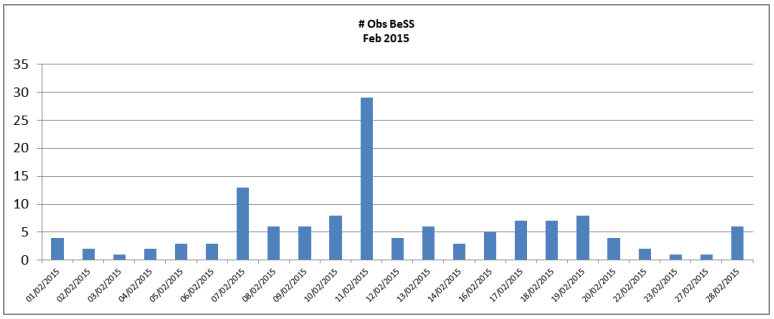
BeSS report – February 2015

Data compiled by Valérie Desnoux
Be projects section by Ernst Pollmann [here]

Observateur	Nb spec
Sollecchia	18
Leonardi	17
de Bruin	12
Favaro	11
Fosanelli	11
HOUPERT	11
MontigianiMannucci	7
Pollmann	7
Bohlsen	6
Lester	5
DUBREUIL	5
Buil	5
Berardi	4
Li	3
Guarro Fló	3
Desnoux	3
Leadbeater	1
François	1
TERRY	1

- 131 H-alpha spectra acquired
- 78 objects observed
- 19 observers contributed

The most observed objects were gam Cas, zeta Tau and Pleione



Objects observed

Classique								Herbig
gam Cas	19 Mon	HD 22780	AX Mon	FU CMa	HD 246537	HD 47054	[BE74] 415	HD 37806
zet Tau	I Hya	omi And	2 Ori	HD 27846	HD 43913	HD 246878	V695 Mon	CQ Tau
PLEIONE	17 Sex	eps Cas	12 Aur	V361 Per	HD 60794	HD 44637	HD 43285	
OT Gem	phi Leo	tet Ari	CT Cam	V555 Per	HD 63453	HD 248390	V1374 Ori	
5 Cnc	V725 Tau	omi Cas	HD 37149	HD 45626	HD 53048	V780 Cas	HD 38856	
tet CrB	V744 Mon	48 Per	HD 42477	BD-06 1895	RY Gem	BN Gem	HD 37330	
bet CMi	del Sco	lam Eri	69 Ori	BD+37 1292	HD 81357	HD 253339	mu Pic	
ome Ori	SHELIAK	228 Eri	V763 Mon	Cl* NGC 884 LAV 2224	HD 53032	PZ Gem	[KW97] 26-56	
nu Gem	HD 91120	eta Ori	KS CMa	HD 61205	HD 53416	HD 42054	EM* MWC 678	
V1165 Tau	15 Mon	V696 Mon	HD 68468					

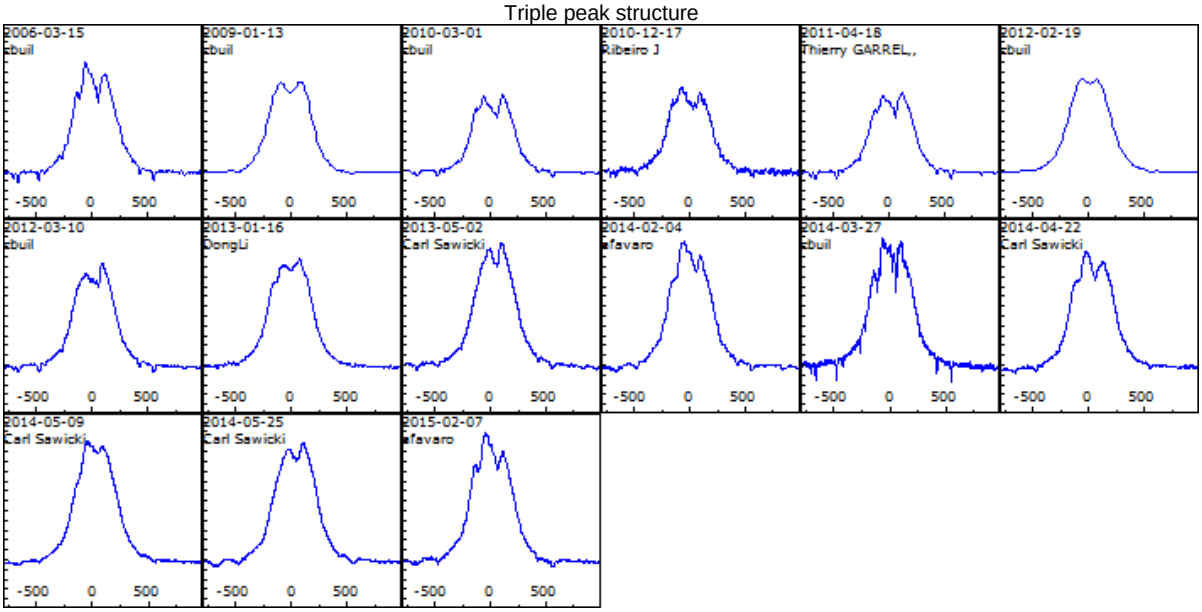
Emission increase since last observations

None observed this month

Moderate evolutions of H-alpha line

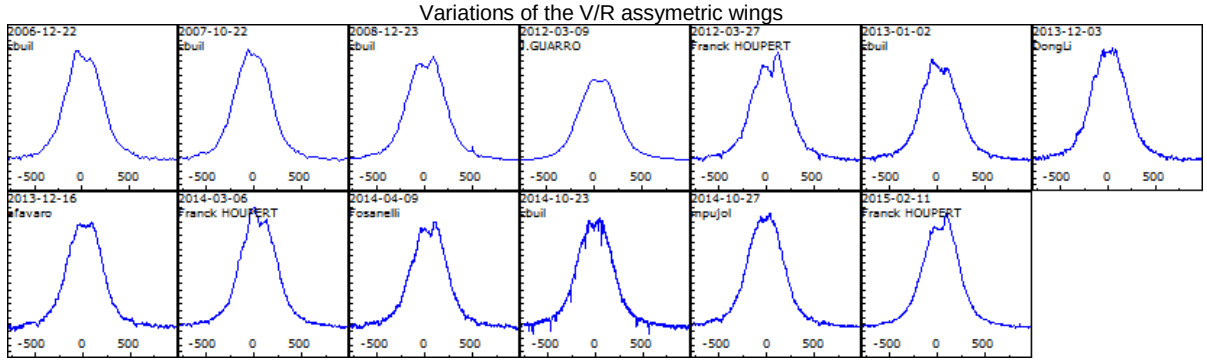
I Hya

Triple peak structure



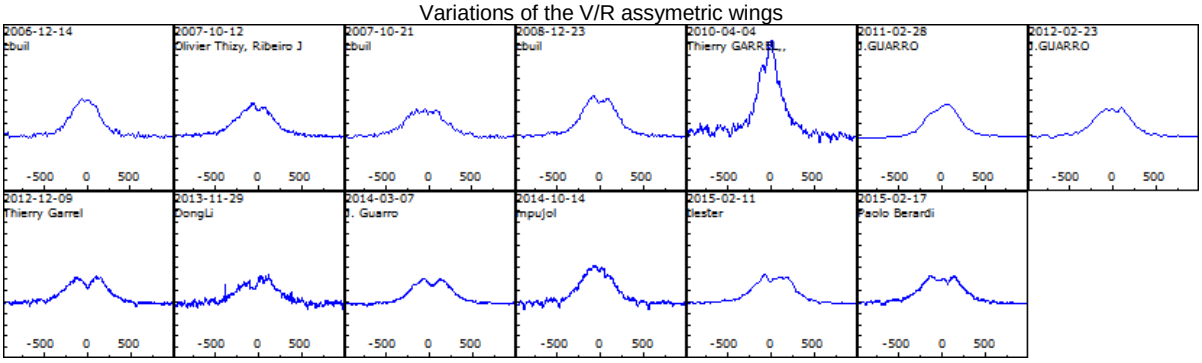
V1165 Tau

Variations of the V/R assymetric wings



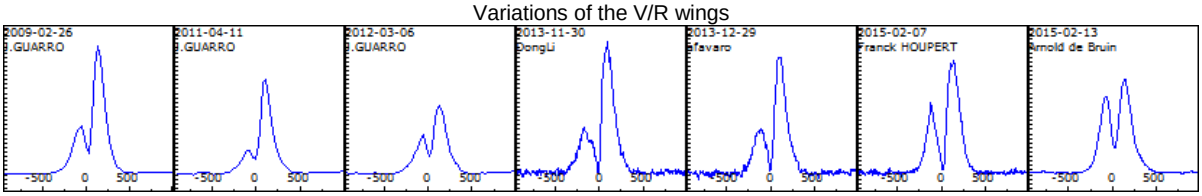
12 Aur

Variations of the V/R assymetric wings



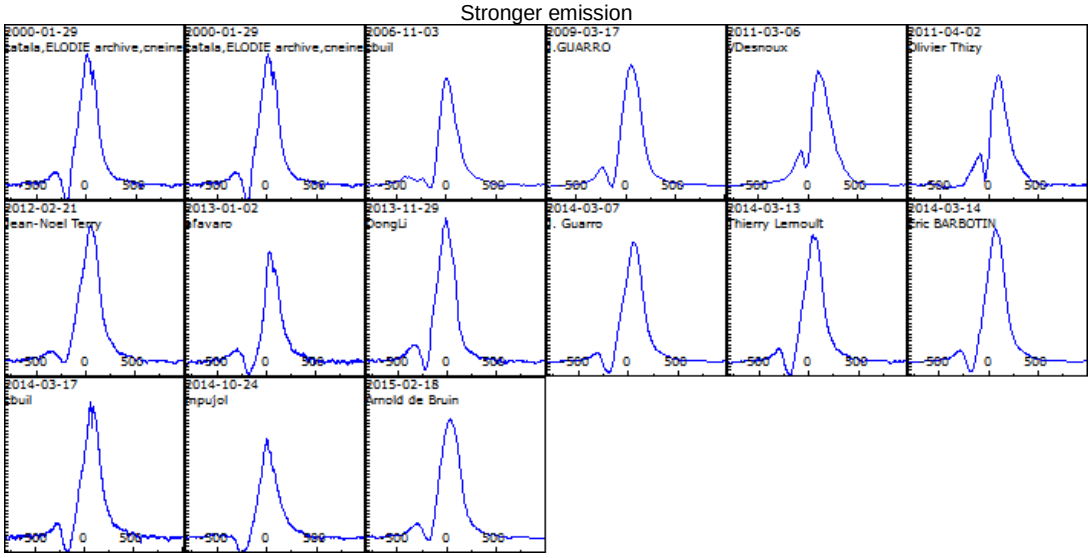
HD37806 B[e]

Variations of the V/R wings



AX mon

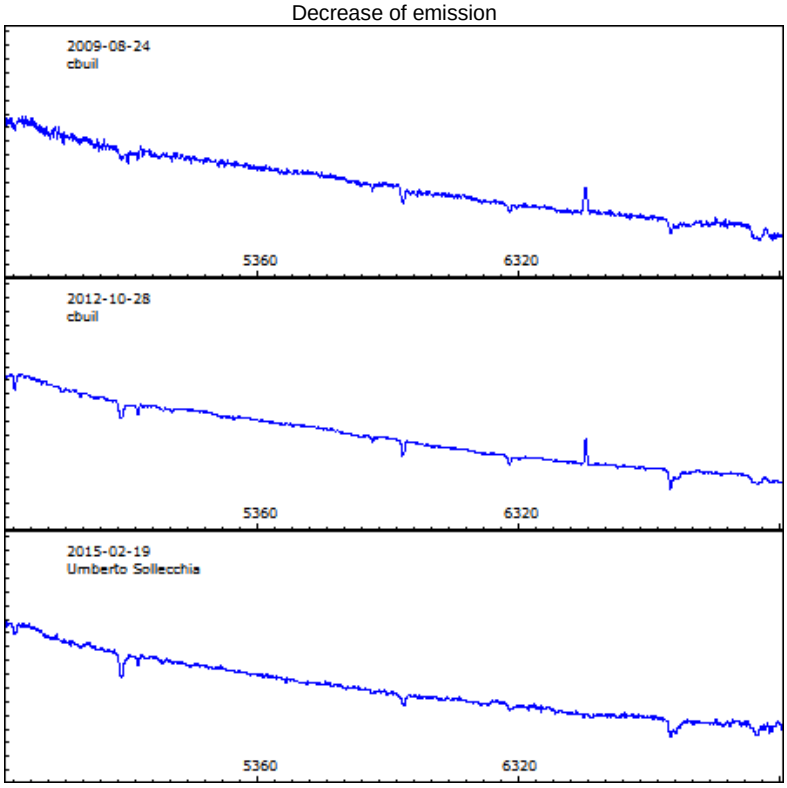
Stronger emission



Emission decrease of H-alpha line

V361 Per

Decrease of emission



Be monitoring projects

By Ernst Pollmann

Campaign of Hα Radial Velocity Measurements at the Be star gamma Cas

In the context of a campaign of the monitoring the Hα radial velocity at the Be-star γ Cas, an observer group of the ARAS community (http://www.astrosurf.com/aras/) had been able within the time interval of July 2014 until January 2015, successfully to document an almost complete cycle of the change of radial velocity.

For this campaign the Littrow spectrographs of the type VHIRES-MO & LHIRES III with different spectral resolving power R from 48000 and 17000 to 8000 resp. were used. The reproducibility of the RV measurement of one spectrum during one night can be indicated by application of the line profile mirror method with (+/-) 2 km/s. For the mentioned time section, the RV time behavior and its period analysis is shown in Fig. 1a-b.

This analysis led to a clearly larger eccentricity (e = 0,173) than for instance in the investigations of Nemravova et al. (2012) with e = 0.00, Smith et al. (2012) with e = 0.0-0.03 and Miroshnichenko et al. (2002) with e = 0.0. The RV data of this ARAS campaign were then embedded into the long-term monitoring of Roland Bücke (Hamburg), which runs meanwhile since September 2006 (see Fig. 2a-b). The period and the eccentricity of this RV data analysis on the base of a curve fitting with the Kepler function of 14 observed cycles, is showing however a very good agreement with the professional data (see references).

The scatter of the measured data is caused from the use of the different instruments and the mode of observation (particularly the wavelength calibration), which leads to systematic deviations between the results. In addition we have to consider, that the movement of the companion only indirectly becomes visible, with the RV of the hydrogen gas disk. But this however is itself influenced by kinematic changes, which possibly affect the RV.

The character of the RV curve leads to the question of the reasons for the asymmetrical behaviour of the ARAS campaign with the eccentricity of 0.173. Asymmetric RV curves are a natural product of nonzero values of e and omega (longitude of periastron). Reasons for the measured asymmetrical RV curve could be a variable emission (or absorption) feature in the wings of the Hα line, due to the temporary presence of circumstellar material around the star. We will continue our monitoring in order to know whether e is in fact nonzero, but previous determinations [Nemravova et al. (2012), Smith et al. (2012), Miroshnichenko et al. (2002)] don´t indicate e is in fact nonzero [exception: Harmanec et al. (2000) with e = 0.26].

Spectra of the following observers have been used:
J. Guarro, Ch. Buil, P. Berardi, N. Montigiani, M Mannucci, J. P. Masviel, M Pujol, T. Lester, P. Fosanelli, E. Pollmann

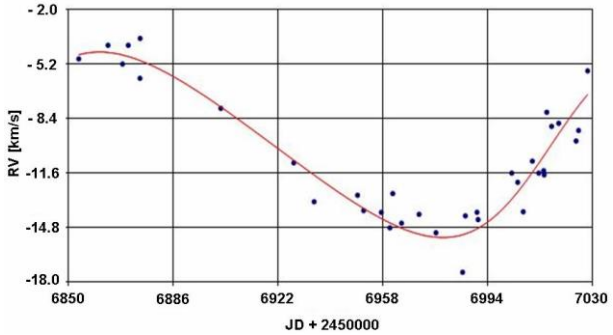
References

Harmanec, P., et al. 2000, A&A, 364, L85-L88
Miroshnichenko, A., S., et al. 2002, PASP, 114: 1226-1233
Nemravova, J., et al. 2012, A&A, 537, A59
Smith, M. A., et al. 2012; A&A, 540, A53

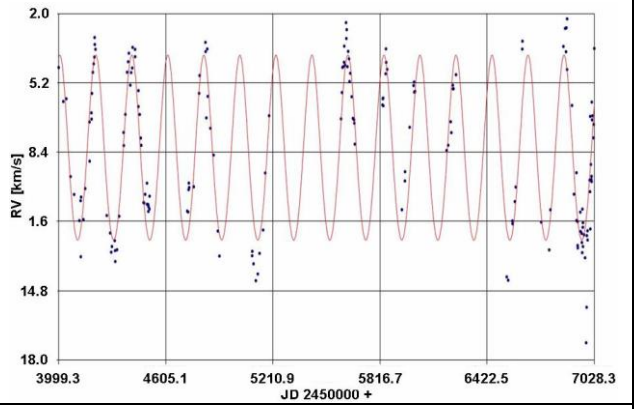
I am very grateful to Dr. Myron Smith for his valuable suggestions.

See Graphics next page

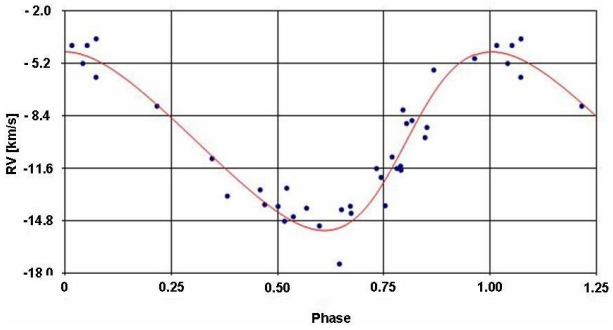
1a



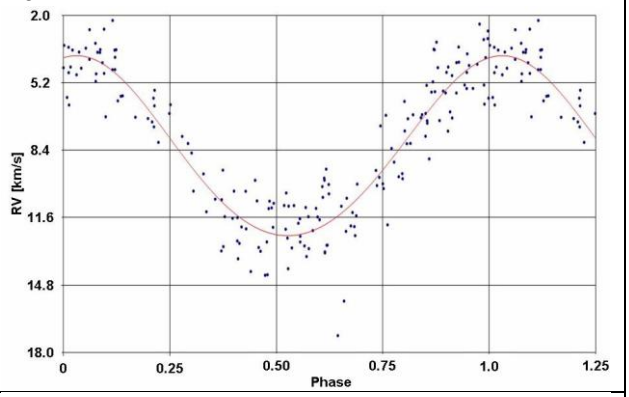
2a



1b



2b



ARAS Group:	Periode: 193.35 d ± 29.77	**Bücke/ARAS:**	Periode: 202.55 d ± 0.21
	Amplitude: 5.4 km/s ± 0.488		Amplitude: 4.08 km/s ± 0.11
	Eccentricity: 0.17 ± 0.05		*Eccentricity: 0.04 ± 0.03*
	To: 2456821.37 ± 35.36		To: 2454009.175 ± 19.66
	Omega: 267.1 ± 25.9		Omega: 7.1 ± 34.9
	RMS: 1.25		RMS: 0.93 km/s
	n = 34		n = 149

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BeSS database at http://basebe.obspm.fr/basebe/
ArasBeAM portal at http://arasbeam.free.fr/

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