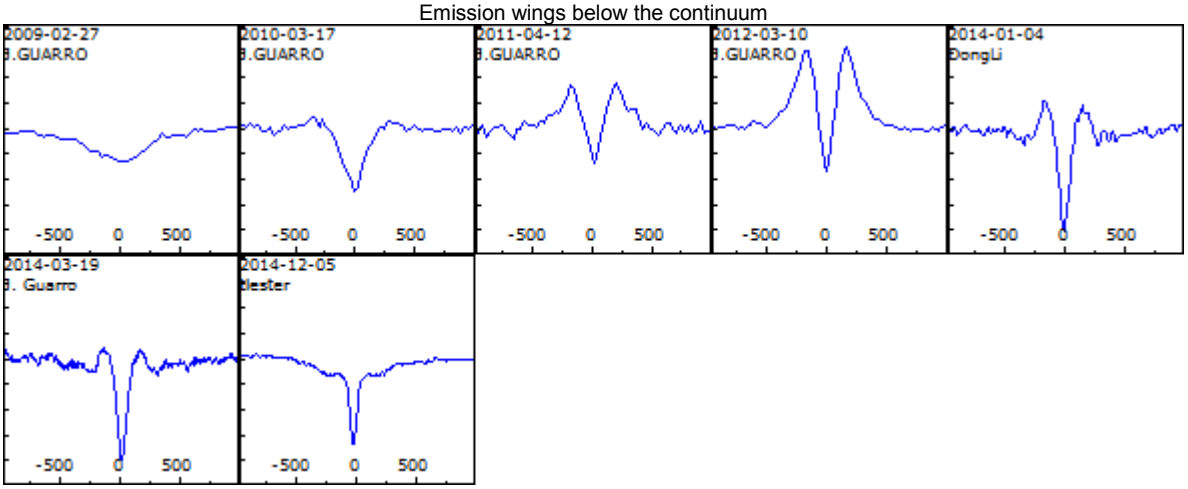
HD 37149

Almost no emission in H-alpha line



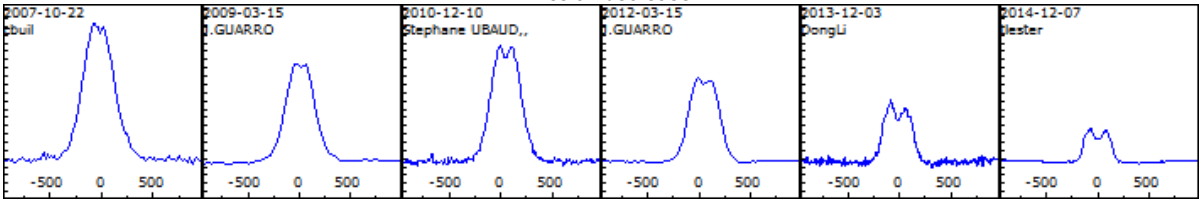
V438 Aur

Emission wings below the continuum



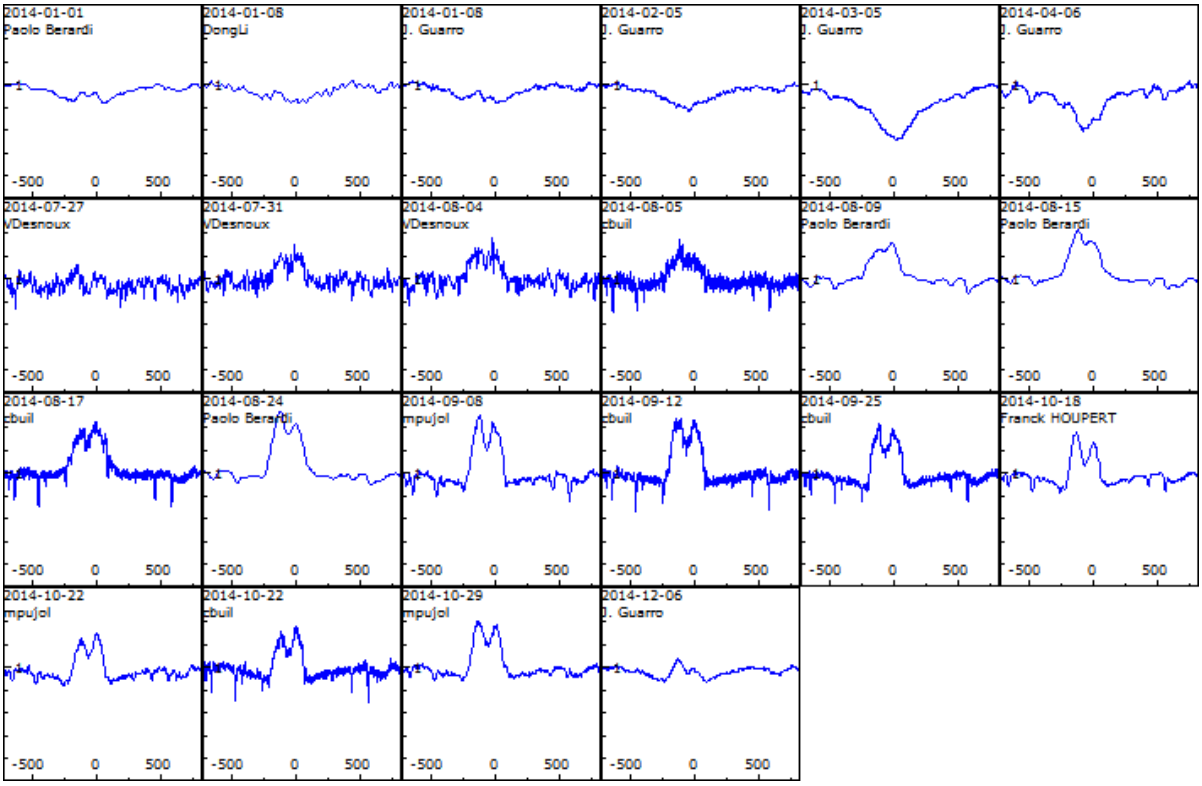
V447 aur

Emission decrease



V442 And

Emission decrease after outburst

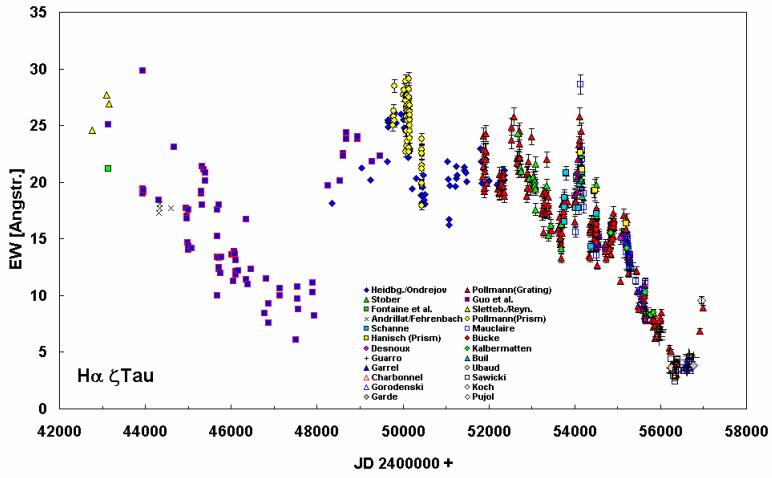


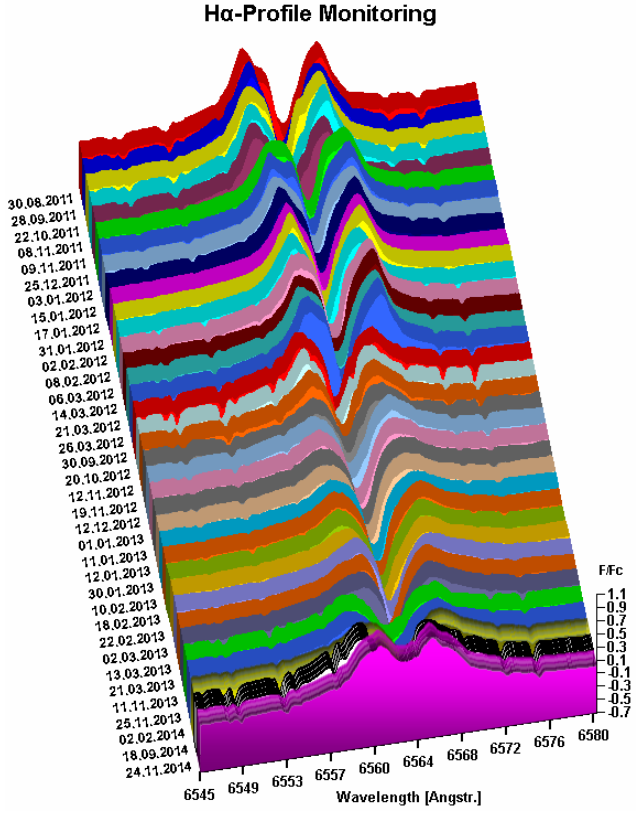
Be monitoring projects

By Ernst Pollmann

ζ Tau Hα Monitoring

The present observations shows, that the Hα EW is now growing again, and a new disk is developing. Interesting in this context is the fact, that the central absorption of Hα is filled up more and more.

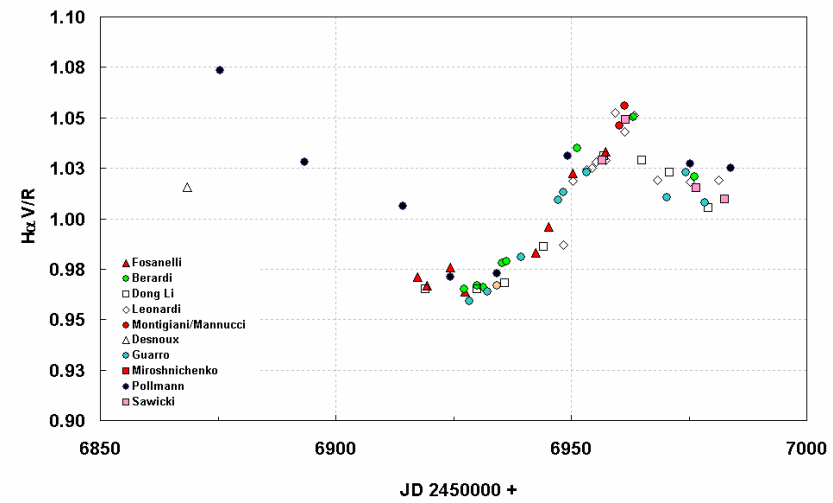


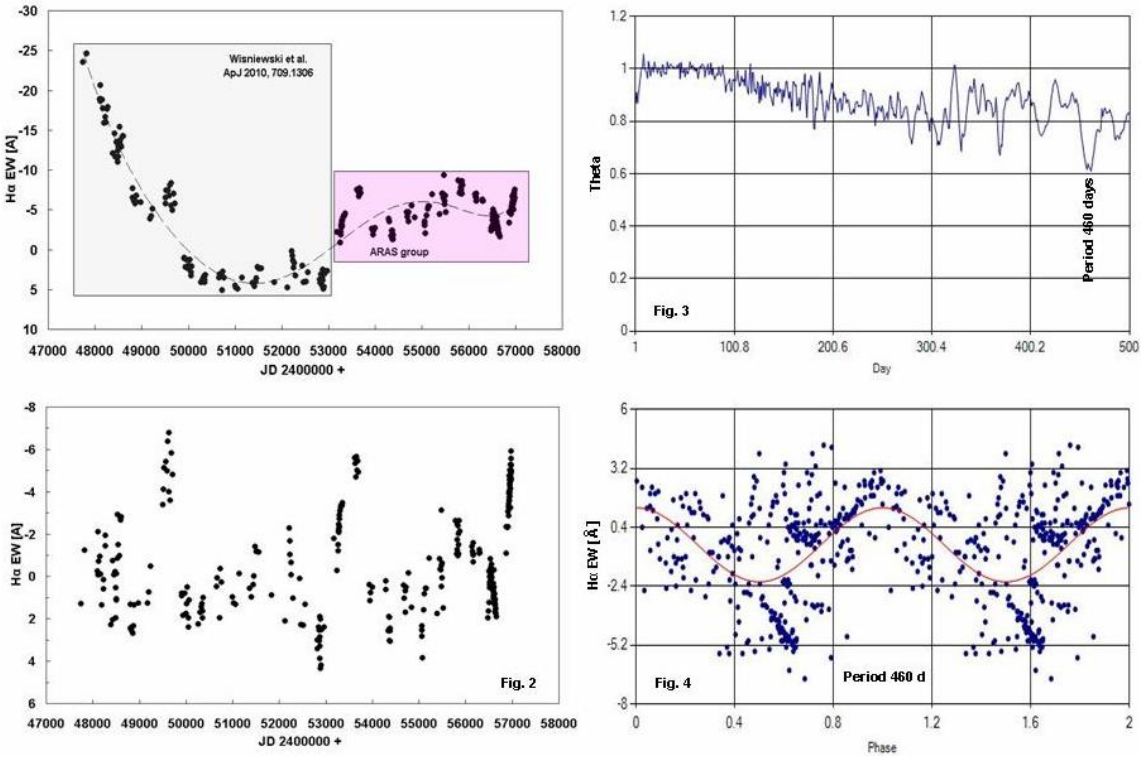


pi Aqr Monitoring

Hα-V/R-84.2d period and Hα-EW periodicity

The campaign after the OHP meeting 2014 led to the observation of two V/R maxima and one minimum (see the following Fig.). Continued observations offer the chance to recognize the minimum at December 20th (approx.). This would be very helpful to confirm the 84.2d V/R period.





pi Aqr Hα EW monitoring

Fig. 1: EW long-term behaviour since 08/1989 until now.
Fig. 2: EW long-term behaviour, but the long-term component removed
Fig. 3: PDM (phase dispersed minimisation) analysis of the data of Fig. 2
Fig. 4: Phase plot of the PDM period 460 days
Because of the inhomogeneous monitoring during the past, the EW periodicity is still unsure. But with our common monitoring we have the chance to improve these uncertainties.

November 2014 periastron passage of the companion star in gamma Cas

P. Harmanec et al. (2000) reported the first detection of the regular radial velocity (RV) variations of the Hα and He6678 lines with a period of 203.59 days, and an orbital eccentricity of 0.26, and attributed them to the orbital motion in the Be binary system γ Cas. The secondary has mass of about 1 solar, appropriate for a white dwarf or a neutron star, but it also could be a normal late-type dwarf.

A group of ARAS observers (Bücke, Kalbermatten, Guarro, Pollmann, Berardi, Masviel, Garrel, Garde, Buil, Montigiani, Mannucci, Pujol) is observing the star for monitoring in different ways. Their spectra offer, among others, the possibility of measuring the Hα RV. Since July 2014 they have collected high quality spectra for measuring the Hα RV and hence for observing the periastron passage in November 2014.

Fig. 1 shows the RV time behavior for that time span. Based on the ephemerides of Harmanec et al. (2000) the periastron was to be expected at JD 2456975. Our lowest RV value (= periastron time) appears at JD 2456982, followed by a fairly quick rise.

An independent monitoring of the V/R periodic behavior of the He6678 line of Pollmann (Fig. 2) shows the He6678 double-peak emission profile during that time section. There, one can clearly recognize the distortion of the blue component of the line profile at JD 2456983 to 2456990.

The distortion in the sense of a tidal interaction of a companion star and a gas disk/shell around the primary star during a periastron passage is, meanwhile, well known and so far is not new. But this is the first time that the invisible companion star in the Be binary system γ Cas is recognizable in this direct manner. On the other hand there is the question, why can't we see this kind of distortion within the Hα line profile, but only within the ring-like He6678 zone of the primary?

Reference

Harmanec, P. et al. Astron. & Astrophys., 364, L85-L88 (2000)

Authors

Valérie Desnoux
Valerie.desnoux@free.fr
Aras Site at http://www.astrosurf.com/aras/
BeSS database at http://basebe.obspm.fr/basebe/
ArasBeAM portal at http://arasbeam.free.fr/

Ernst Pollmann
ernst-pollmann@t-online.de
International Working Group ASPA
Active Spectroscopy in Astronomy
http://www.astrospectroscopy.de
http://www.astronomie.de/astronomische-fachgebiete