Eruptive stars spectroscopy
Cataclysmics, Symbiotics, Novae, Supernovae

ARAS Eruptive Stars
Information letter n° 17 #2015-05 19-07-2015
Observations of May-June 2015

Nova Sgr 2015 b forms dust

So the bottom line is *keep monitoring this nova spectroscopically.* It will be faint for a while, but you've all done fainter and at lower resolution it will still be valuable to have the coverage. And you will be able to get an idea of what happens during the dust formation in any object, including winds, by following this event.

Steve Shore

Contents

ARAS Spectroscopy

ARAS Web page
http://www.astrosurf.com/aras/

ARAS Forum
http://www.spectro-aras.com/forum/

ARAS list
https://groups.yahoo.com/neo/groups/spectro-l/info

ARAS preliminary data base
http://www.astrosurf.com/aras/Aras_DataBase/DataBase.htm

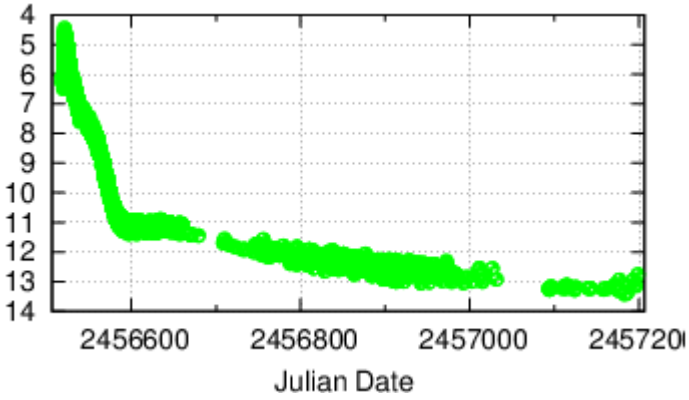
ARAS BeAM
http://arasbeam.free.fr/?lang=en

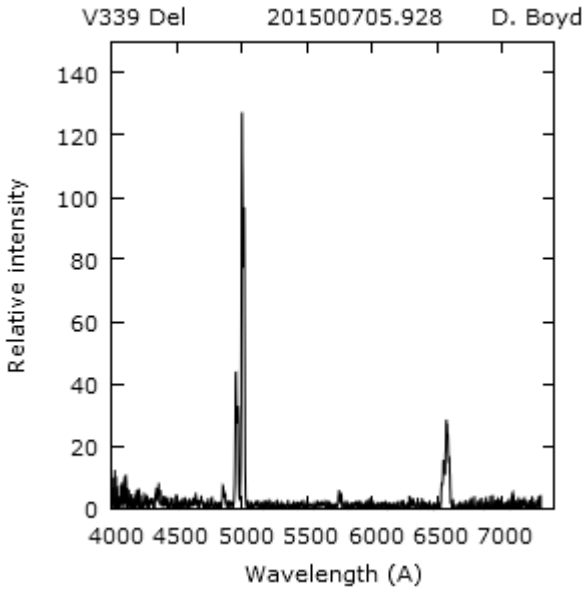
Next issue : July 2015

Authors :
F. Teyssier, S. Shore, P. Berardi, F. Boubault, T. Bohlsen, D. Boyd, C. Buil, P. Dubreuil, J. Edlin, P. Fosanelli, O. Garde, K. Graham, J. Guarro, D. Li, F. Mete, J. Montier, T. Lester, U. Sollecchia, P. Somogyi, E. Wiley

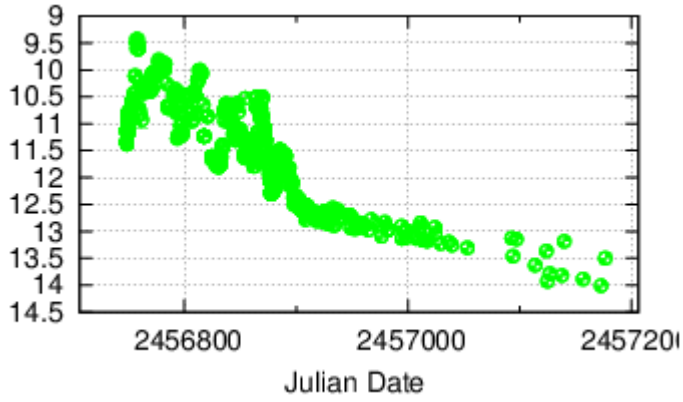
Status of current novae 1/2

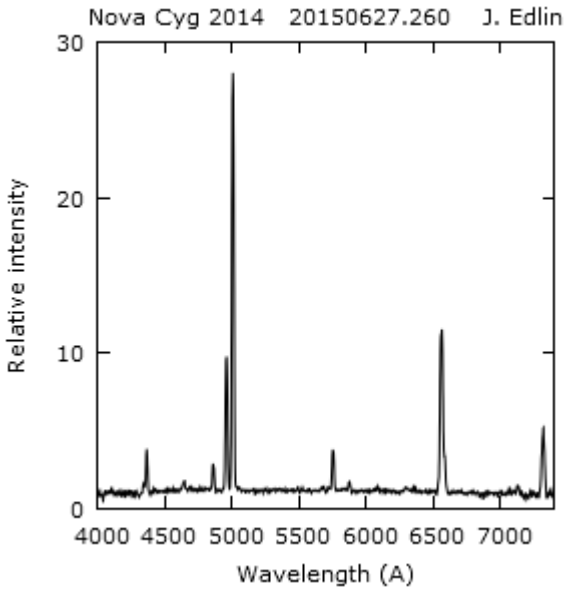
Nova Del 2013	V339 Del
Maximum	14-08-2013
Days after maximum	594
Current mag V	13.2
Delta mag V	8.8



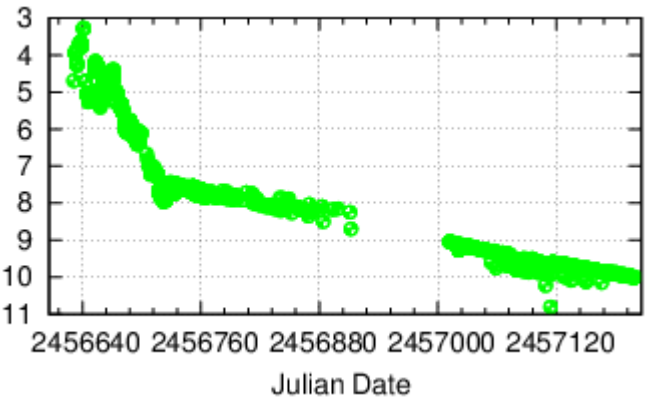


Nova Cyg 2014	V2659 Cyg
Maximum	09-04-2014
Days after maximum	356
Current mag V	13.5
Delta mag V	4.4



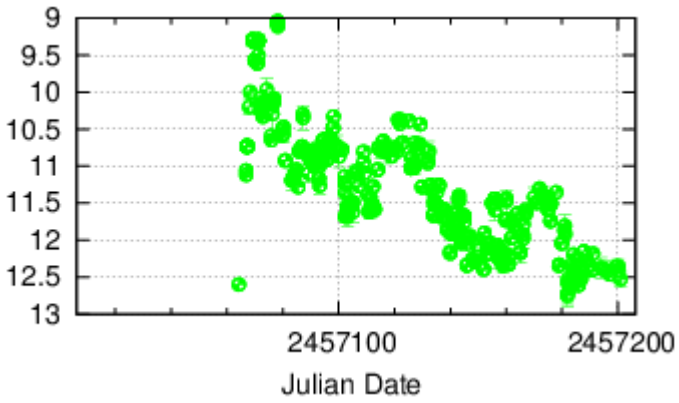


Nova Cen 2013	V1369 Cen
Maximum	14-12-2013
Days after maximum	472
Current mag V	9.8
Delta mag V	6.3

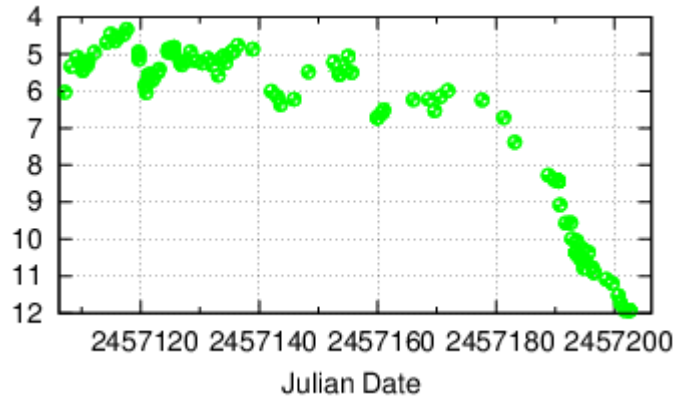


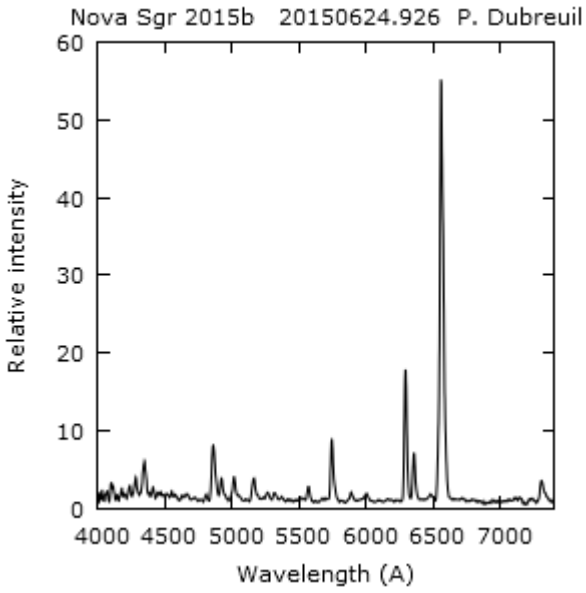
Status of current novae 2/2

NovaSgr 2015	
Maximum	15-02-2015
Days after maximum	44
Current mag V	10.9
Delta mag V	1.6

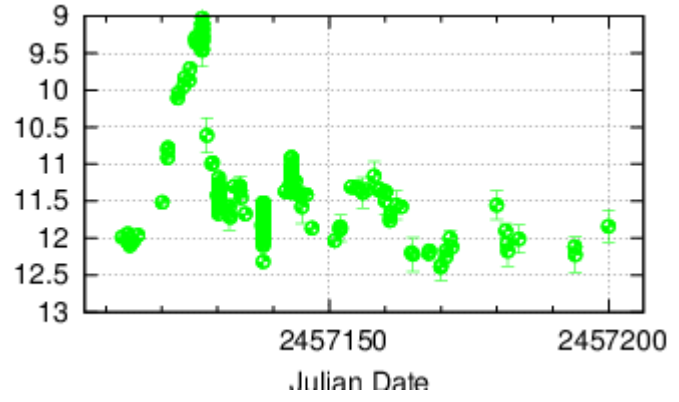


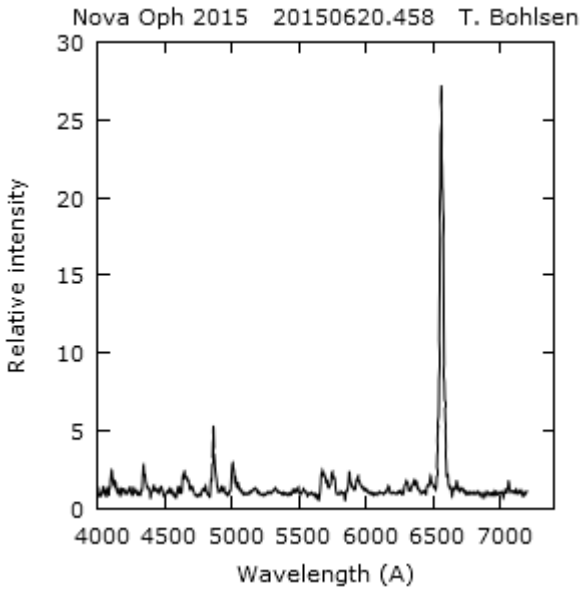
NovaSgr 2015 #2	
Maximum	21-03-2015
Days after maximum	10
Current mag V	5
Delta mag V	0.5





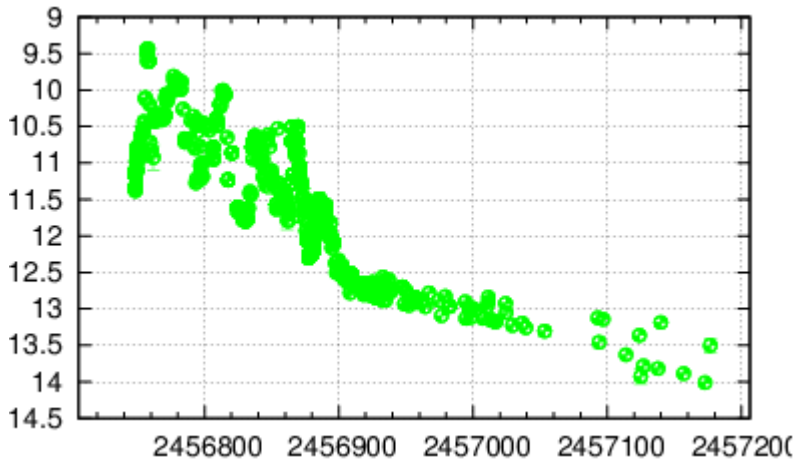
Nova Oph 2015	
Maximum	01-04-2015
Days after maximum	
Current mag V	
Delta mag V	





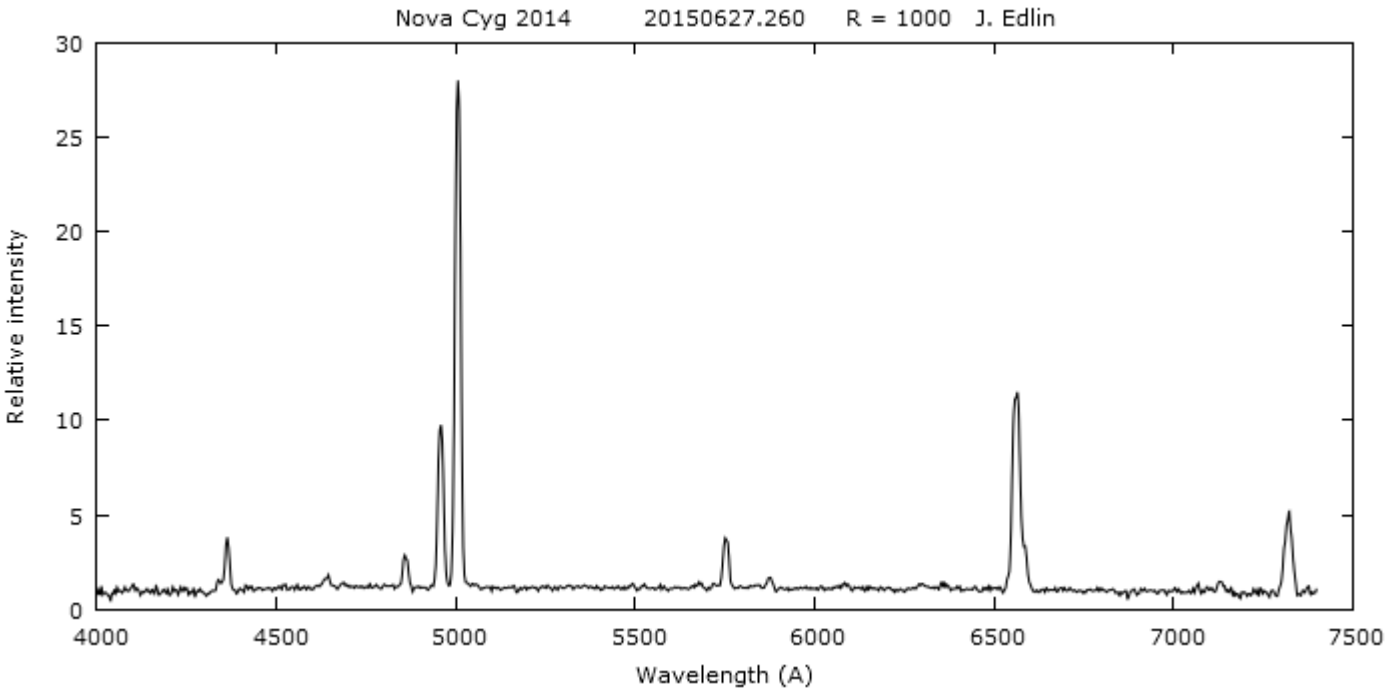
ARAS DATA BASE : http://www.astrosurf.com/aras/Aras_DataBase/Novae.htm

Luminosity
Mag V = 13.3 (30-06-2015)
Slow decline



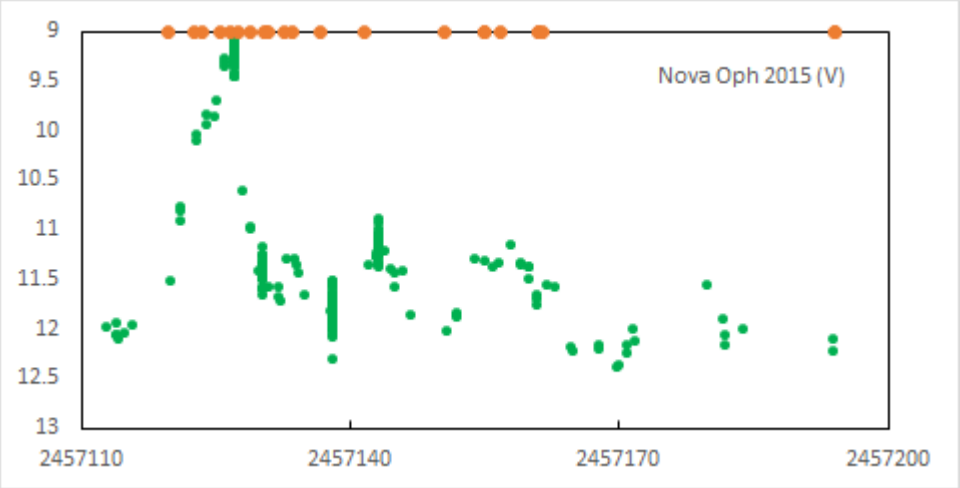
Spectroscopy
Nova Cyg in nebular phase

Jim Edlin obtained a spectrum late june with his 24" CDK and a LISA at R = 1000.
The FWHM of [OIII] lines is ~ 1050 km.s-1
Note the strong [OII] blend 7319, 7325
H alpha is deformed in its red edge by [NII] 6583



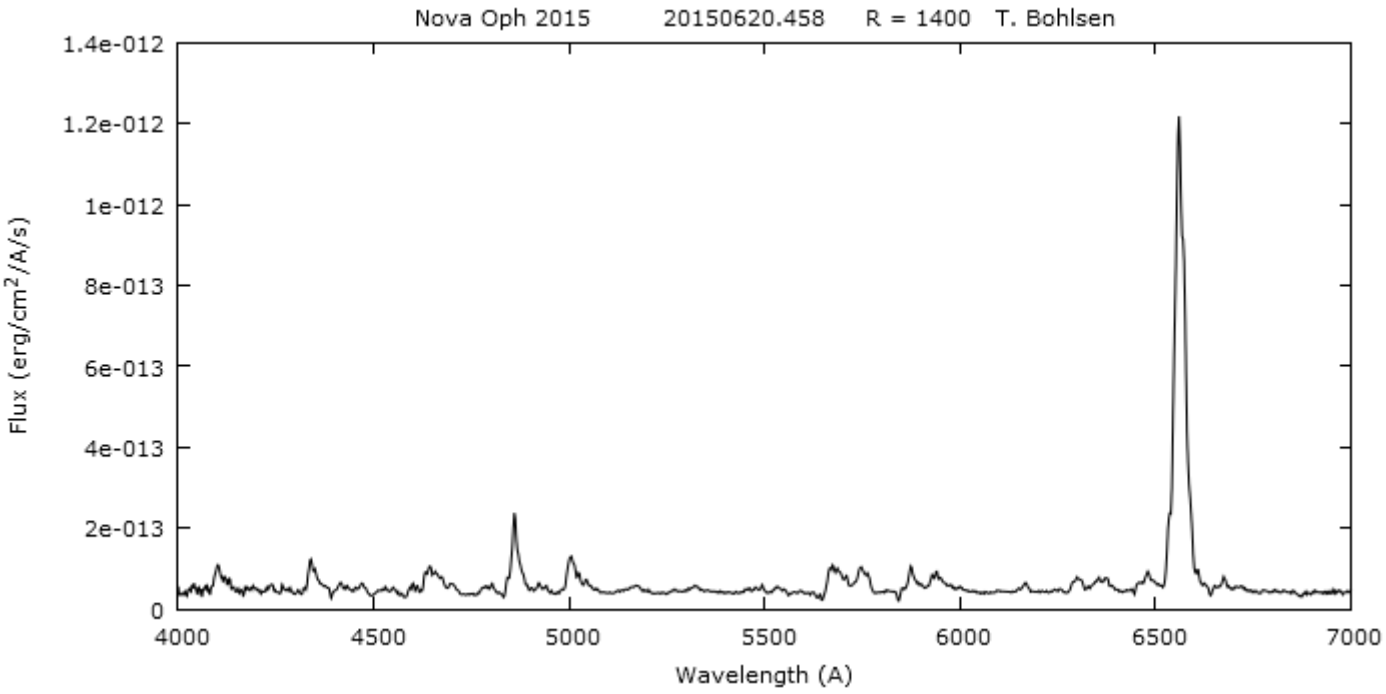
Nova Oph 2015 (PNV J17291350-1846120)

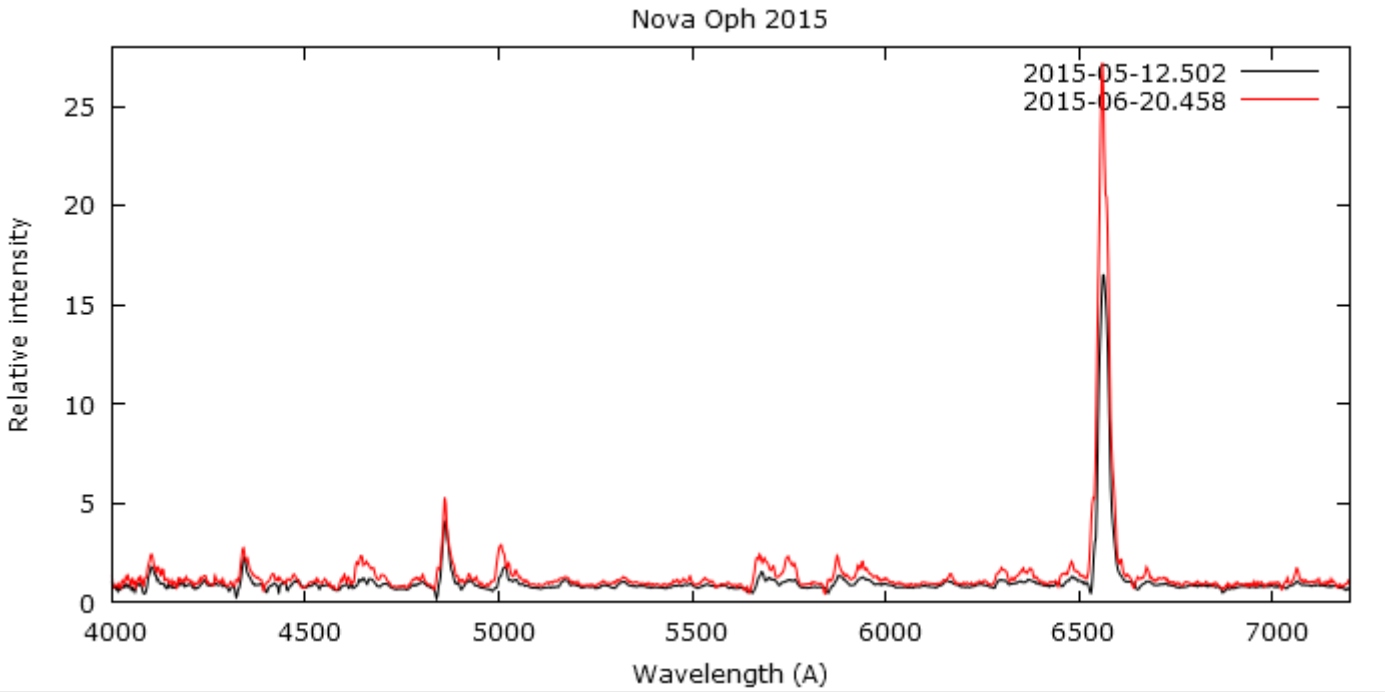
Coordinates (2000.0)	
R.A.	17 29 13.5
Dec.	- 18 46 12



The AAVSO light curve from 30th of march to 30th of june, 2015
Spectra of ARAS database : brown points

Last spectrum in ARAS data base obtained by Terry Bohlsen (R = 1400)
The nova enters nebular phase. See noticeably [OIII] increasing slowly

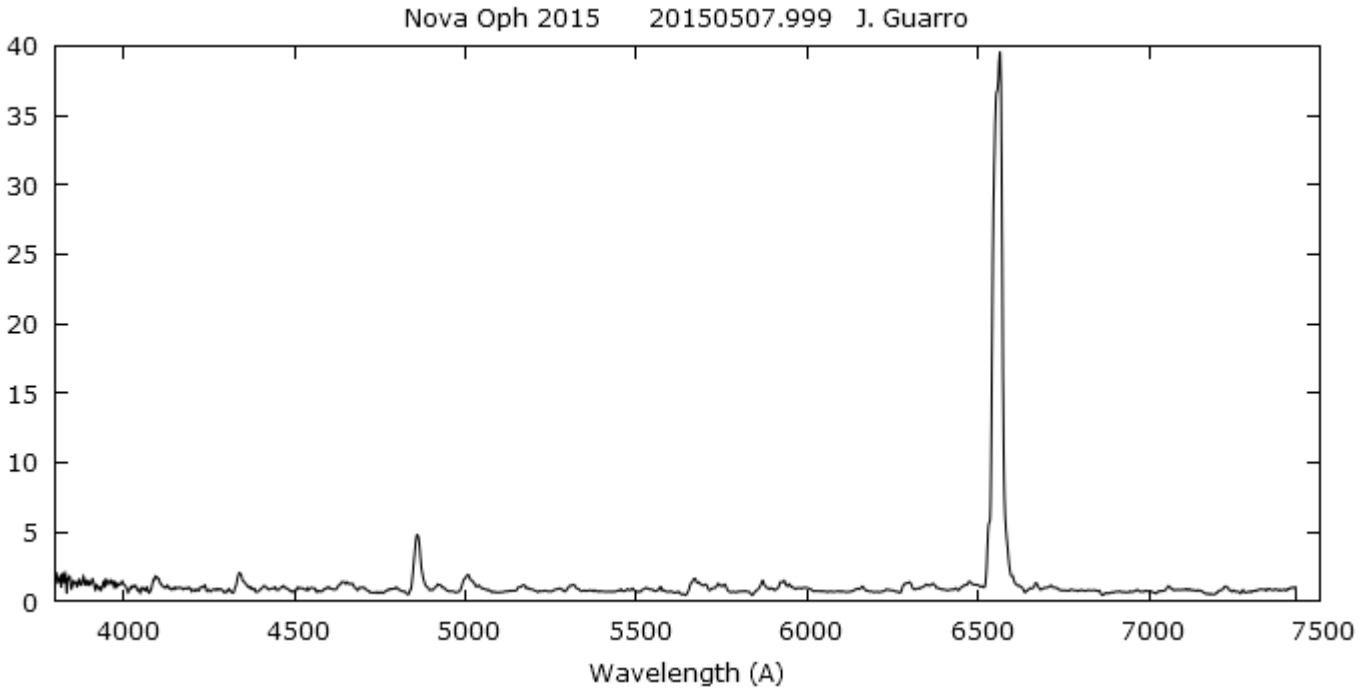


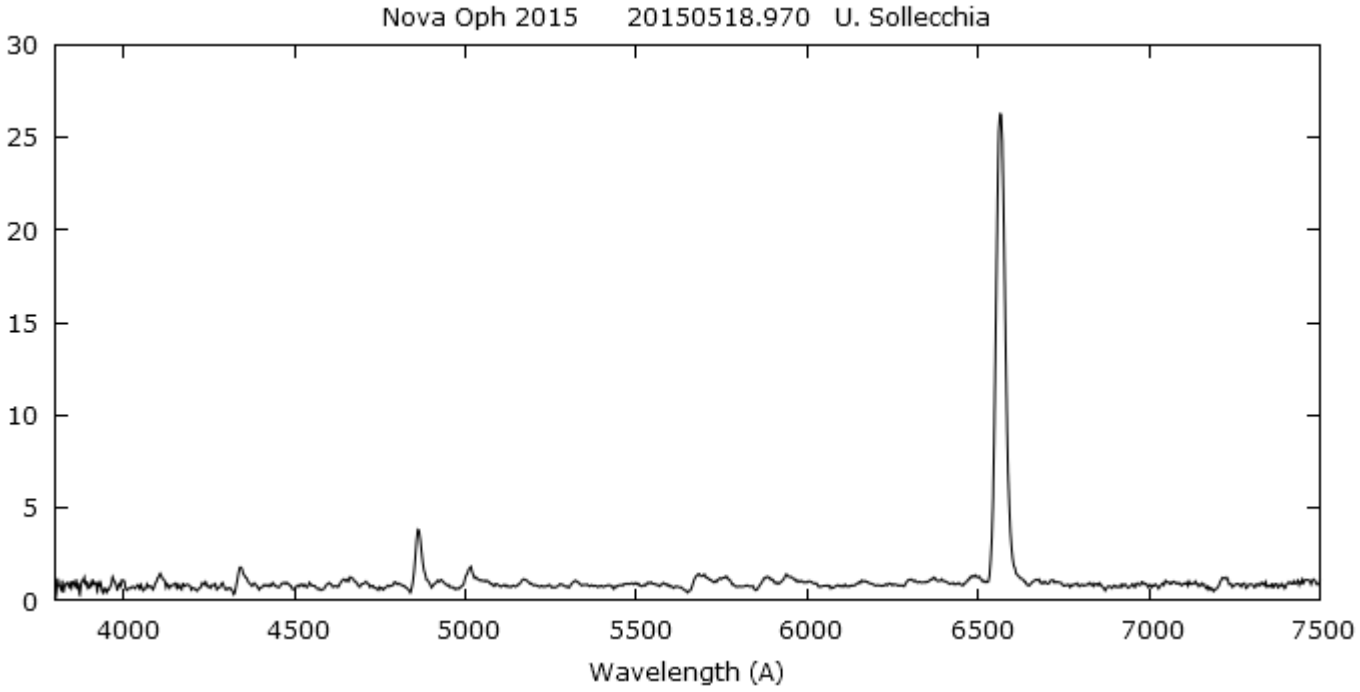


ARAS Data Base : 26 spectra : http://www.astrosurf.com/aras/Aras_DataBase/Novae/Nova-Oph-2015.htm

Nova Oph 2015 (PNV J17291350-1846120)

Coordinates (2000.0)	
R.A.	17 29 13.5
Dec.	- 18 46 12



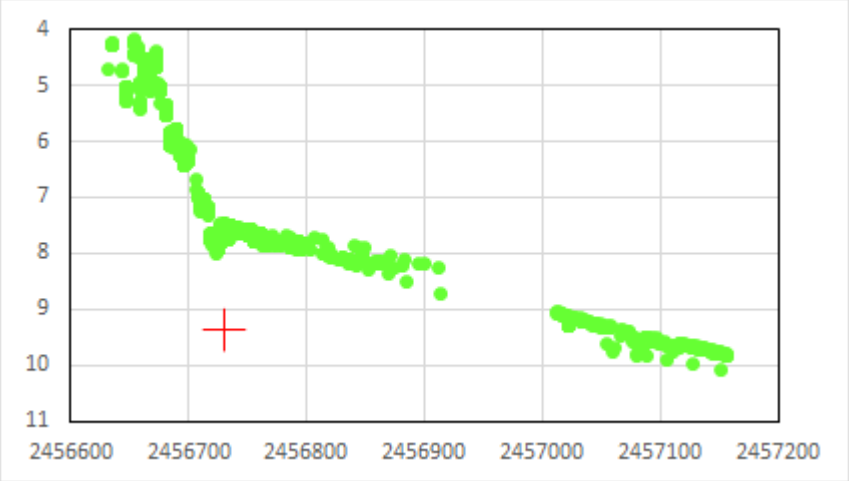


ARAS Data Base : 26 spectra : http://www.astrosurf.com/aras/Aras_DataBase/Novae/Nova-Oph-2015.htm

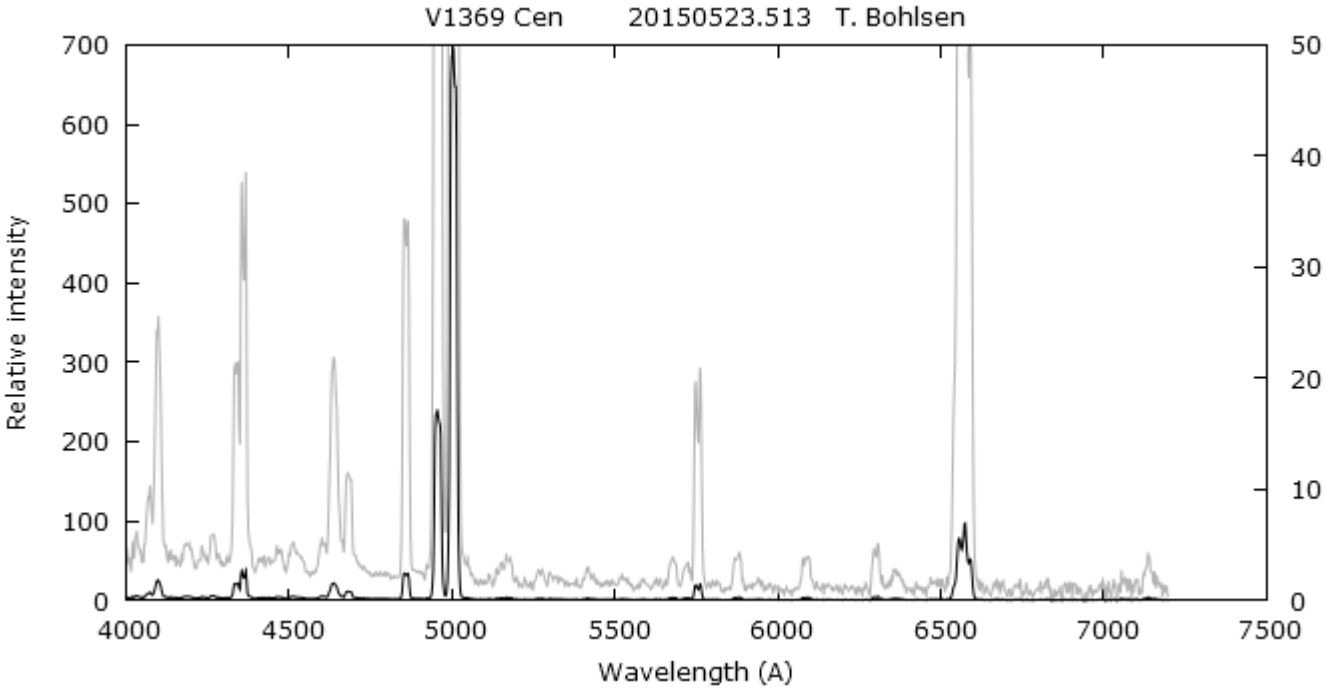
Nova Cen 2013 (PNV J17291350-1846120)

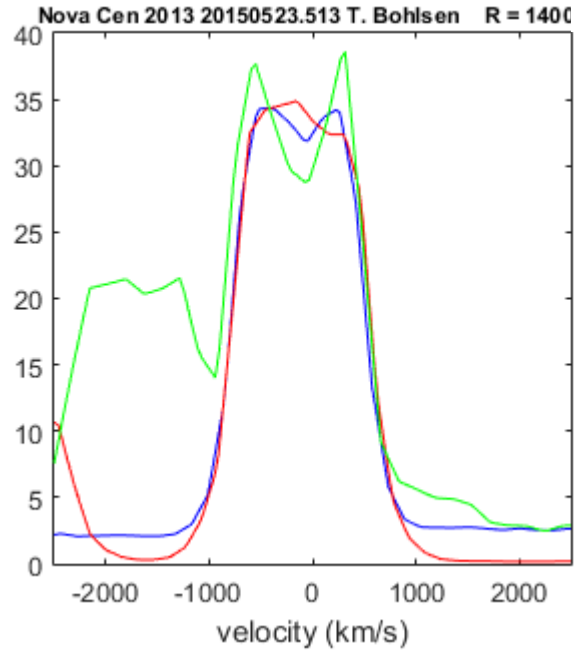
Coordinates (2000.0)	
R.A.	13 54 47.0
Dec.	-59 09 08.0

V1369 Cen evolves slowly in nebular phase
The profile of H alpha line is stongly deformed by [NII] 6548, 6583



AAVSO light curve since 2013, december





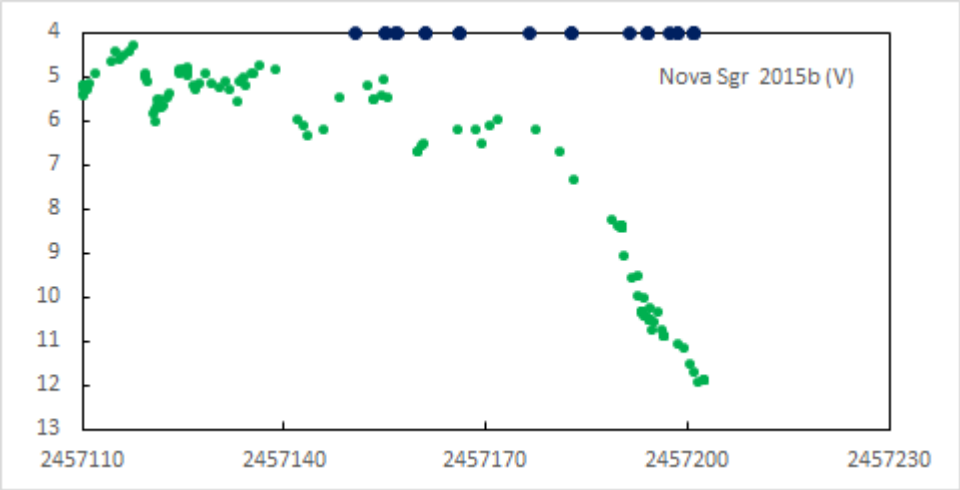
Comparison of
H beta
[OIII] 5007 (intensity x 1/20)
[OIII] 4363

Note the strong difference between [OIII] 5007 and 4363 (saddle shape)

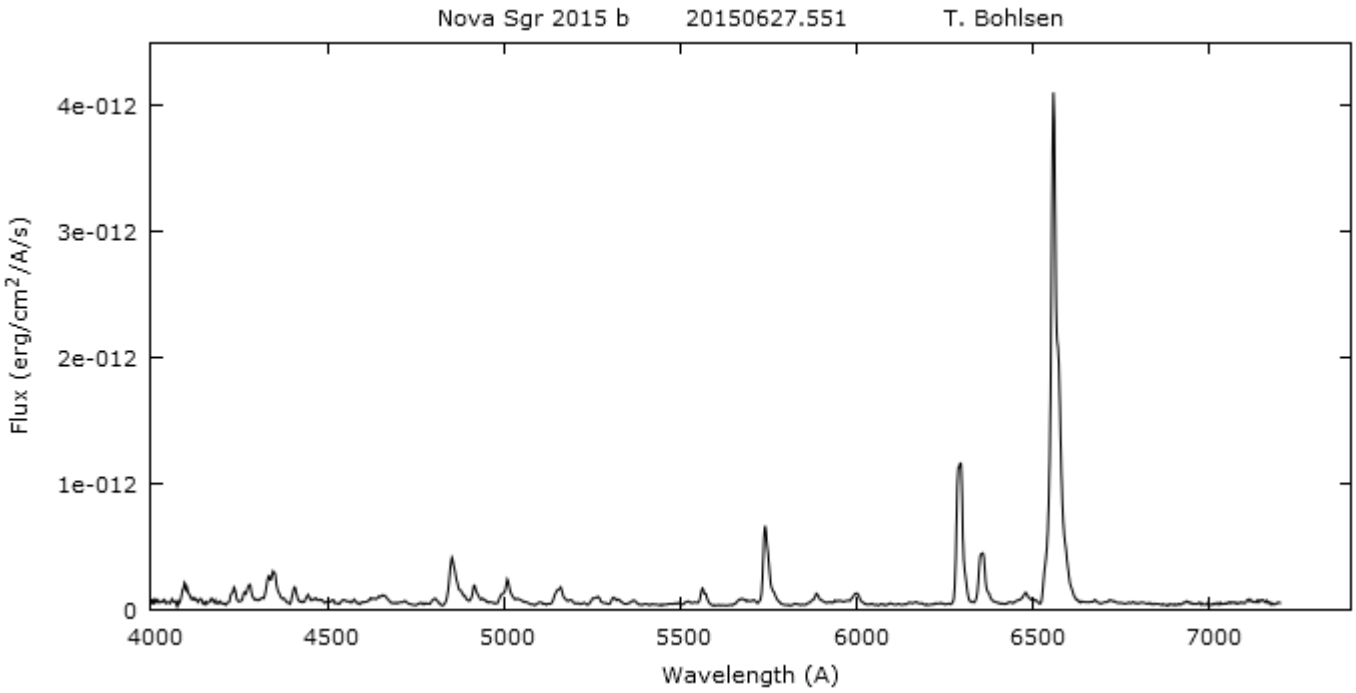
Nova Sgr 2015b

Coordinates (2000.0)	
R.A.	18 36 56.8
Dec.	-28 55 39.8

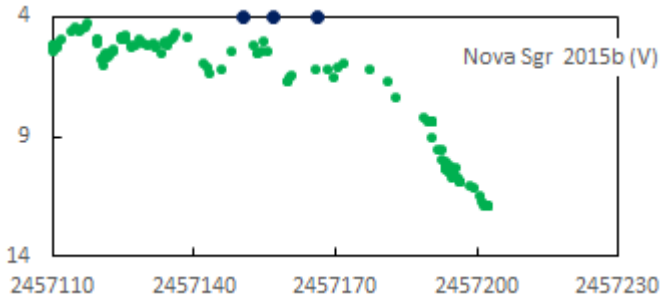
After two months of oscillation, the nova has undergone a formation of dust event (ATel 7299).
The luminosity declined of more than 5 magnitude in june.
Fe II remains strong during this transition phase.
The high luminosity of this nova allows ARAS observers to follow this nova during the dust event.
See Steve's notes page 43-45

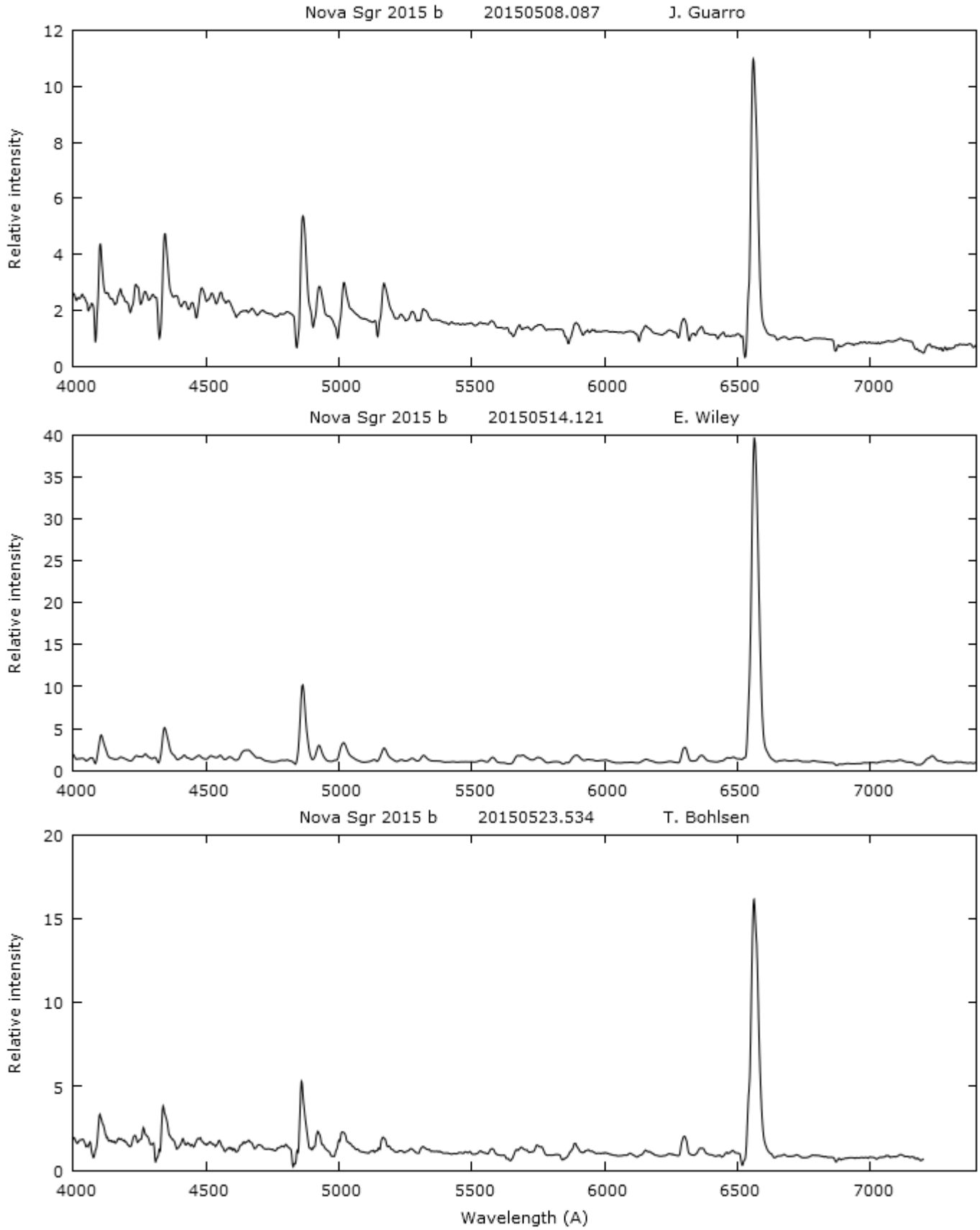


AAVSO light curve (V band)
ARAS Spectra : blue dots

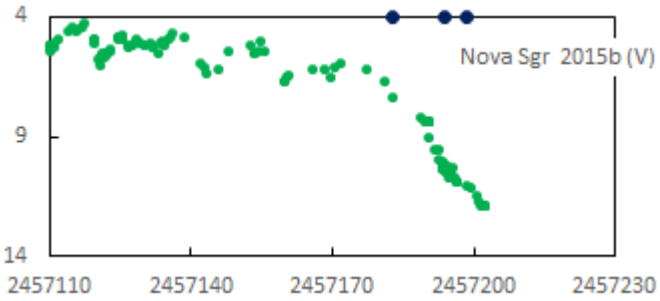


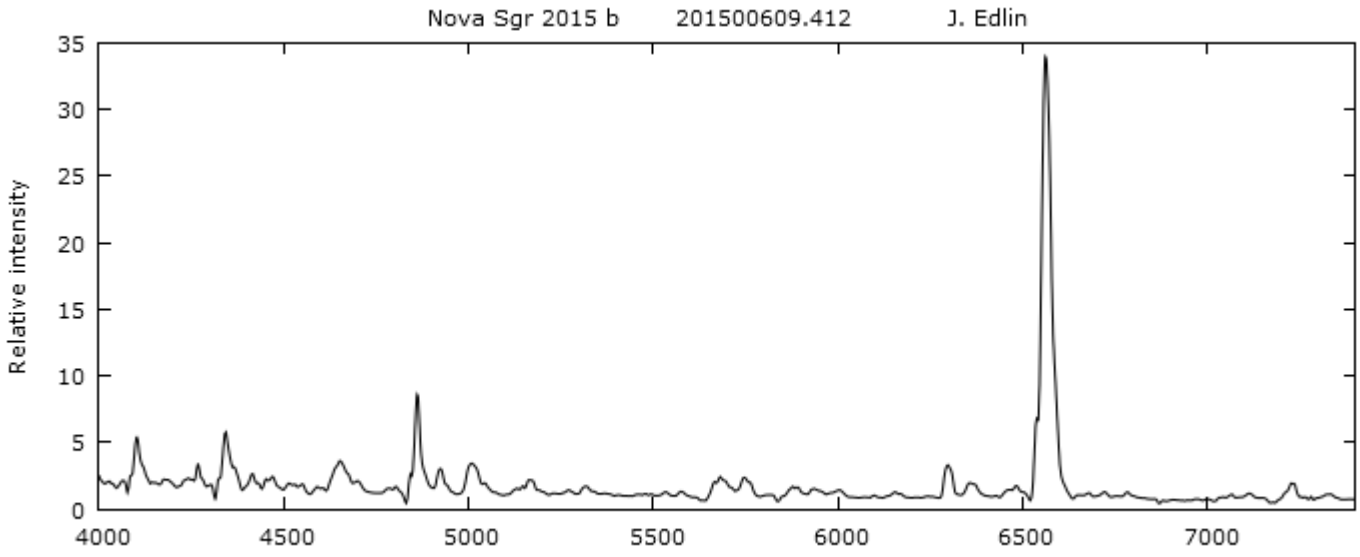
Nova Sgr 2015b Evolution in May and June, 2015 throw low resolution spectra

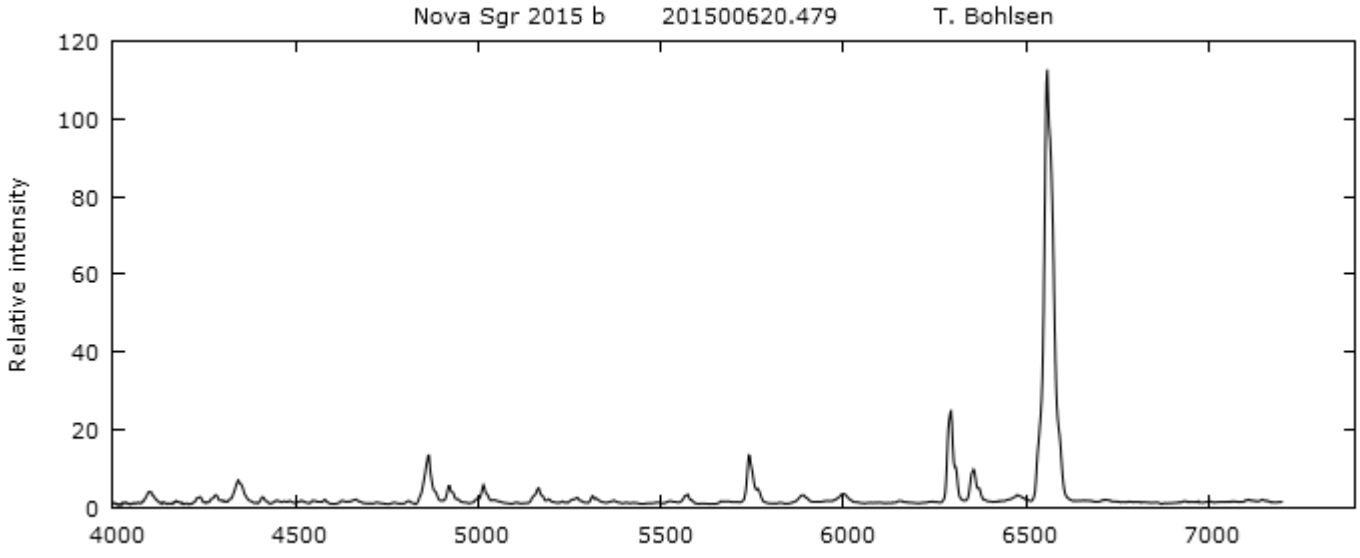


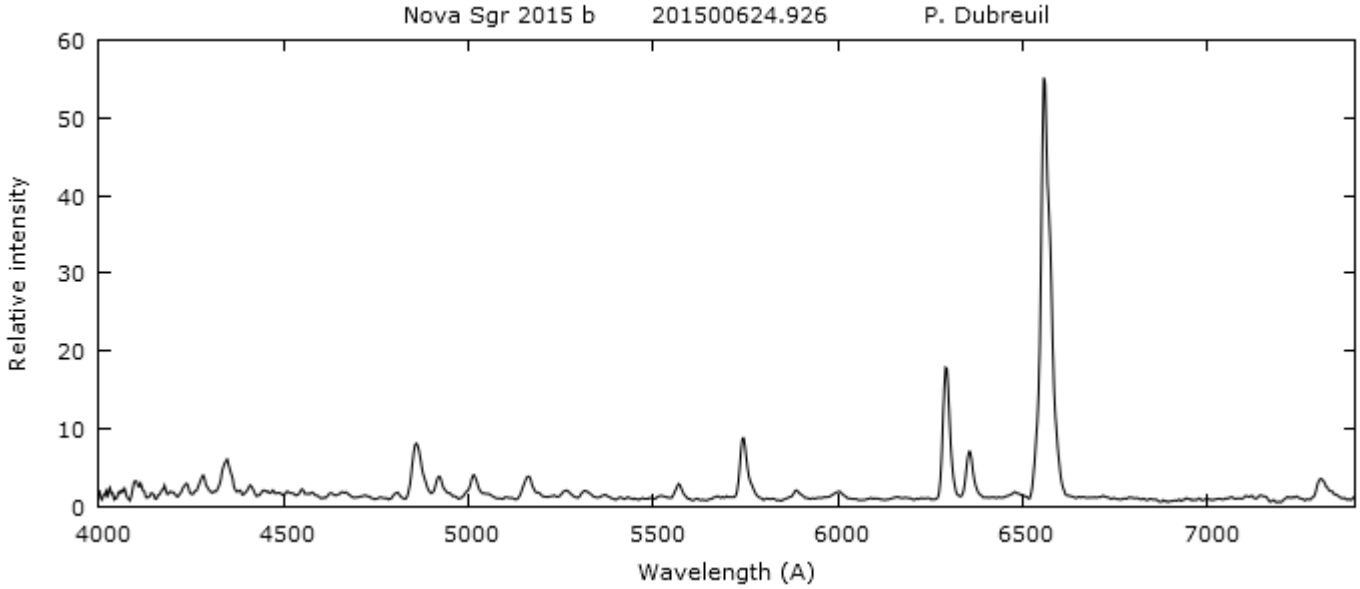


Nova Sgr 2015b Evolution in May and June, 2015 throw low resolution spectra

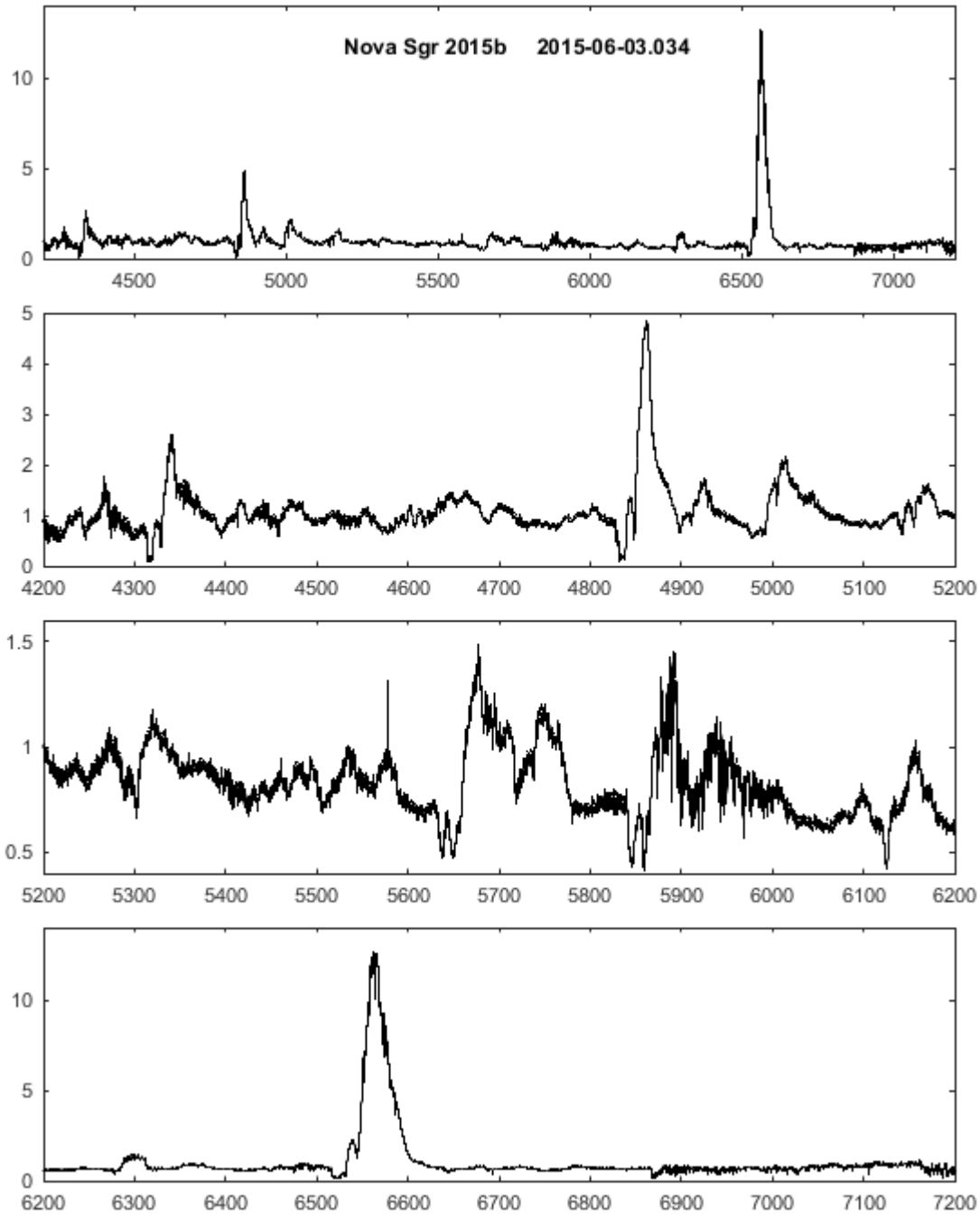


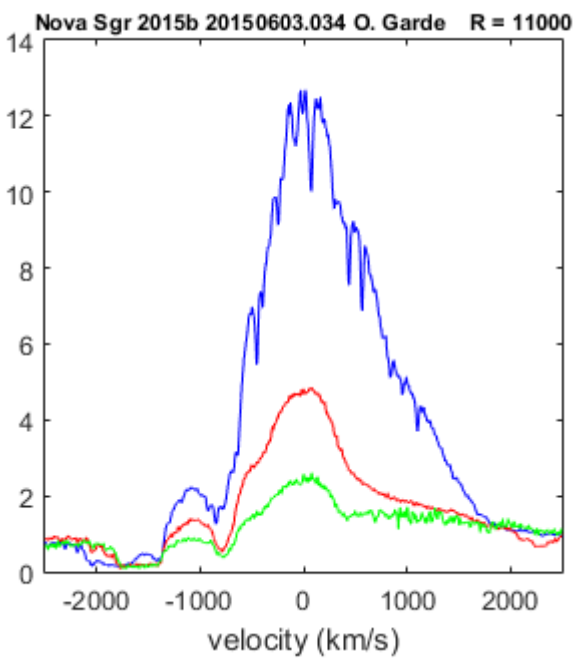


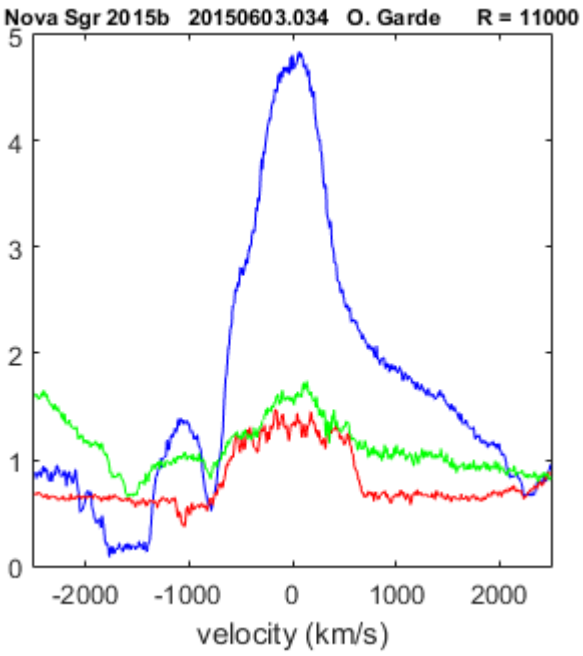




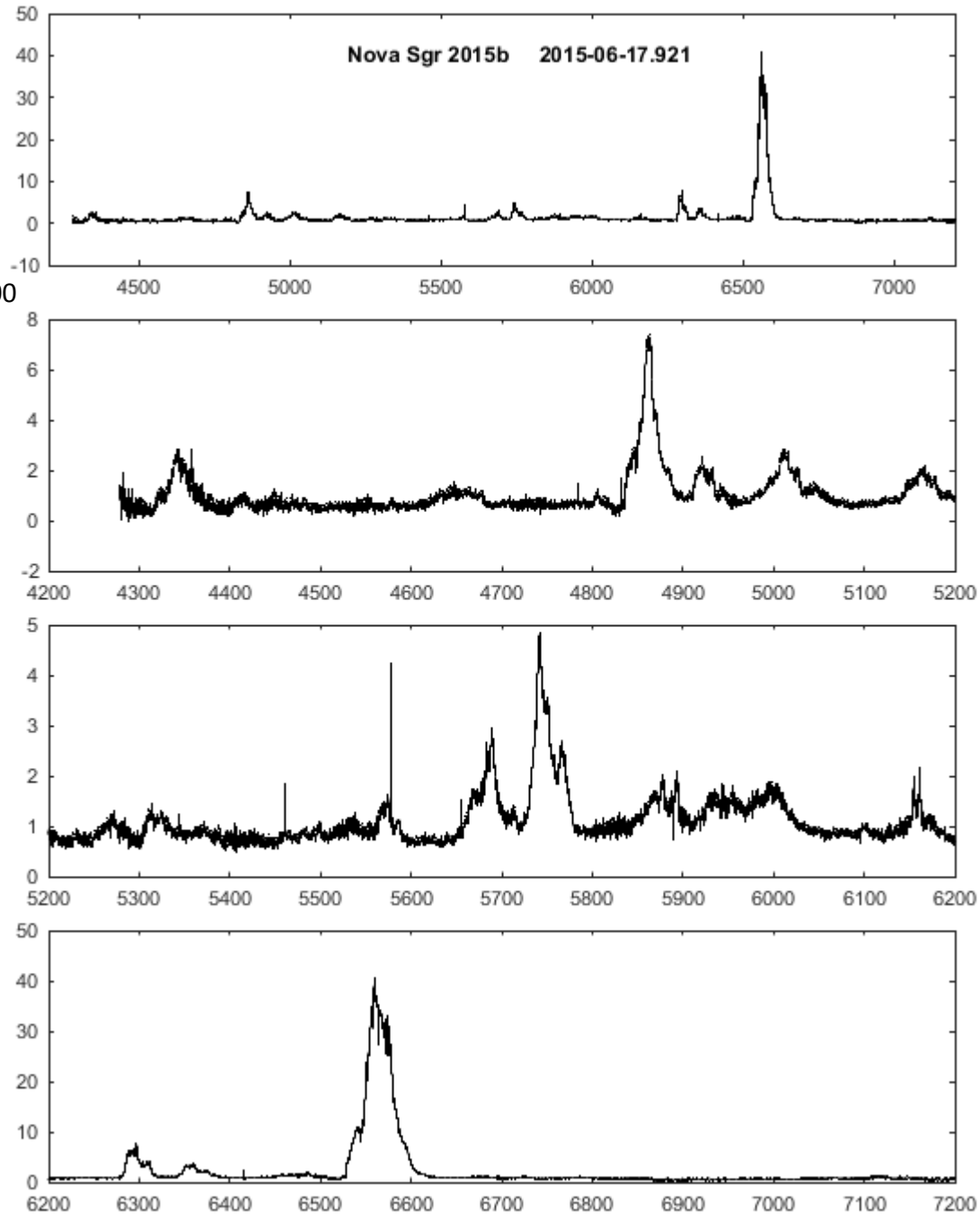
Eshel spectrum
by Olivier Garde,
just at the beginning

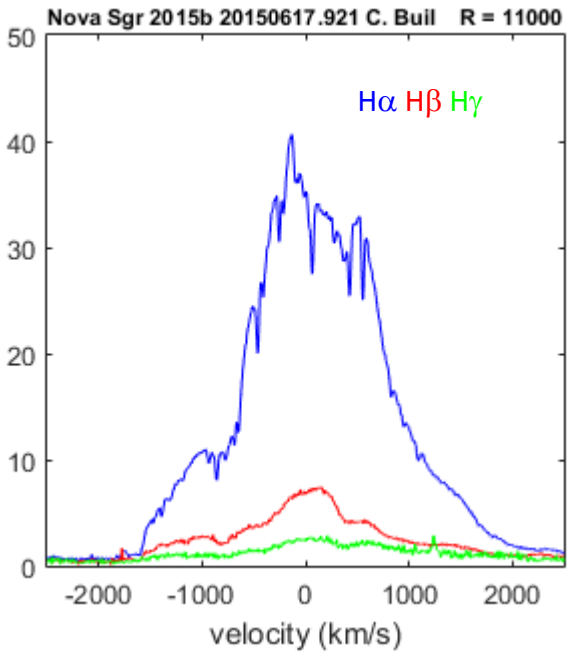


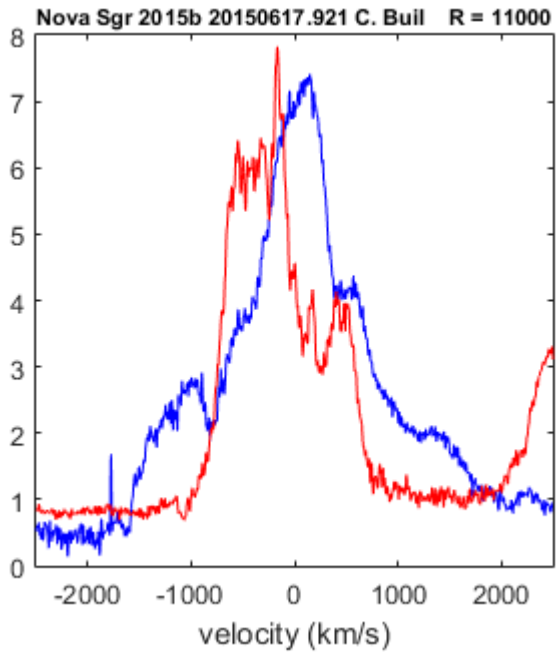


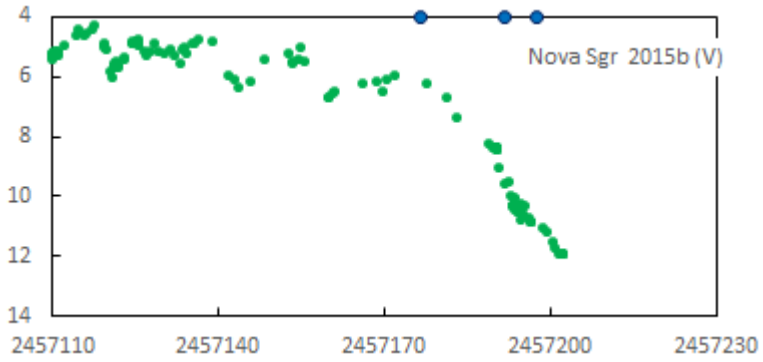


EShel spectrum at R = 11000
by C. Buil
During the dust formation
event





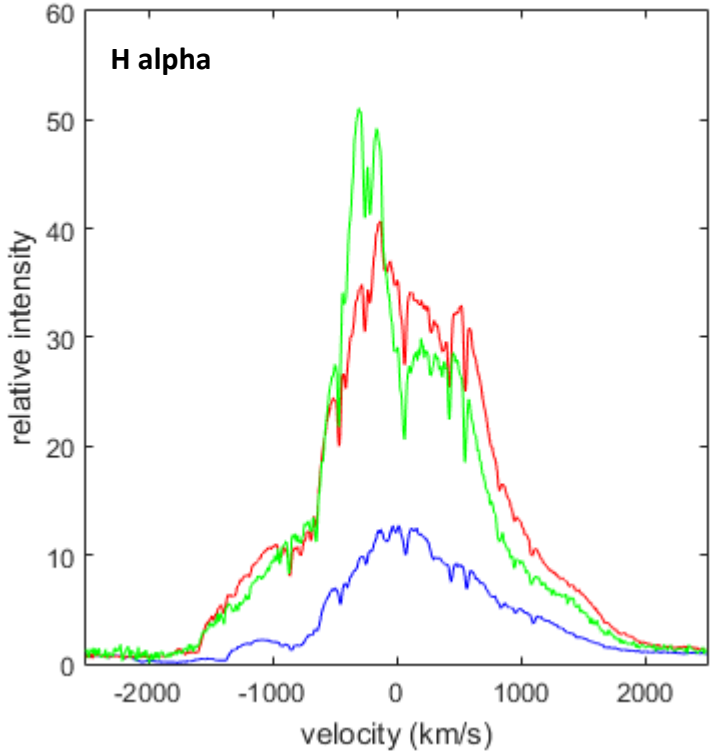


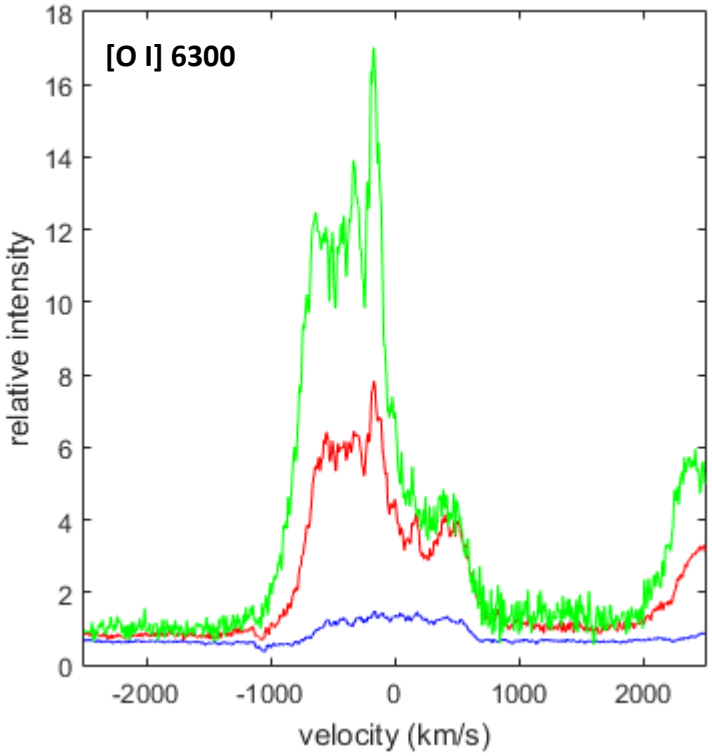


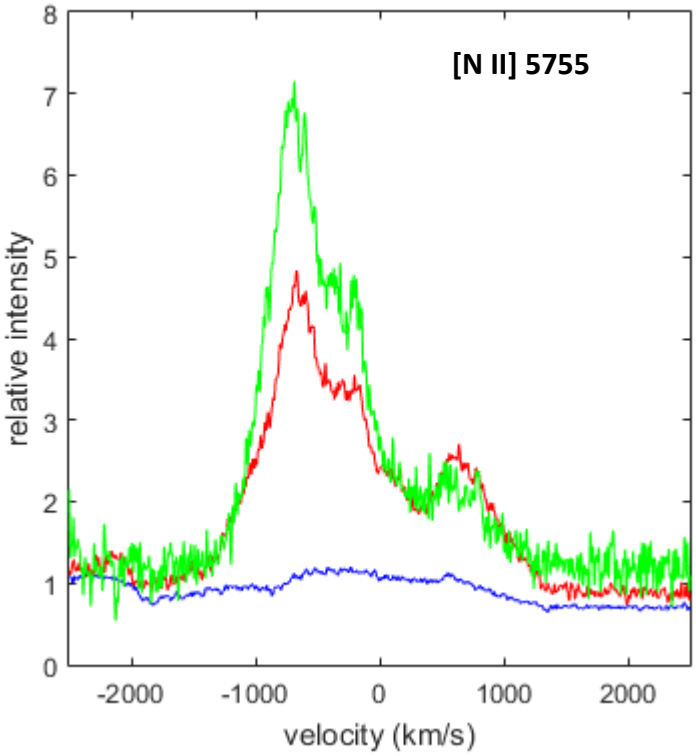
Evolution of Nova Sgr 2015 b

EShel spectra

Blue : O. Garde 2015-06-03
Red : C Buil 2015-06-17
Green : C Buil 2015-06-17







Selected list of bright symbiotics stars of interest

Target						Refrence Star					
#	Name	AD (2000)	DE (2000)	Mag V *	Interest	Name	AD (2000)	DE (2000)	Mag V	E(B-V)	Sp Type
1	AX Per	1 36 22.7	54 15 2.5	11.6	++	HD 6961	01 11 06.2	+ 55 08 59.6	4.33	0	A7V
2	UV Aur	5 21 48.8	32 30 43.1	10		HD 39357	05 53 19.6	+ 27 36 44.1	4.557		A0V
3	ZZ CMi	7 24 13.9	8 53 51.7	10.2		HD 61887	07 41 35.2	+ 03 37 29.2	5.955		A0V
4	BX Mon	7 25 24	-3 36 0	10.4	+	HD 55185	07 11 51.9	- 00 29 34.0	4.15		A2V
5	V694 Mon	7 25 51.2	-7 44 8	10.5	++	HD 55185	07 11 51.9	- 00 29 34.0	4.15		A2V
6	NQ Gem	7 31 54.5	24 30 12.5	8.2		HD 64145	07 53 29.8	+ 26 45 56.8	4.977		A3V
7	T CrB	15 59 30.1	25 55 12.6	10.4	++	HD 143894	16 02 17.7	+ 22 48 16.0	4.817	0	A3V
8	AG Dra	16 1 40.5	66 48 9.5	9.7	++	HD 145454	16 06 19.7	+ 67 48 36.5	5.439	0	A0Vn
9	RS Oph	17 50 13.2	-6 42 28.4	10.4	++	HD 164577	18 01 45.2	+ 01 18 18.3	4.439	0	A2Vn
10	YY Her	18 14 34.3	20 59 20	12.9	++	HD 166014	18 07 32.6	+ 28 45 45.0	3.837	0.02	B9.5V
11	V443 Her	18 22 8.4	23 27 20	11.3	++	HD 171623	18 35 12.6	+ 18 12 12.3	5.79	0	A0Vn
12	BF Cyg	19 23 53.4	29 40 25.1	10.8	++	HD 180317	19 15 17.4	+ 21 13 55.6	5.654	0	A4V
13	CH Cyg	19 24 33	50 14 29.1	7	+	HD 184006	19 29 42.4	+ 51 43 47.2	3.769	0	A5V
14	CI Cyg	19 50 11.8	35 41 3.2	10.5	++	HD 187235	19 47 27.8	+ 38 24 27.4	5.826	0.02	B8Vn
15	StHA 190	21 41 44.8	2 43 54.4	10.3	+	HD 207203	21 47 14.0	+ 02 41 10.0	5.631	0	A1V
16	AG Peg	21 51 1.9	12 37 29.4	8.6	++	HD 208565	21 56 56.4	+ 12 04 35.4	5.544	0	A2Vnn
18	Z And	23 33 39.5	48 49 5.4	9.65	++	HD 222439	23 40 24.5	+ 44 20 02.2	4.137	0	A0V
19	R Aqr	23 43 49.4	-15 17 4.2	9.9	++	HD 222847	23 44 12.1	- 18 16 37.0	5.235	0	B9V

Mag V * : 01-04-2014

Observing

CH Cygni campaign
Especially high resolution H alpha
CH Cygni remains at a high level of activity.

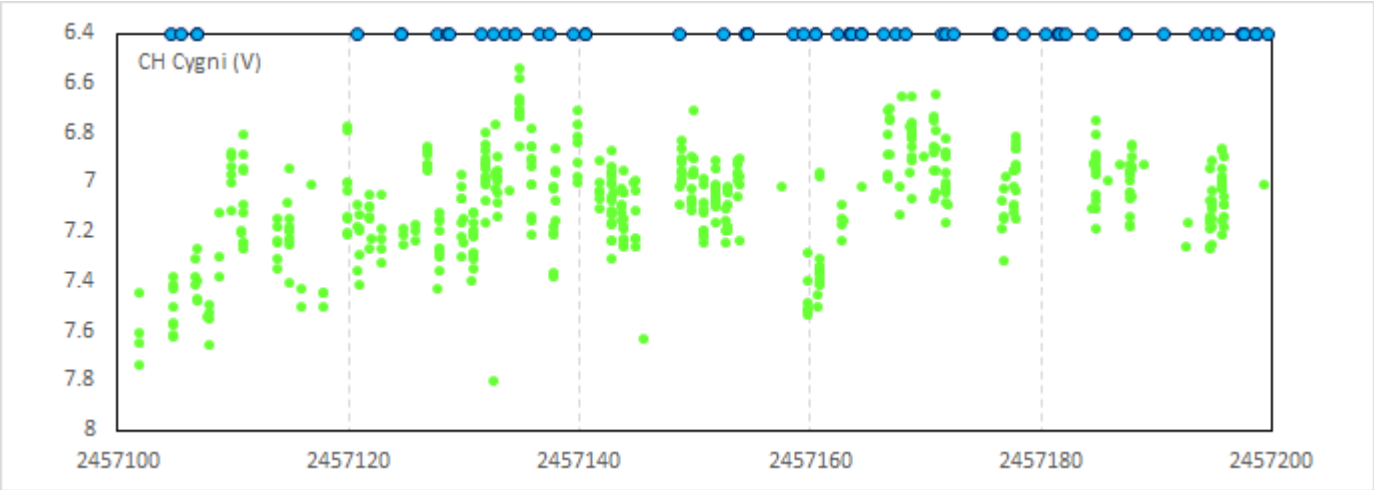
BF Cygni

AG Dra : short flare detected in June

AG Peg : historical outburst

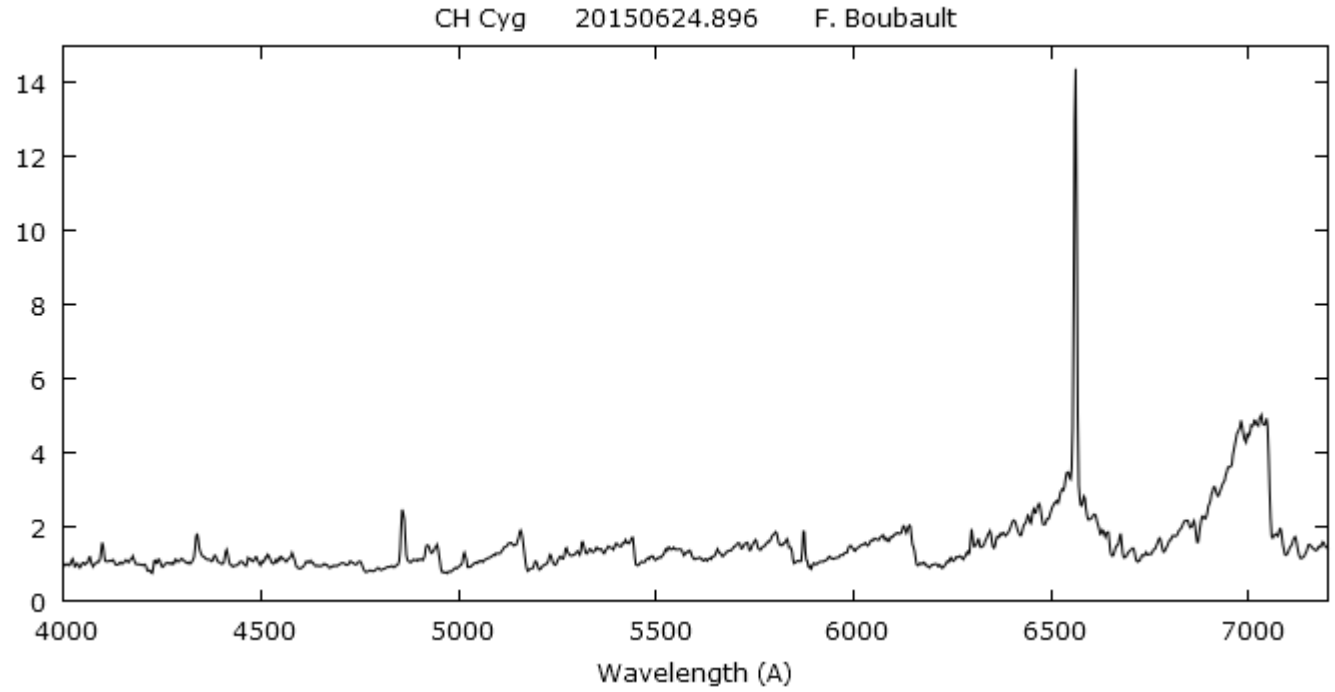
CH Cygni campaign

Coordinates (2000.0)	
R.A.	19 24 33.0
Dec.	+50 14 29.1



AAVSO V band light curve from march to june, 2015
CH Cyg remains in high state with a flickering of about 0.3-0.4 mag - In June, appears a slowly decreasing trend
ARAS observations : blue dots

CH Cygni ARAS campaign : see page 22 and previous issues



ARAS DATA BASE | http://www.astrosurf.com/aras/Aras_DataBase/Symbiotics/CHCyg.htm

CH Cygni campaign

Log of observations in may -june 2015

75 observations of this star during this period comprising 18 time series (H alpha, H beta, Echelle)

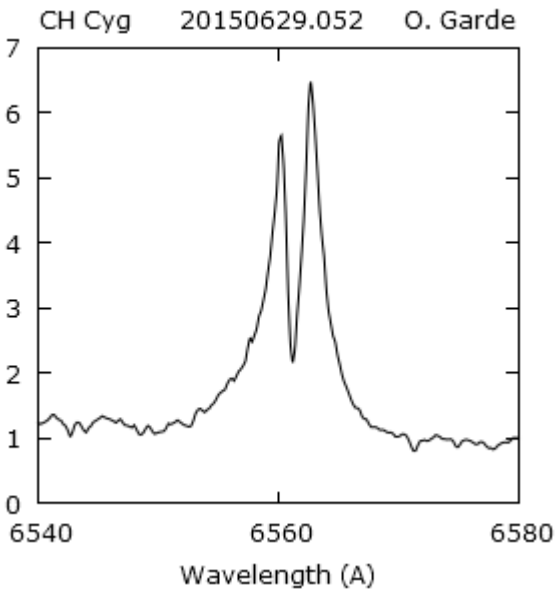
Column 1 = date
Column 2 = time
Column 3 = Julian date
Column 4 = observer
Column 5 = set up
Column 6 = resolution

[Aras web page]

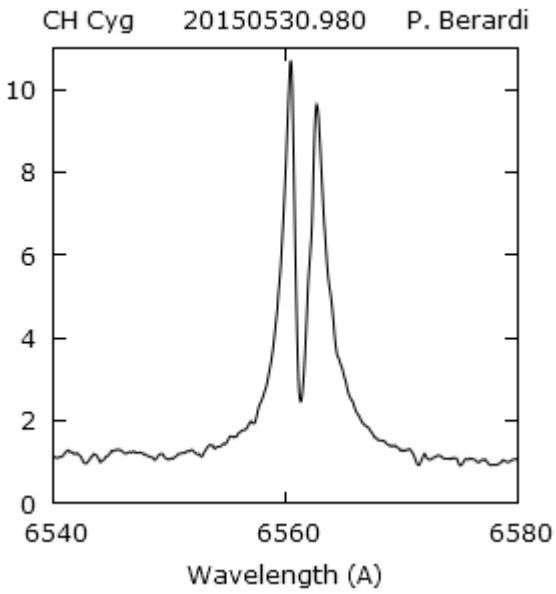
06/05/2015	02:13:45	2457148.613	FTeyssier	SC14+eshel+460EX	11000
10/05/2015	01:03:24	2457152.557	FTeyssier	SC14+eshel+460EX	11000
11/05/2015	23:10:26	2457154.473	psomogyi	25cmLH24K23u414exm	15090
12/05/2015	02:25:20	2457154.611	J.Guarro	NOU16ATIK314L+	6635
12/05/2015	02:30:29	2457154.606	psomogyi	25cmLH24K23u414exm	13813
12/05/2015	03:20:35	2457154.644	J.Guarro	16REMOTATIK460EX	992
16/05/2015	02:41:33	2457158.615	J.Guarro	16REMOTATIK460EX	965
16/05/2015	22:40:17	2457159.456	FTeyssier	SC14+eshel+460EX	11000
17/05/2015	22:08:33	2457160.433	psomogyi	25cmLH24K23u414exm	9475
17/05/2015	23:04:13	2457160.472	psomogyi	25cmLH24K23u414exm	18650
19/05/2015	18:23:43	2457162.287	DongLi	C11LHIRES3-2400_2x	14268
20/05/2015	23:28:52	2457163.49	D.Boyd	C11+LISA+SXVR-H694	826
20/05/2015	23:35:33	2457163.488	fteyssier	SC14+eshel+460EX	11000
20/05/2015	23:48:43	2457163.501	fteyssier	SC14+eshel+460EX	11000
21/05/2015	20:57:31	2457164.377	fboubault	C8_LISA_ATIK314L+	1000
21/05/2015	23:17:58	2457164.485	D.Boyd	C11+LISA+SXVR-H694	846
23/05/2015	19:05:42	2457166.317	DongLi	C11LHIRES3-2400_2x	14344
24/05/2015	20:58:22	2457167.391	psomogyi	25cmLH24K23u414exm	15965
25/05/2015	16:47:26	2457168.221	DongLi	C11LHIRES3-2400_2x	14784
28/05/2015	20:55:53	2457171.378	fboubault	C8_LISA_ATIK314L+	1000
29/05/2015	05:15:47	2457171.725	tlester	31cmDK+23um1800lpm+	9101
29/05/2015	22:08:28	2457172.424	psomogyi	25cmLH24K23u414exm	15618
29/05/2015	22:36:15	2457172.445	PaoloBerardi	LHIRES3C9SXVR-H69	16115
30/05/2015	22:48:37	2457173.454	PaoloBerardi	LHIRES3C9SXVR-H69	15263
02/06/2015	17:23:00	2457176.246	DongLi	C11LHIRES3-2400_2x	14450
02/06/2015	21:07:36	2457176.405	OlivierGarde	RC400Astrosib-Eshe	11000
02/06/2015	21:35:41	2457176.421	J.Guarro	NOU16ATIK314L+	6496
02/06/2015	22:17:59	2457176.454	OlivierGarde	RC400Astrosib-Eshe	11000
02/06/2015	23:28:22	2457176.503	OlivierGarde	RC400Astrosib-Eshe	11000
04/06/2015	22:03:46	2457178.44	OlivierGarde	RC400Astrosib-Eshe	11000
04/06/2015	22:08:00	2457178.436	cbuil	T200VHIRES_MOATIK	50000
05/06/2015	23:18:00	2457179.496	cbuil	T200VHIRES_MOATIK	50000
06/06/2015	23:32:01	2457180.481	psomogyi	25cmLH24K35u414exm	10915
07/06/2015	21:17:43	2457181.393	fboubault	C8_LISA_ATIK314L+	1000
07/06/2015	22:59:31	2457181.464	JacquesMontier	MEADE355mm+Alpy600+	647
08/06/2015	00:41:45	2457181.545	JacquesMontier	MEADE355mm+Lhires	14000
08/06/2015	16:57:03	2457182.21	DongLi	C11LHIRES3-2400_2x	14642
10/06/2015	22:09:34	2457184.43	D.Boyd	C11+LISA+SXVR-H694	797
11/06/2015	21:53:04	2457185.413	PaoloBerardi	LHIRES31200C9SXV	5746
12/06/2015	16:07:00	2457186.193	DongLi	C11LHIRES3-2400_2x	14697
13/06/2015	21:11:06	2457187.384	psomogyi	25cmLH24K35u414exm	11658
13/06/2015	21:40:42	2457187.409	psomogyi	25cmLH24K35u414exm	7626
15/06/2015	20:46:39	2457189.367	PaoloBerardi	LHIRES31200C9SXV	4337
17/06/2015	01:39:21	2457190.574	JacquesMontier	MEADE355mm+Alpy600+	648
17/06/2015	02:10:13	2457190.598	tlester	31cmDK+23um1800lpm+	9200
18/06/2015	20:31:36	2457192.356	PaoloBerardi	LHIRES31200C9SXV	4130
19/06/2015	16:54:00	2457193.226	DongLi	C11LHIRES3-2400_2x	18956
19/06/2015	22:25:55	2457193.452	J.Guarro	NOU16ATIK314L+	6299
20/06/2015	22:33:44	2457194.461	OlivierGarde	RC400Astrosib-Eshe	11000
20/06/2015	22:50:13	2457194.466	J.Guarro	NOU16ATIK314L+	6408
21/06/2015	20:46:03	2457195.369	psomogyi	25cmLH24K35u414exm	19614
23/06/2015	21:38:06	2457197.431	OlivierGarde	RC400Astrosib-Eshe	11000
23/06/2015	22:07:00	2457197.431	cbuil	t200eShelAtik460E	11000
23/06/2015	23:15:28	2457197.491	OlivierGarde	RC400Astrosib-Eshe	11000
24/06/2015	00:19:34	2457197.535	OlivierGarde	RC400Astrosib-Eshe	11000
24/06/2015	01:20:36	2457197.577	OlivierGarde	RC400Astrosib-Eshe	11000
24/06/2015	02:21:40	2457197.613	OlivierGarde	RC400Astrosib-Eshe	11000
24/06/2015	22:03:00	2457198.441	Fosanelli	C11LHIRES3_2400AT	10886
25/06/2015	00:06:29	2457198.527	OlivierGarde	RC400Astrosib-Eshe	11000
25/06/2015	01:10:36	2457198.572	OlivierGarde	RC400Astrosib-Eshe	11000
25/06/2015	02:17:45	2457198.618	OlivierGarde	RC400Astrosib-Eshe	11000
26/06/2015	01:13:26	2457199.568	JacquesMontier	MEADE355mm+Lhires	12000
26/06/2015	20:07:37	2457200.34	PaoloBerardi	LHIRES31200C9SXV	4316
26/06/2015	20:56:49	2457200.375	psomogyi	25cmLH24K15u414exm	20104
27/06/2015	21:52:00	2457201.414	fboubault	C8_LISA_ATIK314L+	1000
27/06/2015	22:23:31	2457201.455	JacquesMontier	MEADE355mm+Lhires	12507
28/06/2015	20:50:00	2457202.371	psomogyi	25cmLH24K15u414exm	25469
28/06/2015	21:52:00	2457202.413	fboubault	C8_LISA_ATIK314L+	1000
29/06/2015	00:10:00	2457202.53	OlivierGarde	RC400Astrosib-Eshe	11000
29/06/2015	00:10:00	2457202.53	OlivierGarde	RC400Astrosib-Eshe	11000
29/06/2015	01:14:00	2457202.574	OlivierGarde	RC400Astrosib-Eshe	11000
29/06/2015	02:18:00	2457202.619	OlivierGarde	RC400Astrosib-Eshe	11000
29/06/2015	22:14:00	2457203.453	JacquesMontier	MEADE355mm+Lhires	13329
30/06/2015	21:14:00	2457204.405	Fosanelli	C11LHIRES3_2400AT	10175
30/06/2015	21:32:00	2457204.402	fboubault	C8_LISA_ATIK314L+	1000

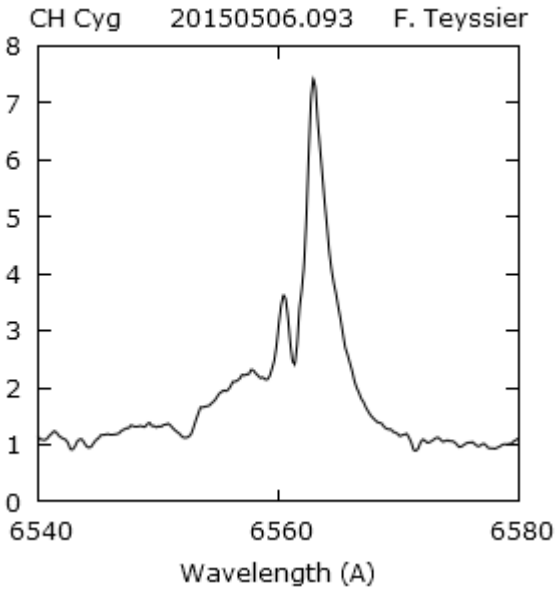
Various profiles of H alpha line
R = 11000 to 15000

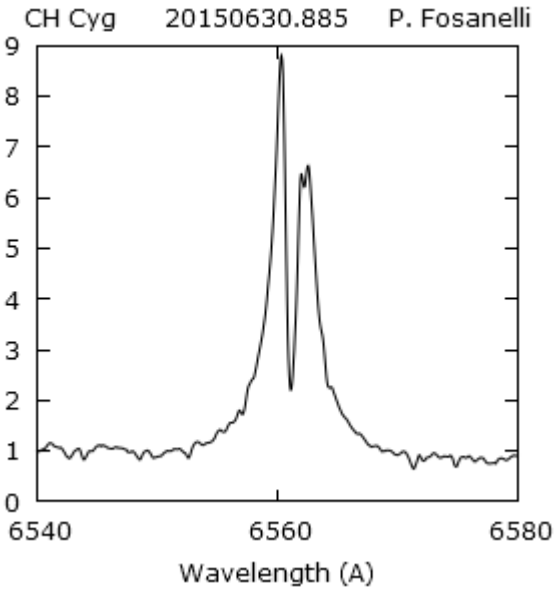
V < R

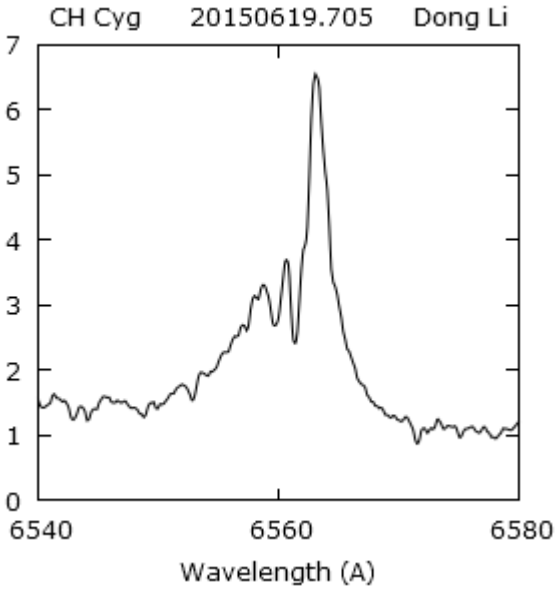


V > R

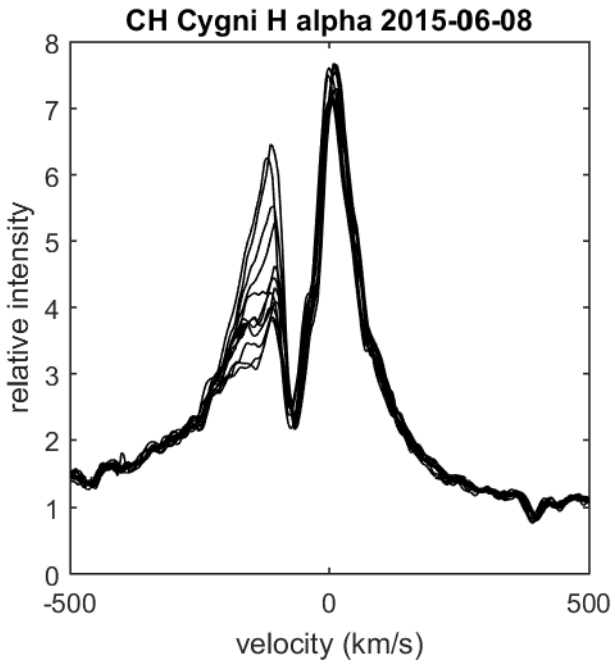


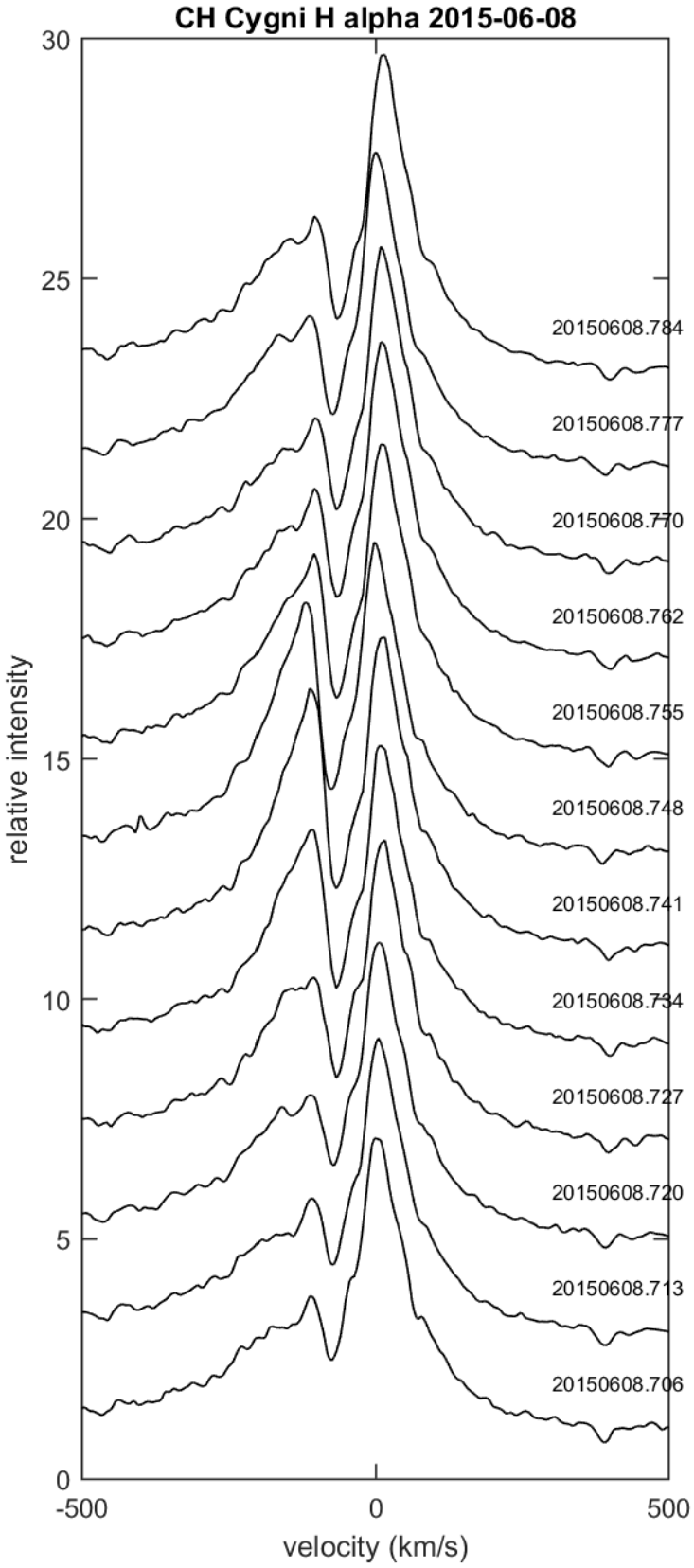






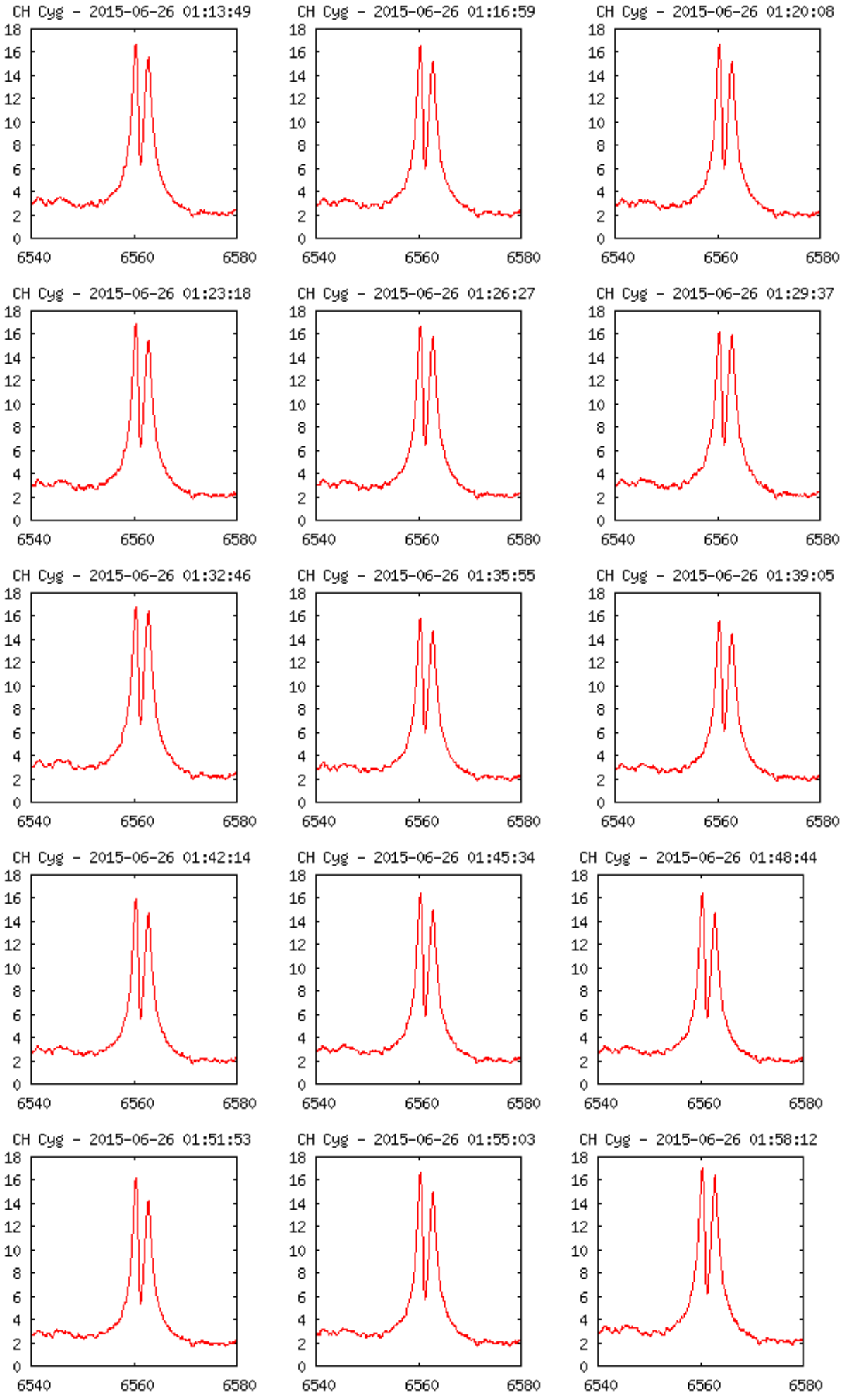
An example of time series
Dong Li Lhires III 2400 l/mm
R = 15000
10 mns between each spectrum
Total duration = 1 hour

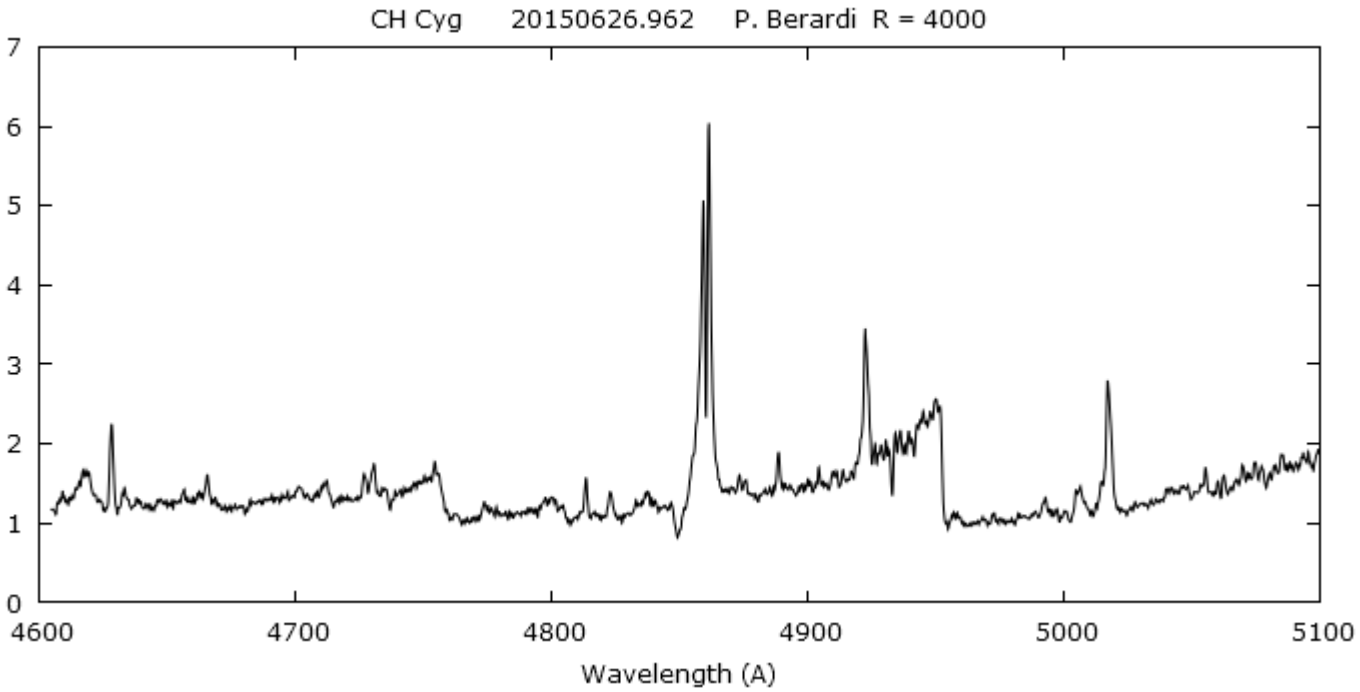




CH Cygni campaign

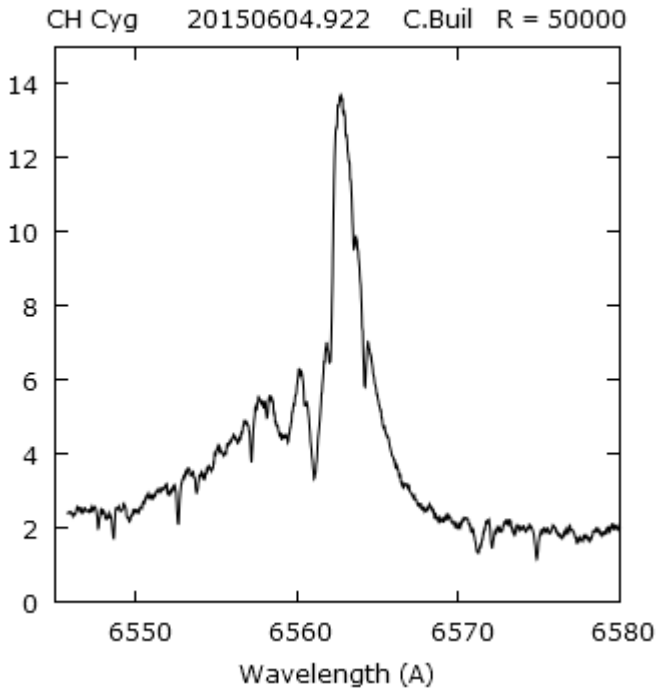
A run
with no significative change ; just little change of V/R ratio
Jacques Montier
Lhires III 2400 l/mm
R = 15000
180 s between each spectrum
Total duration = 45 mns

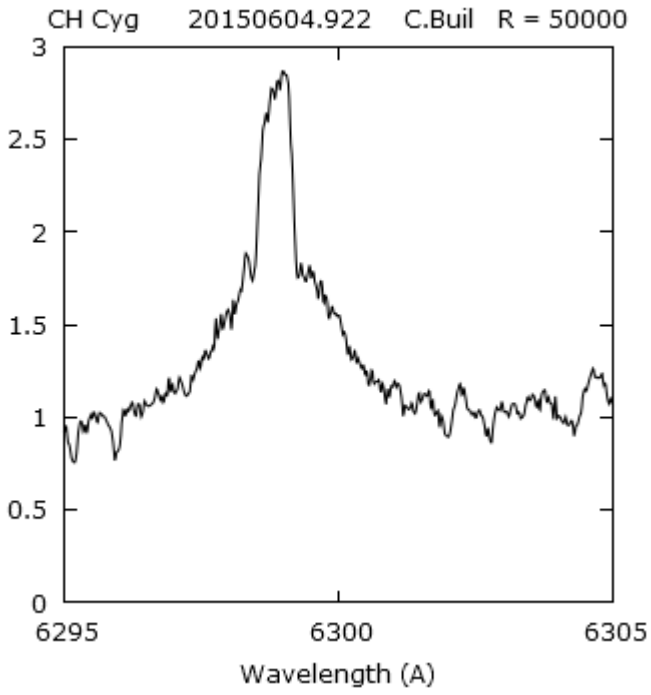


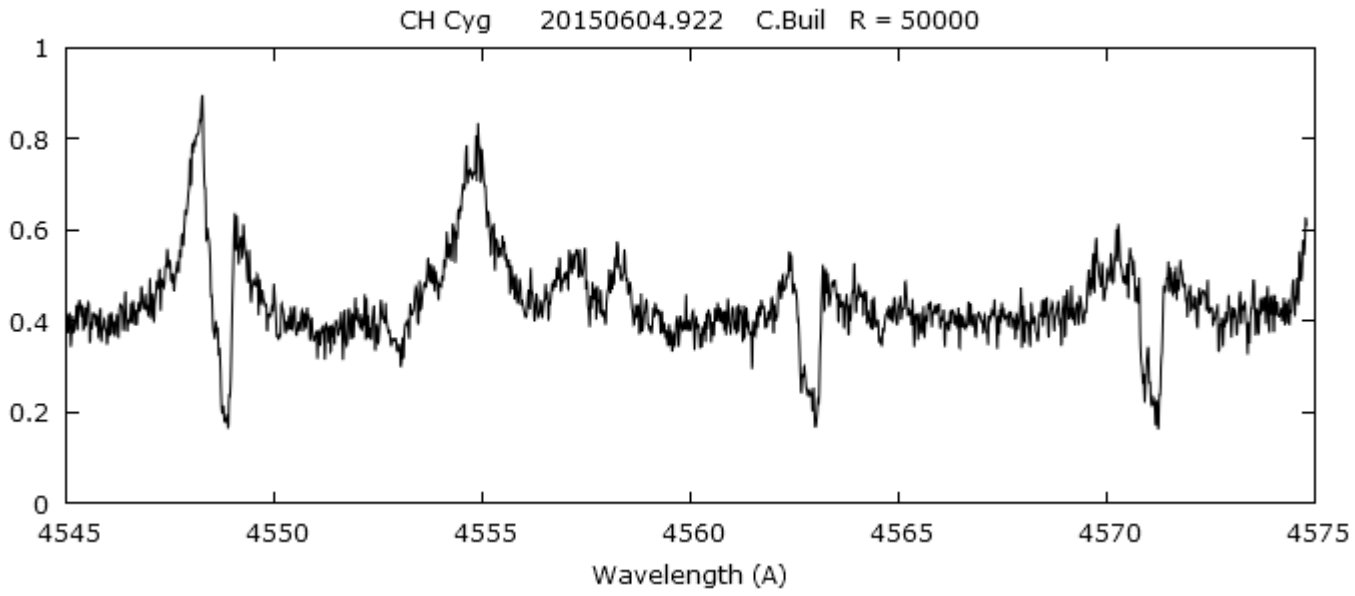


Blue/Green Region by Palolo Berardi LHIRES III R = 4000

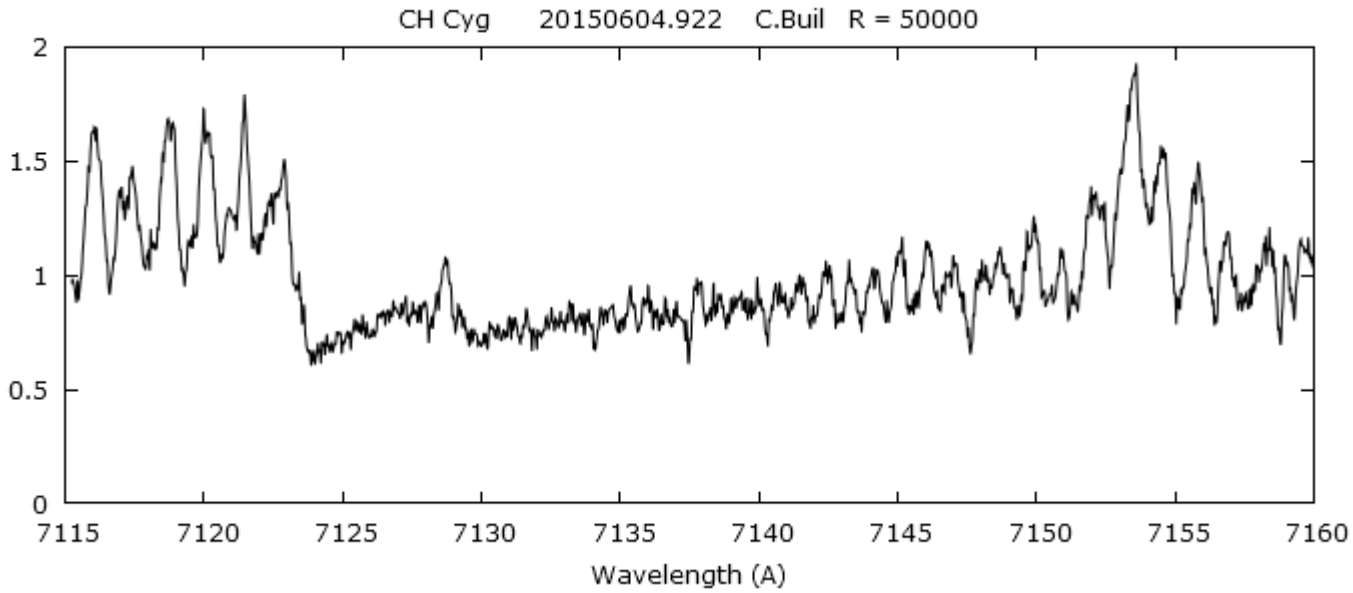
CH Cygni observed at R = 50000 by Christian Buil







4549.47 Fe II (38) + 4549.62 Ti II (82) , 4555.89 Fe II (37), 4558.66 Cr II (44), 4563.76 Ti II (50)
(According to Hack & al. 1988)



Request for observations of the symbiotic star CH Cygni (Dr A. Skopal)

Field of CH Cygni - Christian Buil - 15-03-2012

CH Cygni

Coordinates (2000.0)	
R.A.	19 24 33
Dec.	+54 14 29.1

Current magnitude V = 7.4 to 7.6
(Flickering)

Reference stars

MILES Standart for high resolution spectra

Name	RA (2000)	Dec (20002)	Sp. Type	Mag. V	E_{B-V}
HD 192640	20:14:31.9	+36:48:22.7	A2V	4.96	0.026

Reference for low resolution spectra

Name	RA (2000)	Dec (20002)	Sp. Type	Mag. V	E_{B-V}
HD 183534	19:27:42	+52:19:14	A1V	5.7	0

Observing

High resolution spectra
Eshel
LHIRES III 2400 l/mm (H alpha)
Spectra should be corrected for heliocentric velocity

Low resolution spectra (minimum R = 600)
With an excellent correction of atmospheric/intrumental response for computation of the SED

Send spectra

To francoismathieu.teyssier at bbox.fr

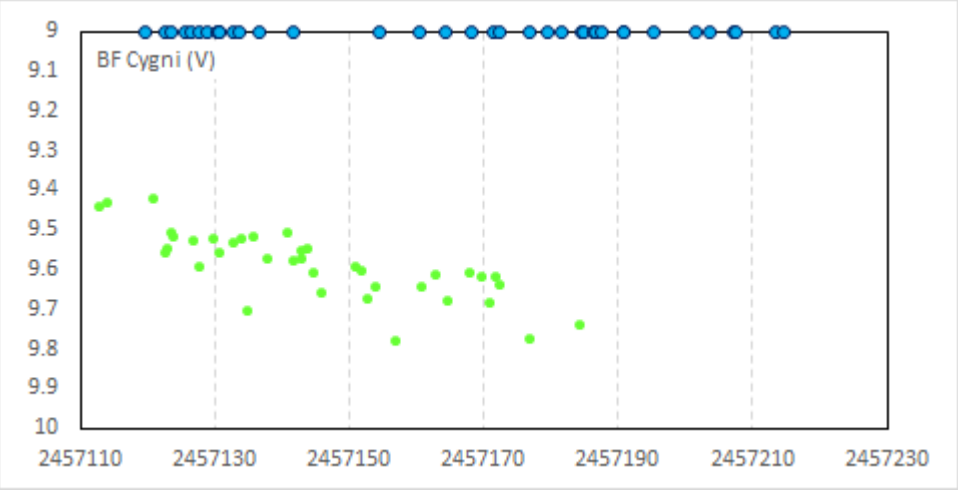
File name : _chcygni_aaaammdd_hhh.fit
And _chcygni_aaaammdd_hhh.zip for eShel and Time series

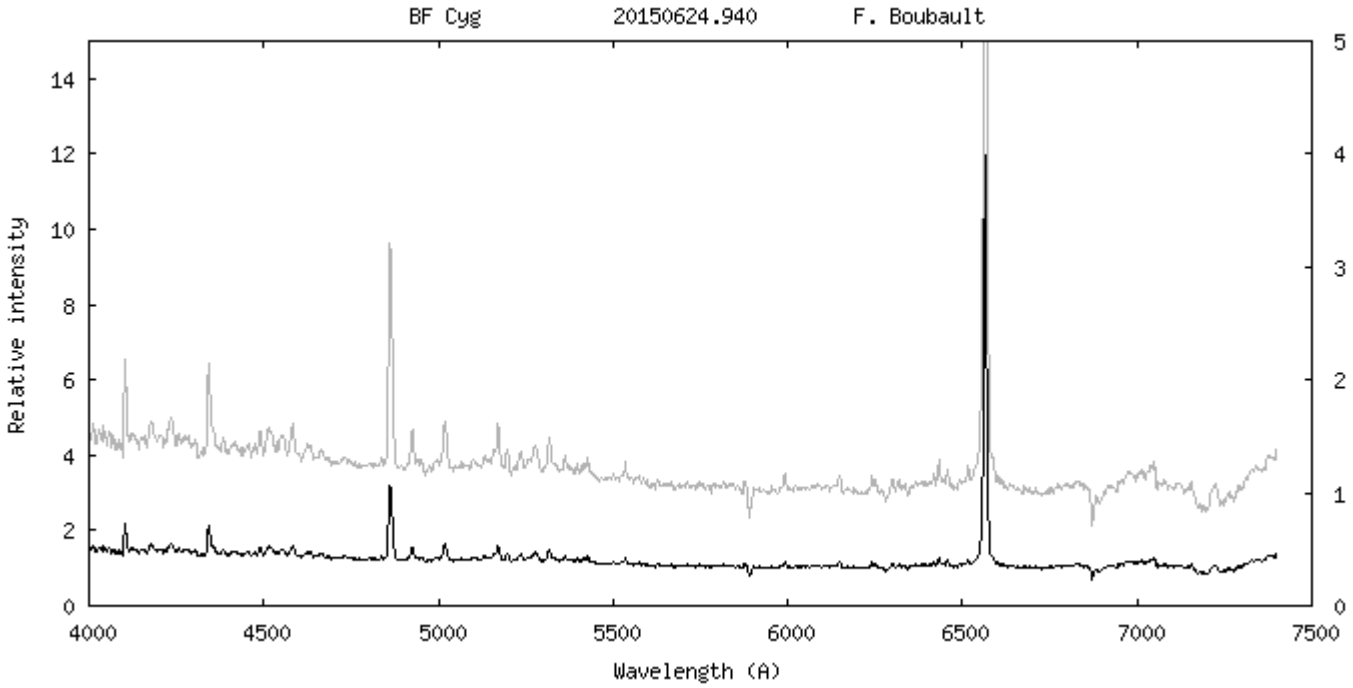
ARAS Data Base for CH Cygni
http://www.astrosurf.com/aras/Aras_DataBase/Symbiotics/CHCyg.htm

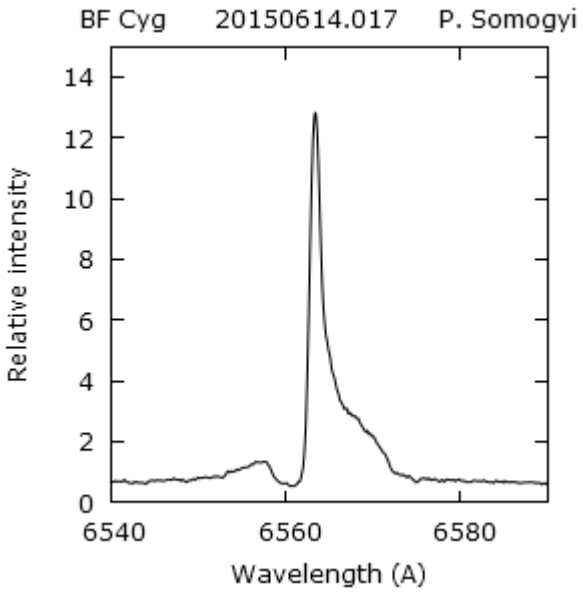
BF Cygni

Coordinates (2000.0)	
R.A.	19 23 53.5
Dec.	+29 40 29.2

Slowly declining
The hump in the red part of H alpha remains strong
Changes in the blue absorption

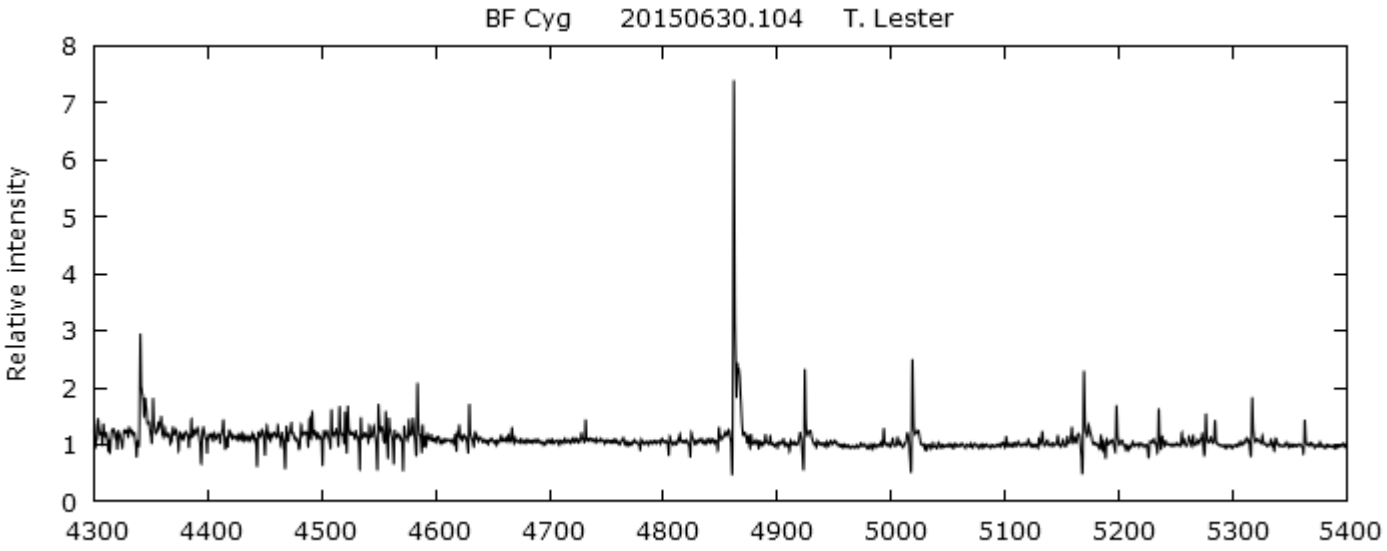


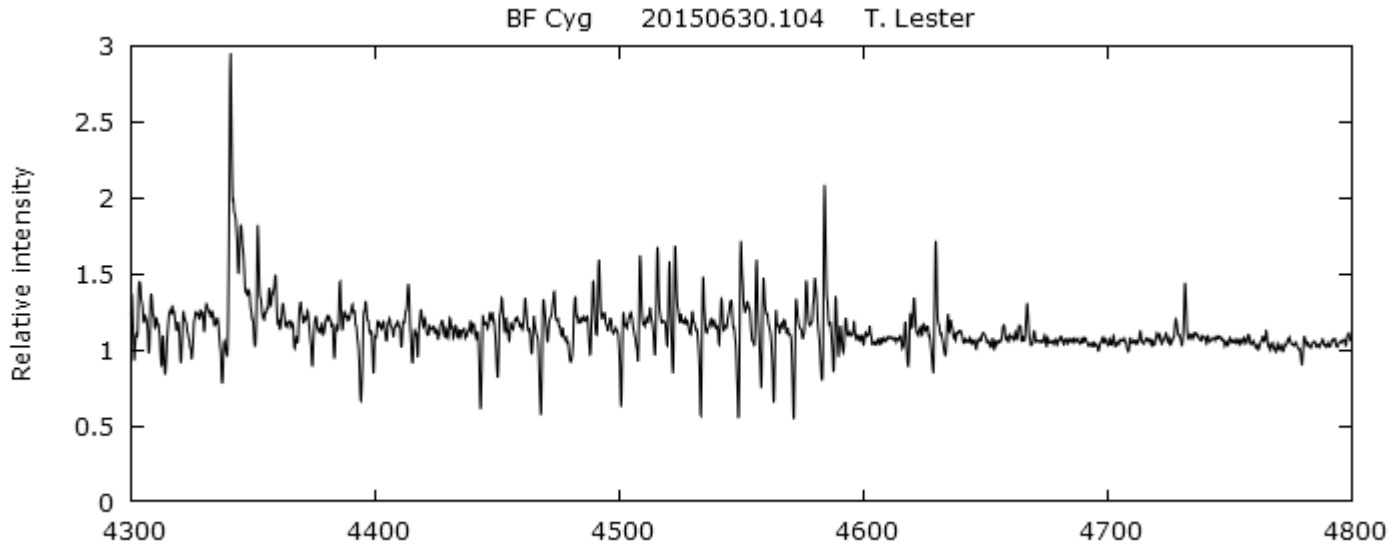


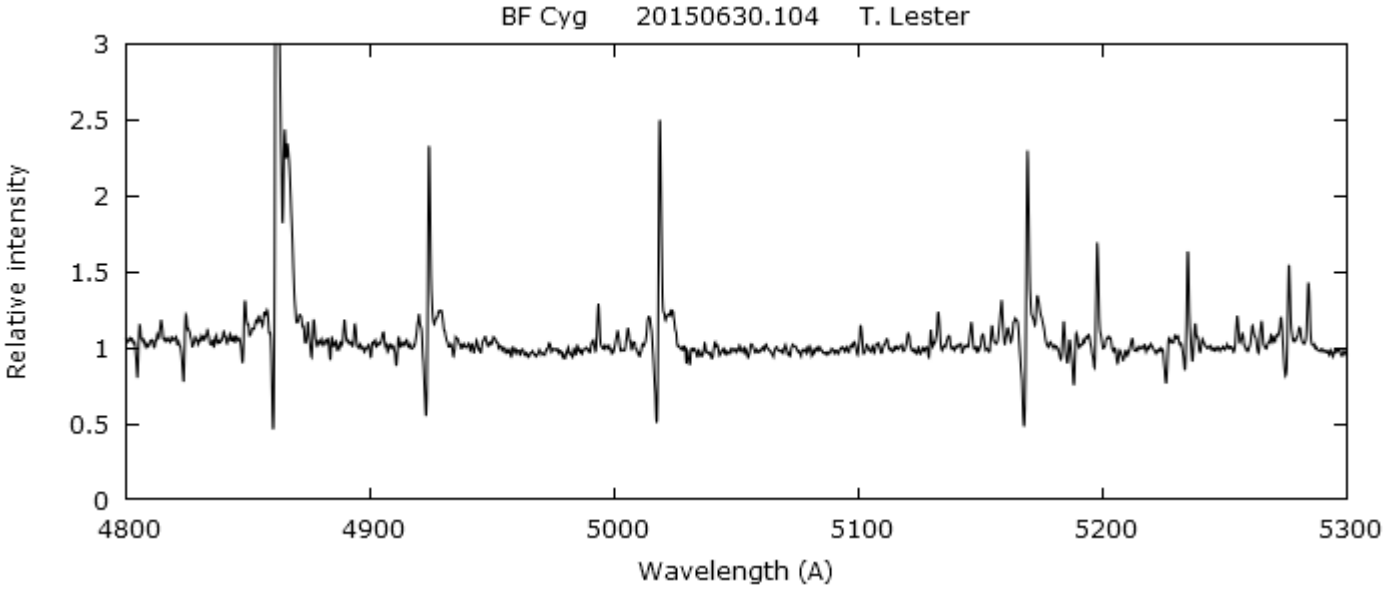


BF Cygni

Coordinates (2000.0)	
R.A.	19 23 53.5
Dec.	+29 40 29.2



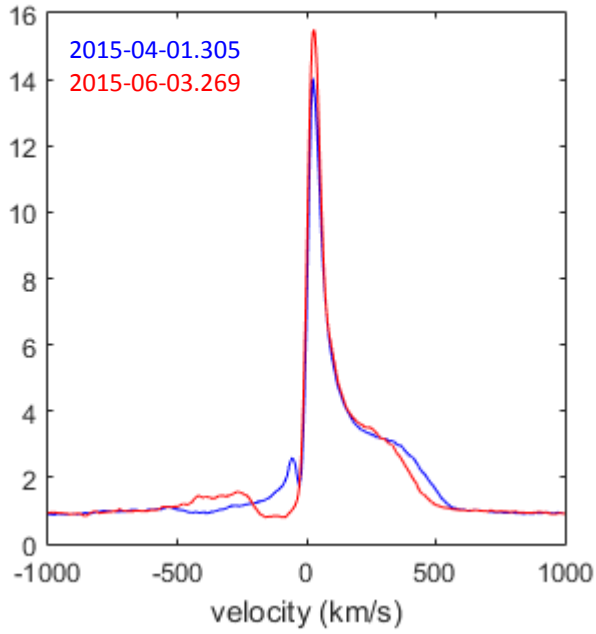




BF Cygni

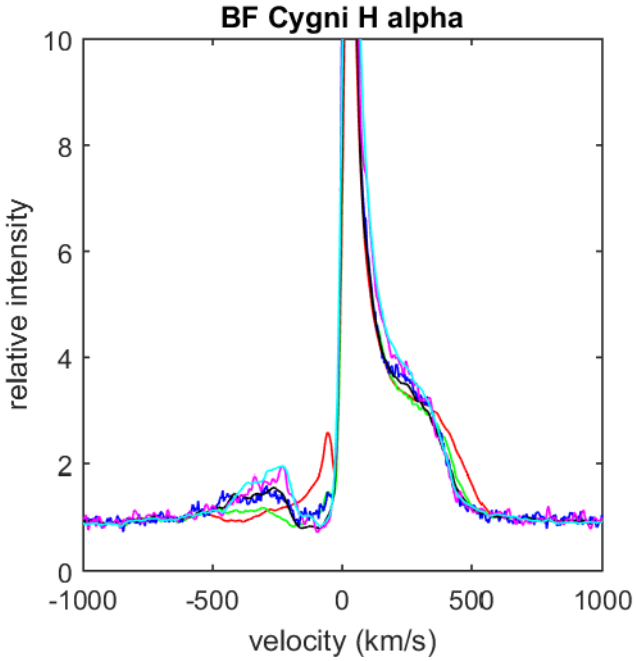
Coordinates (2000.0)	
R.A.	19 23 53.5
Dec.	+29 40 29.2

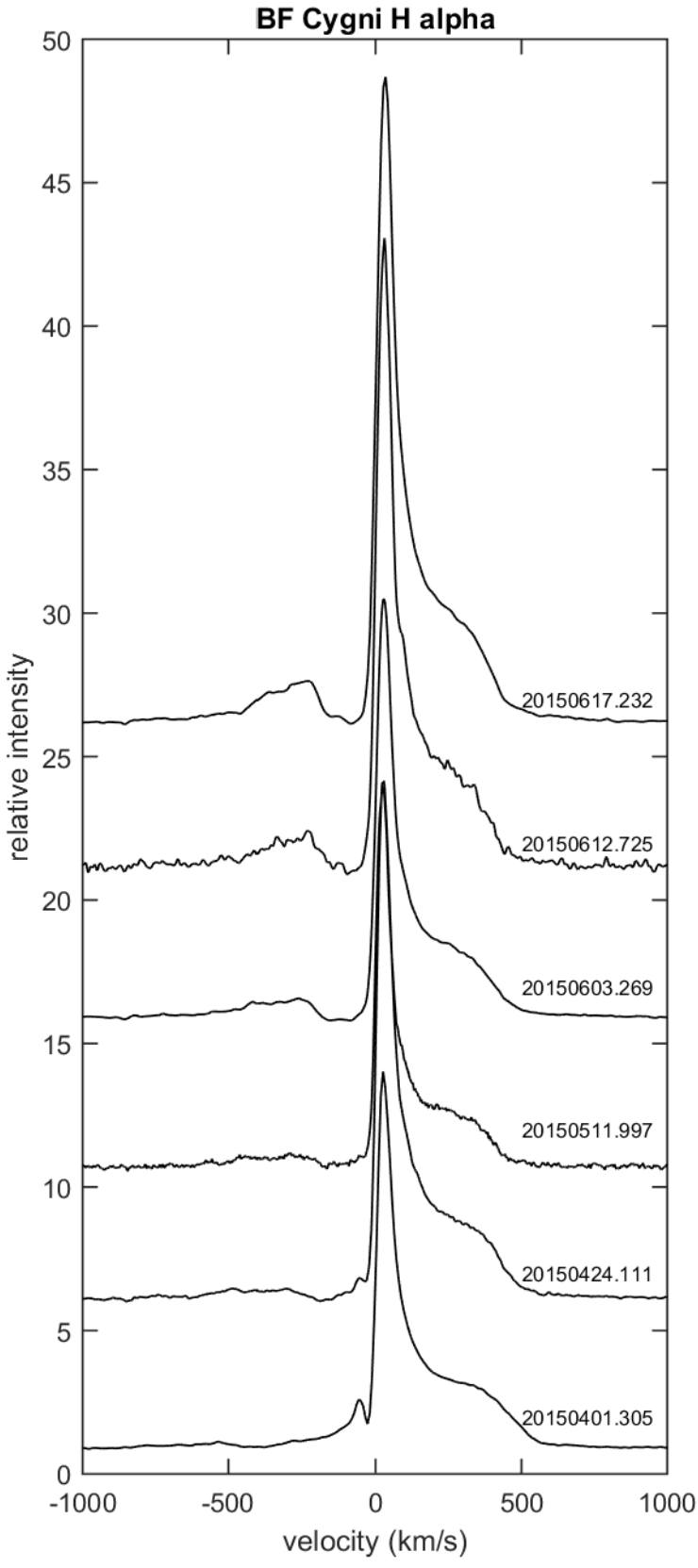
Tim Lester detected a significative change in the blue absorption of H alpha line



Spectra : T. Lester at R = 9000

Evolution of H alpha line,
Especially blue absorption from april to june 2015
Spectra at R = 9000 to 12000
T. Lester
P. Somogyi
Dong Li
F. Teyssier

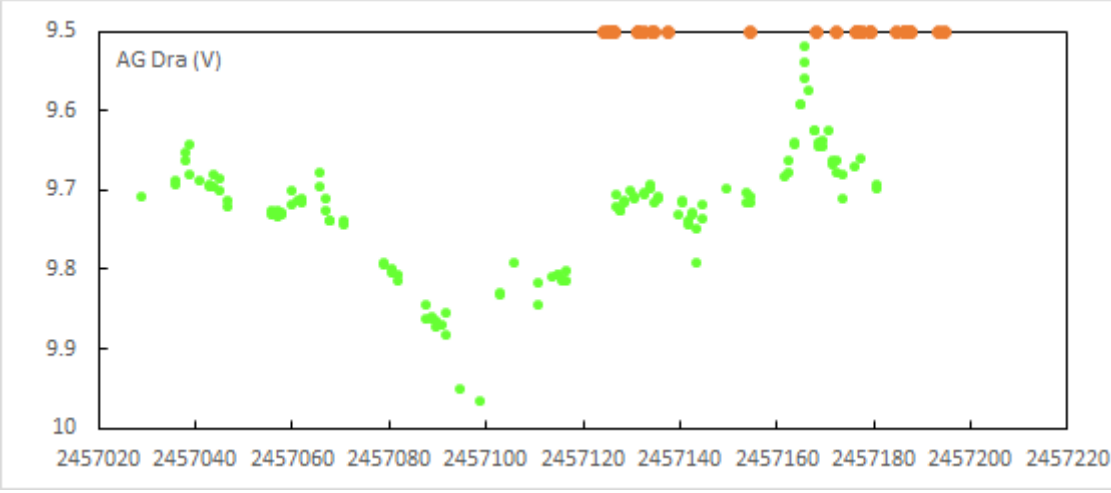




AG Dra : short flare late may

Coordinates (2000.0)	
R.A.	16 01 41.0
Dec.	+66 48 10.1
Mag V	9.7

Late May, the yellow symbiotic AG Dra showed a short flare in V band. The Luminosity raised from mag V = 9.7 (19/05) to V = 9.5 (23/05) and returned promptly to Mag 9.7 (31/05).



AAVSO light curve for 2015
ARAS spectra (may-june) : brown points

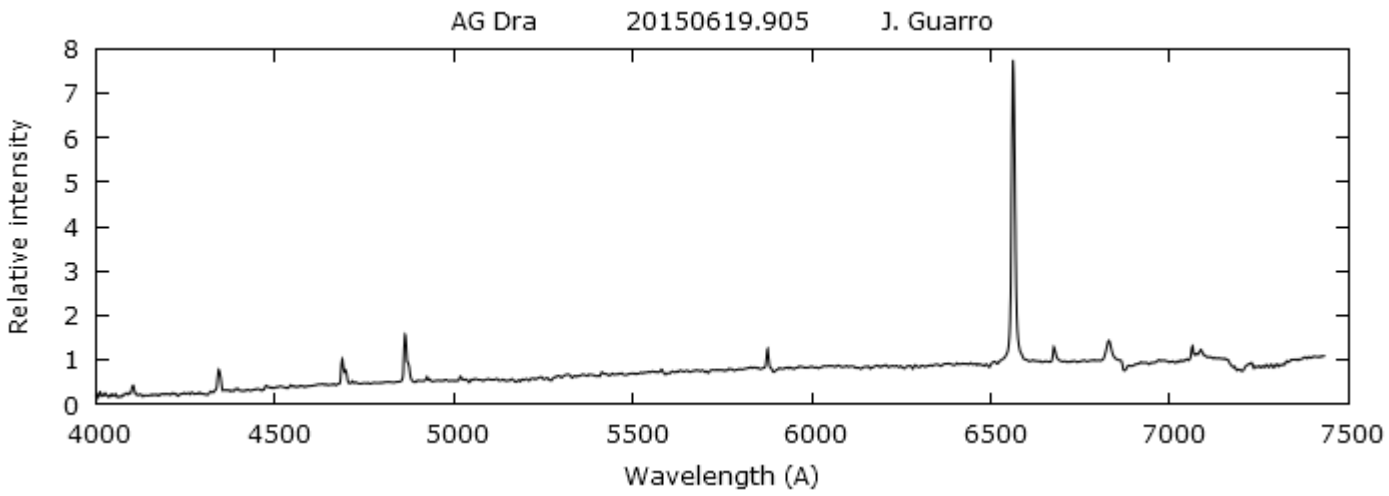
Munari & al. deduced an outburst from this rise (see Atel #7582). But, during former outbursts (2006-2008), AG Dra reached a luminosity of about 8 in V band.

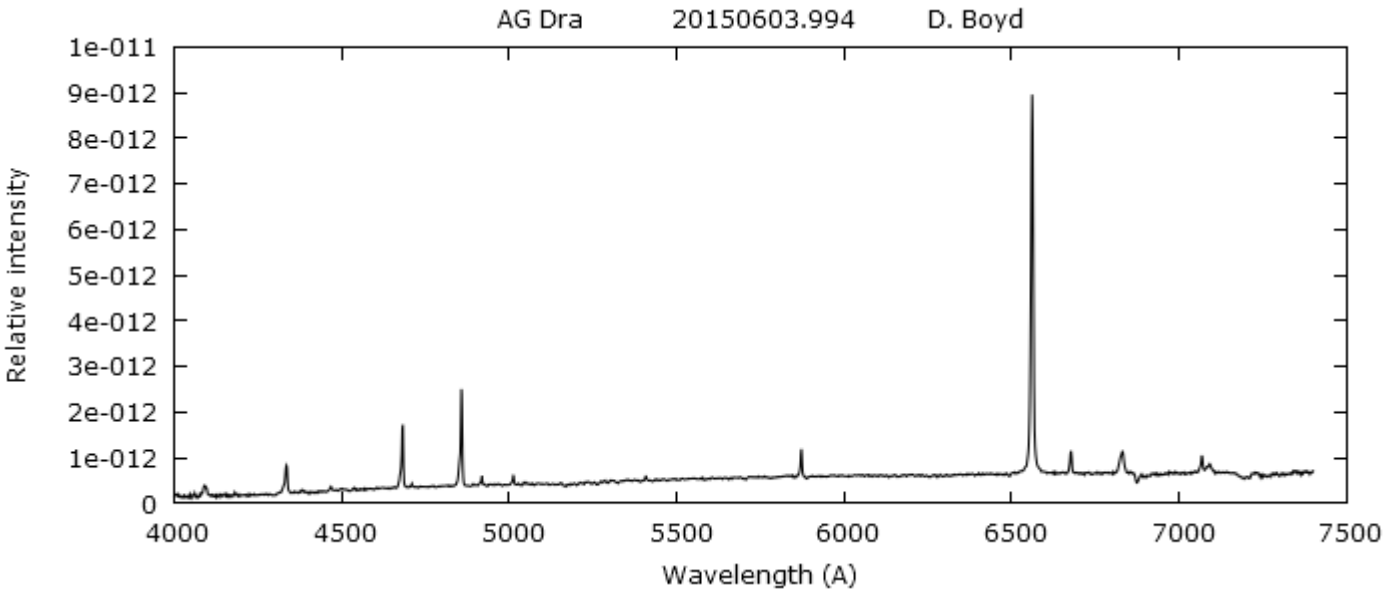
The symbiotic binary and super-soft X-ray source AG Dra is going into outburst

ATel #7582; U. Munari (INAF Padova-Asiago), G. L. Righetti, U. Sollecchia, F. Castellani (ANS Collaboration)
on 1 Jun 2015; 10:49 UT

The yellow symbiotic binary and luminous super-soft X-ray source AG Dra is on a steep rise in optical brightness, after seven years of flat quiescence following the 2006-08 multi-maxima outburst episode (Munari et al. 2009, PASP 121, 1070). We are tightly monitoring AG Dra both photometrically and spectroscopically with various ANS Collaboration telescopes and the Asiago 1.22m and 1.82m telescopes. On March 8.923 UT, when the current brightening begun, we measured B=11.301, V=9.885, Rc=9.005, and Ic=8.367, while our last measurement on May 29.883 UT provides B=10.989, V=9.683, Rc=8.822, and Ic=8.228. The start of what looks like as a new outburst episode is marked by a significant lowering of the usually very high ionization conditions: the HeII 4686 / Hbeta ratio has declined from 0.83 in Nov 2014 to 0.67 on May 29.86 UT, and the ratio between OVI Raman scattering at 6830, 7088 and HeI 6678, 7065 has lowered from 3.80 to 1.58. The profiles of emission lines are still broadly similar to those of quiescence, in particular no P-Cyg absorption has yet appeared.

AG Dra is a yellow symbiotic binary, with an orbital period of 550 days and a pulsation one of 355 days (Galis et al. 1999, A&A 348, 533). The high galactic latitude, large radial velocity (-135 km/s) and low metallicity of the K giant donor star ([Fe/H]=-1.3, Smith et al. 1996, A&A 315, 179), point to a partnership of AG Dra with the Galactic Halo. The luminous super-soft X-ray emission was discovered by ROSAT (Greiner et al. 1997, A&A 322, 576). AG Dra went through 3 major outburst periods during the last 50 years, in 1980-82, 1994-96 and 2006-08, each showing multiple maxima. These maxima have either been of the "cool" (probably related to an expansion and cooling of the white dwarf photosphere, with decline/disappearance of high ionization features) and of the "hot" type (probably caused by an enhancement in the wind from the white dwarf, with no reduction in the ionization degree; Gonzalez-Riestra et al. 1999, A&A 347, 478; Skopal et al. 2009, A&A 507, 1531; Shore et al. 2010, A&A 510, A70). During previous outbursts, the X-ray and the optical/UV brightness have been anti-correlated.



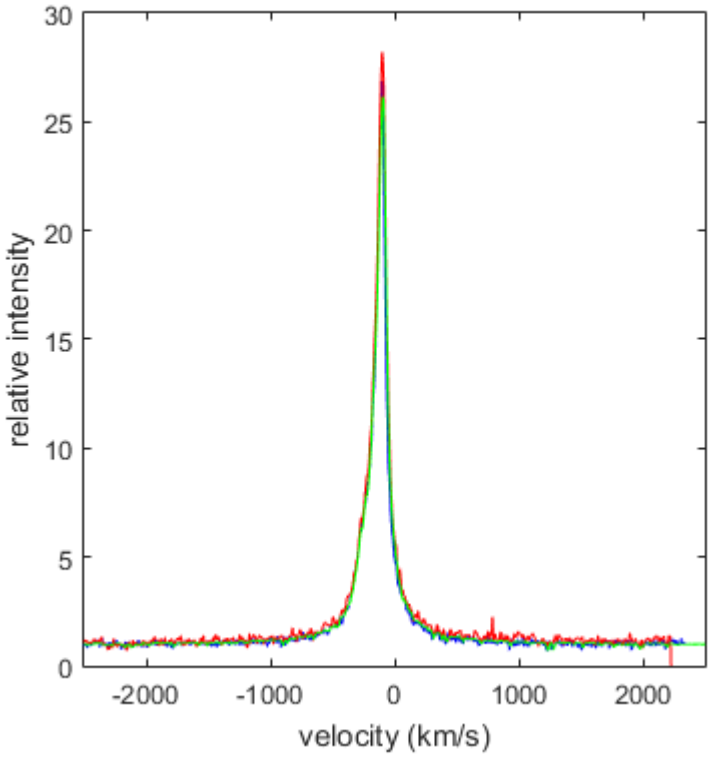


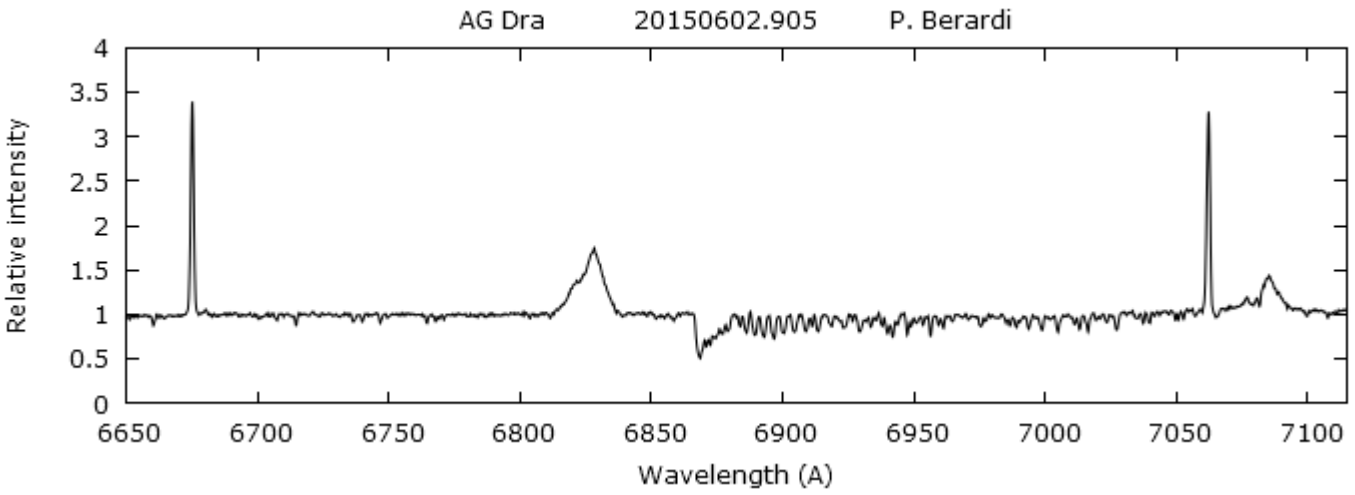
AG Dra just after the flare by D. Boyd (LISA R = 1000, flux calibrated spectrum)

H alpha line at R= 15000
(Lhires III - 2400 l/mm)

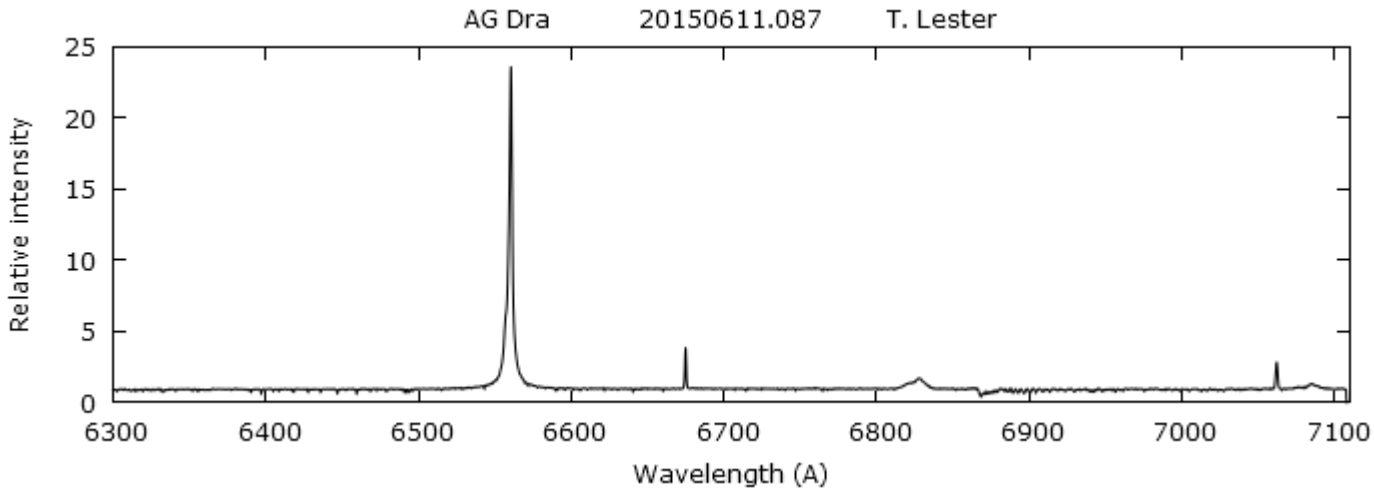
05-05-2015 : P. Somogyi
25-05-2015 : Dong Li
29-05-2015 : P. Somogyi

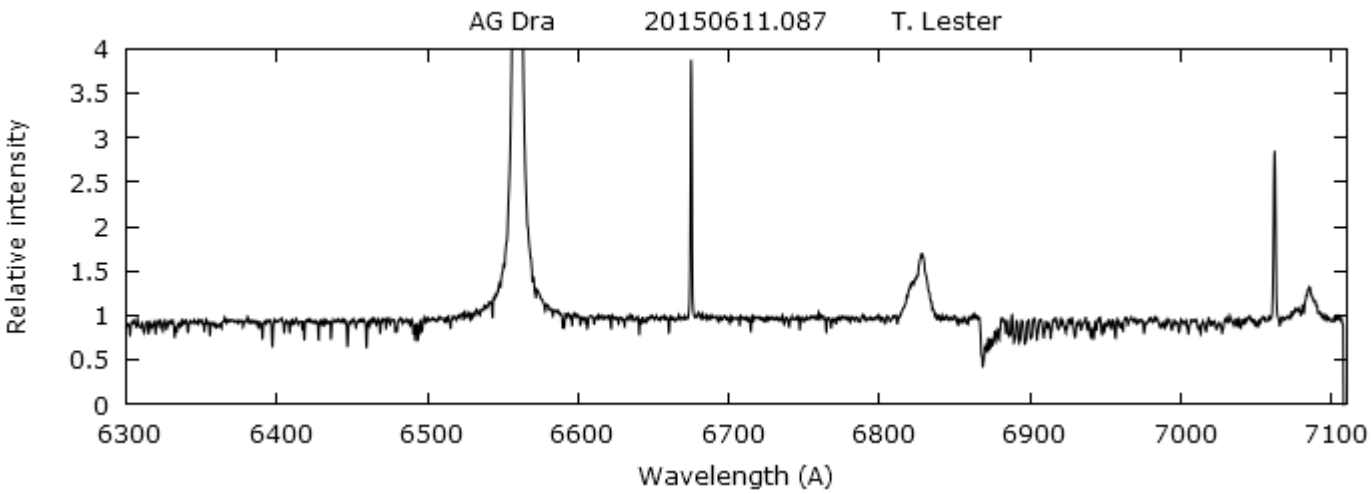
No significant change during (25-05) and after the flare (29-05)





He I 6678, 7065 and Raman OVI 6830, 7085 by Paolo Berardi (Lhires III - 1200 l/mm) at R = 6000
A few days after the flare



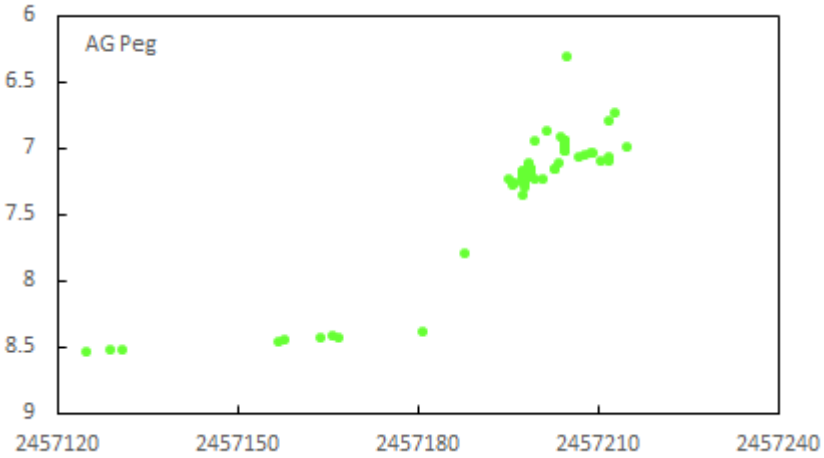


The H alpha region by Tim Lester (Home made spectrograph R = 9000)

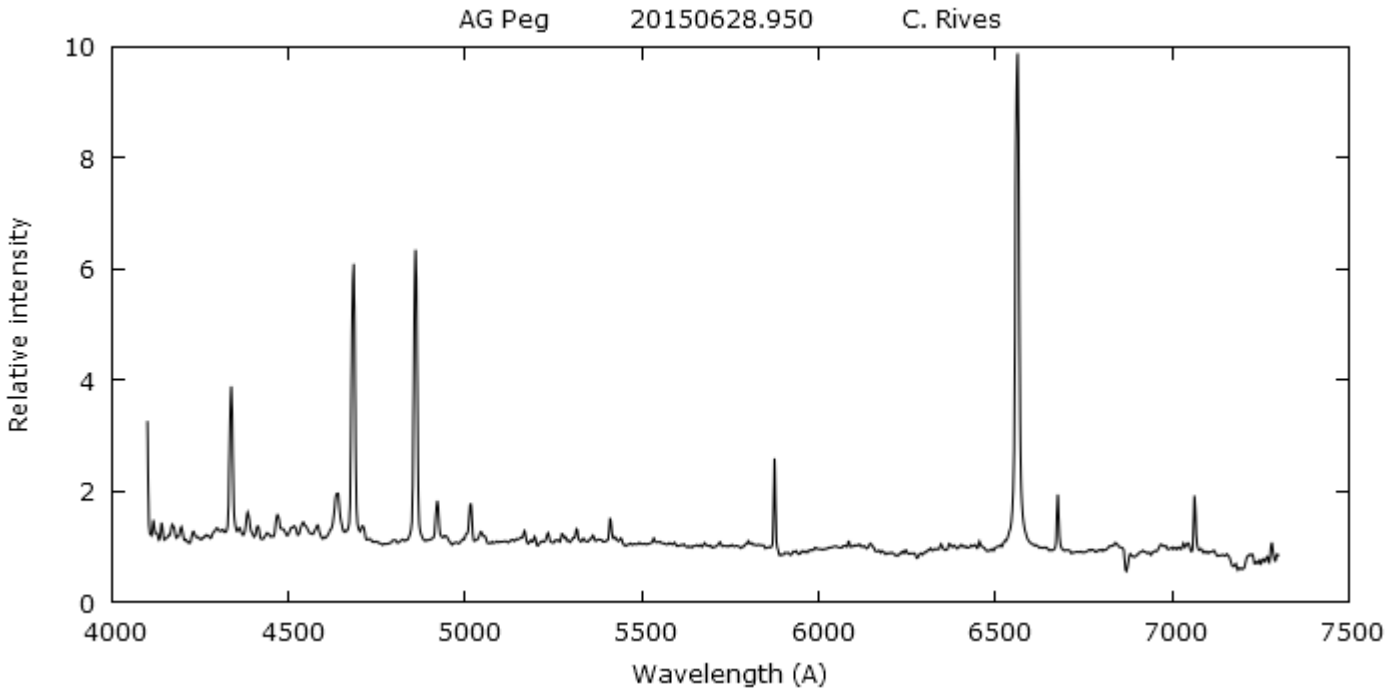
AG Peg in outburst : an historical event

Coordinates (2000.0)	
R.A.	19 23 53.5
Dec.	+29 40 29.2

AG Peg has been detected in outburst
See : http://www.aavso.org/aavso-alert-notice-521
This is the first symbiotic outburst of this star.
The luminosity in V band began to rise after the 25th of may.



A low res spectrum of the nova taken just yesterday evening by a S:A 200 and a Celestron 8 working at f 5:20x 5 sec images 12 A/ pix dispersion. Calibration for the response by the theta Pegasi spectrum in Vspec. Evident H Balmer serie in emission and He II.
Fulvio Mete

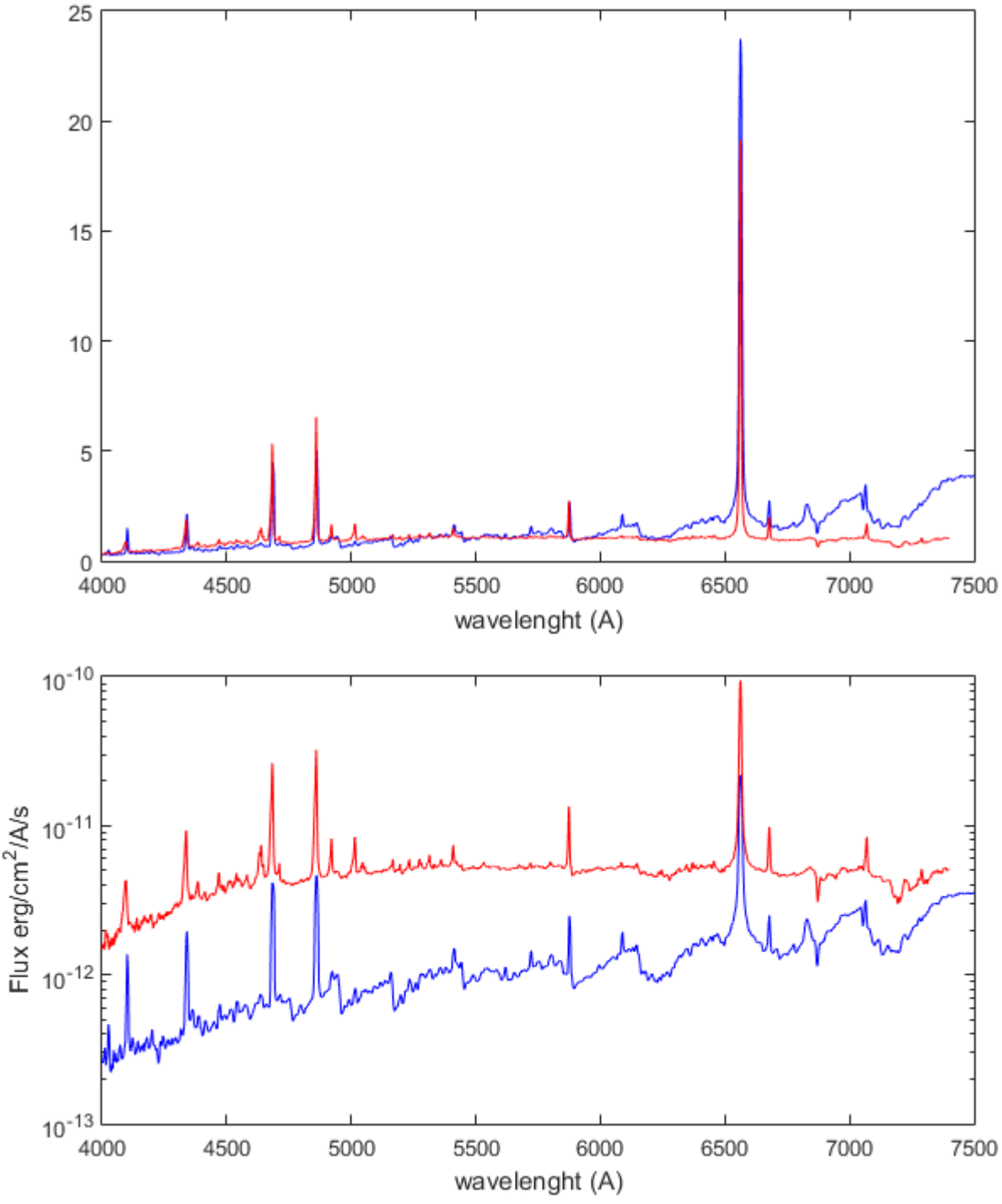


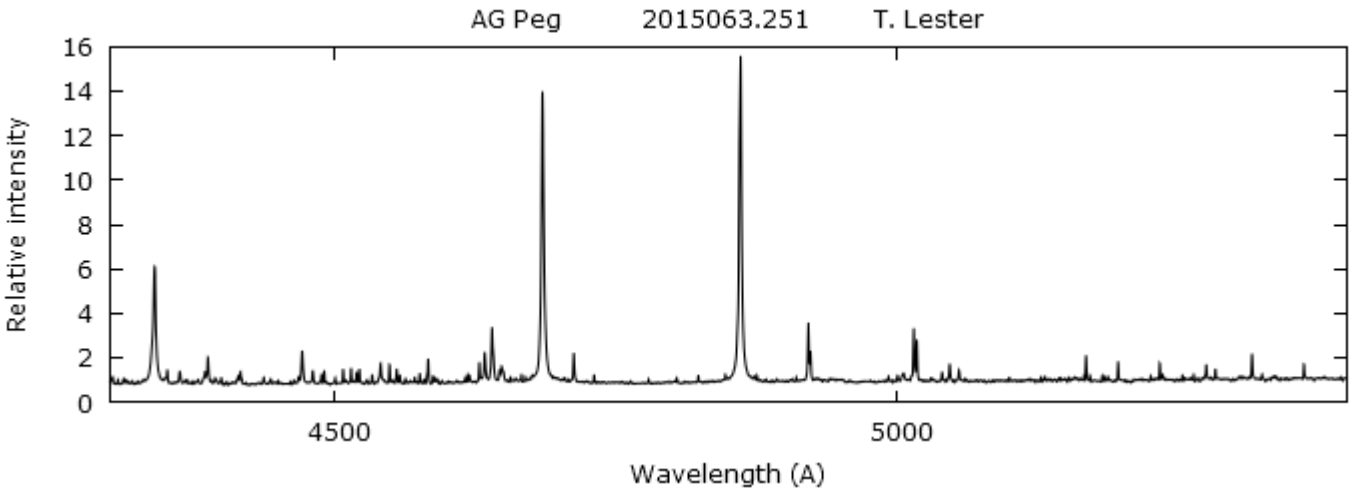
AG Peg in outburst by Christian Rives (LISA R = 1000)

Comparison of low state (2014-12-25) and outburst spectra (2015-06-30)

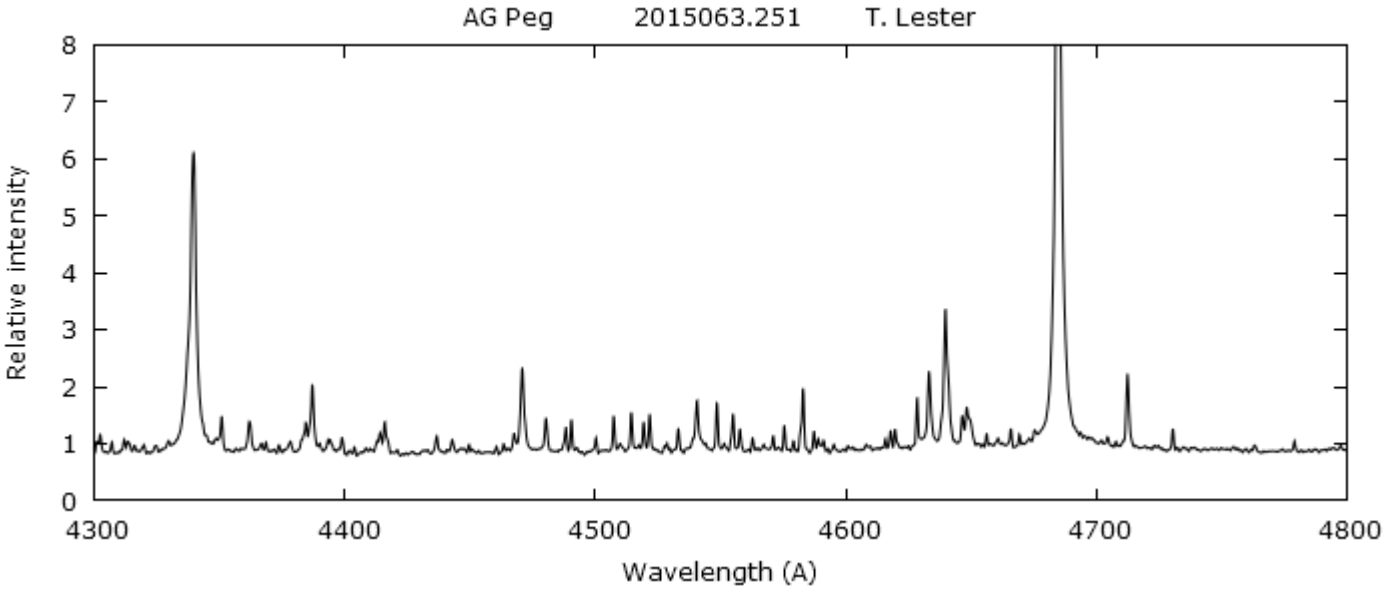
The changes in the spectre are typical of a symbiotic outburst, produced by the expansion of the hydrogen burning envelop at the surface of the white dwarf. The envelop reacts to expansion by cooling. The peak of luminosity is shifted to longer wavelenghts, which produces the raise of luminosity in visible range.
The TiO bands weakens, overhelmed by the Balmer continuum.
The decrease of the temperature leads to the decline of ionization state : the high excitation lines weakens, such as [Fe VII] or Raman OVI. Note the enhancement of low ionisation lines for instance He I 4922, 5016.

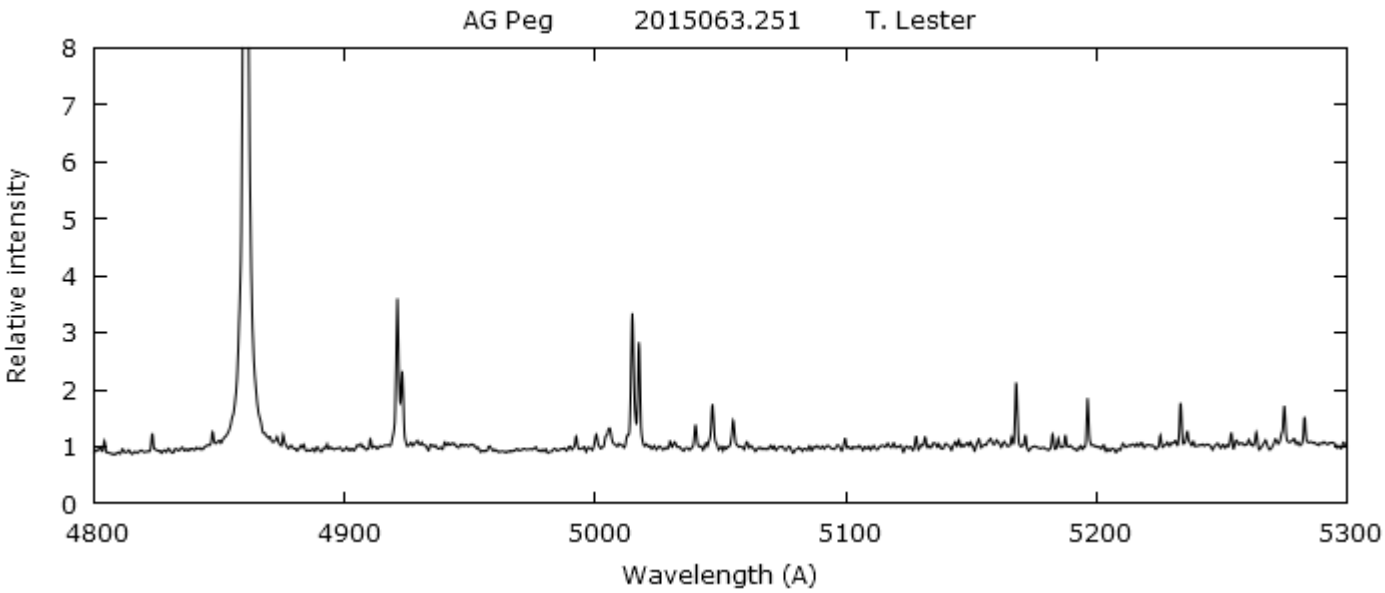
Blue : 2014-12-25.778 F. Teyssier LISA R = 1000
Red : 2015-06-30.044 D. Boyd LISA R = 1000





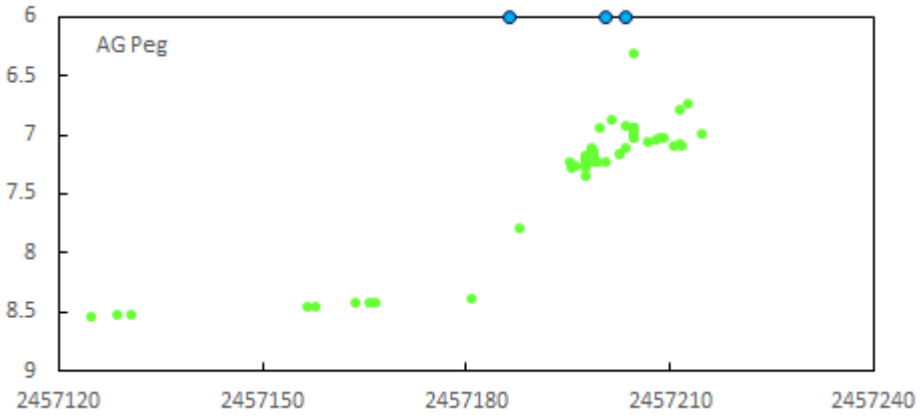
The blue/green region by Tim Lester (R = 9000)

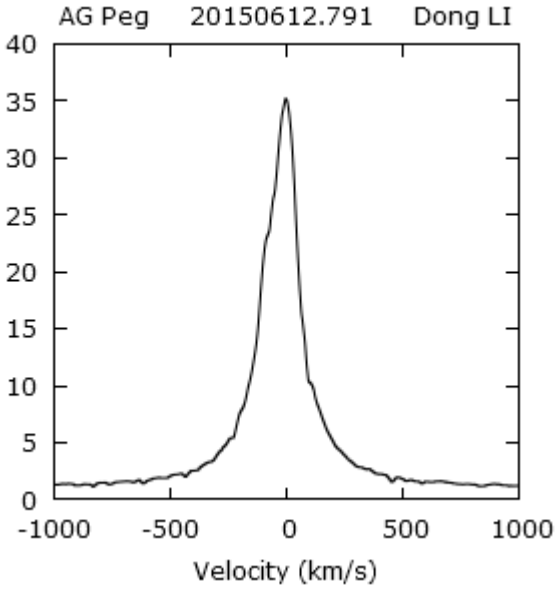


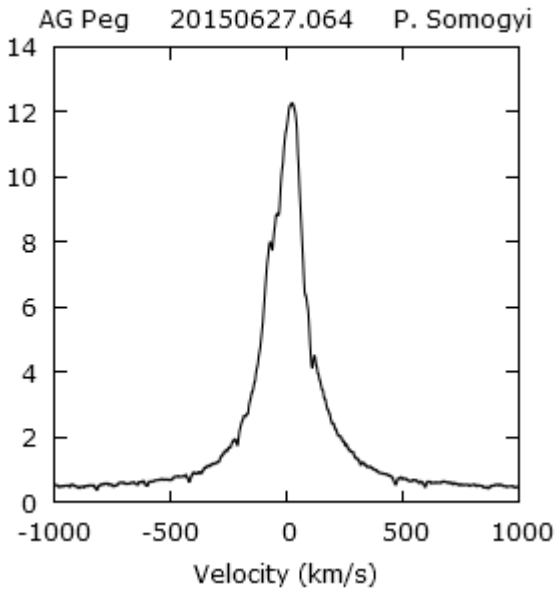


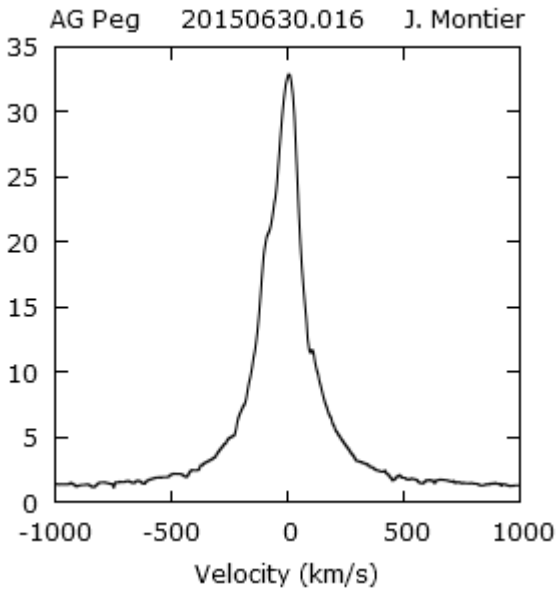
AG Peg

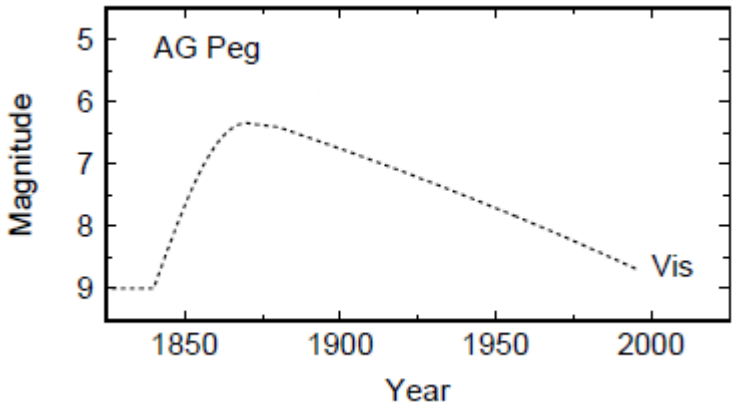
H alpha profile by Dong Li, P. Somogyi and J. Montier. The first spectrum is obtained the 12th of june, during the rise.
No significant change of the profile at date.





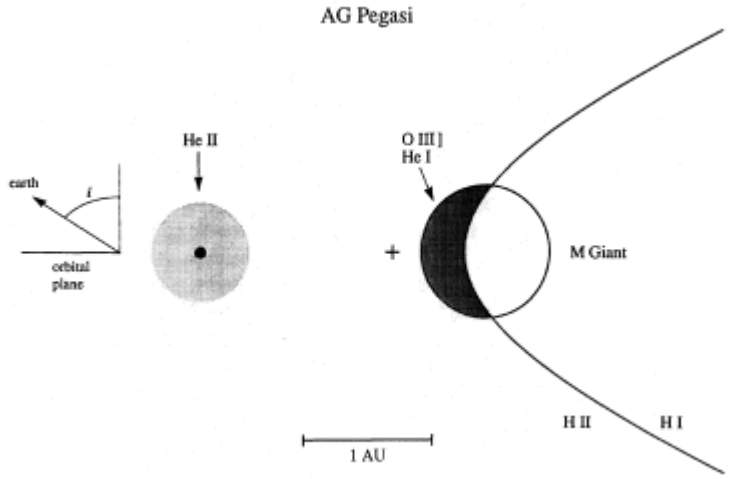




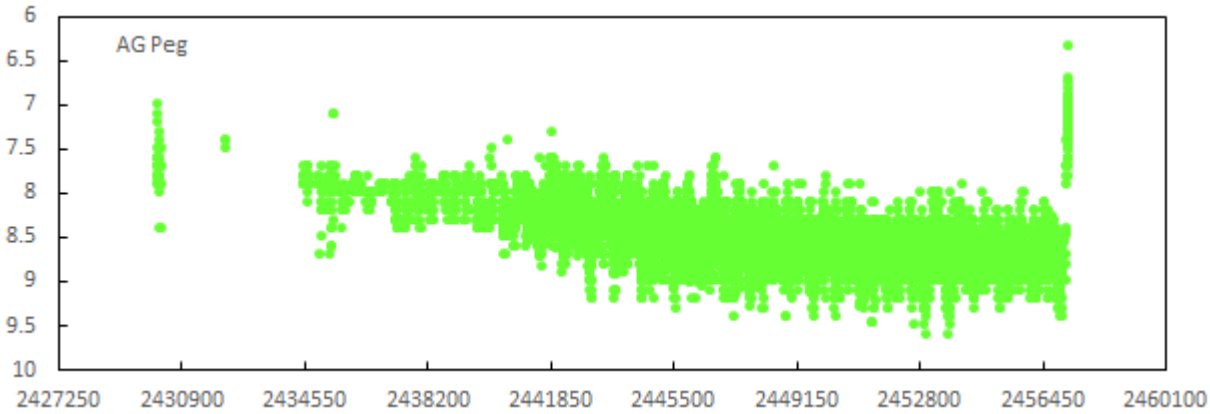


The nova outburst of AG Peg
(Adapted from Kenyon, 2001)

The symbiotic nova AG Peg was shining at ~9 mag when in 1850 started the outburst that in 1871 reached a peak brightness of ~6 mag. The very slow rise to maximum was followed by an even slower decline that took longer than a century to complete. The star was at m(vis)=7.6 in 1943, at m(vis)=8.1 in 1963, m(vis)=8.5 in 1983, and declined to m(vis)=8.75 by 2003.
(In Atel 5258, Munari & al., 2013)



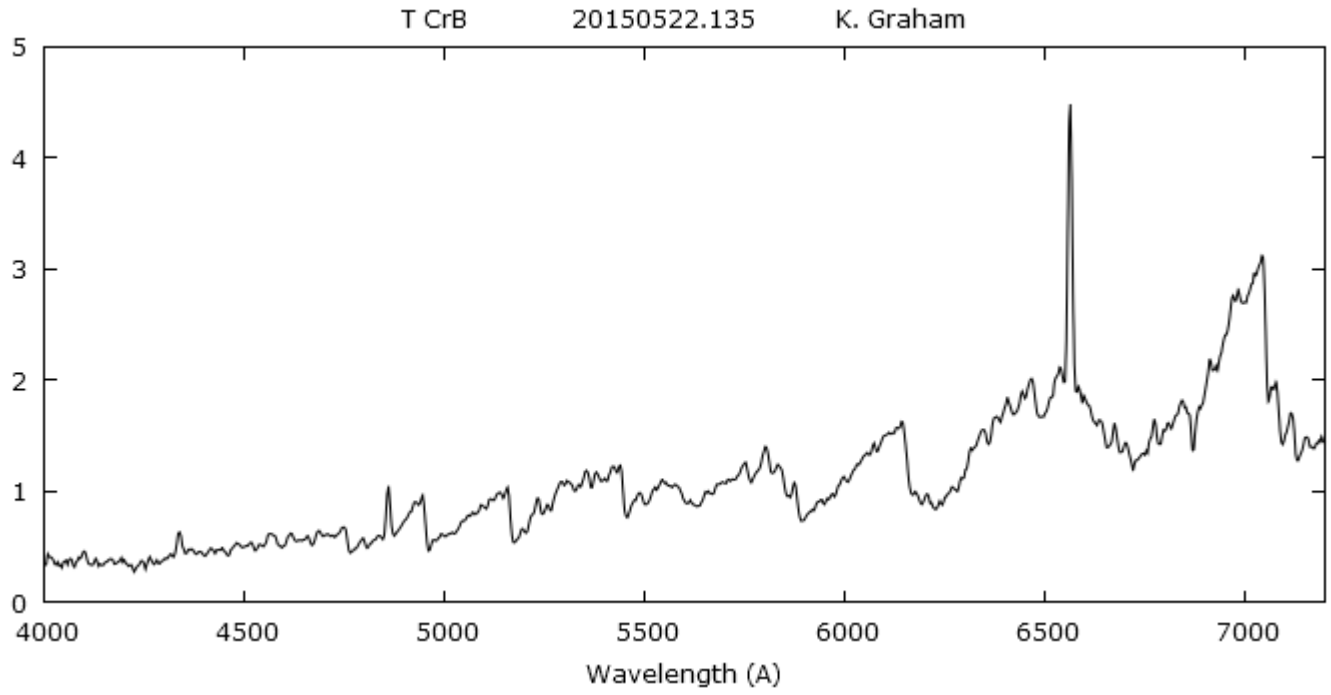
A model for A Peg
In Kenyon & al., 1993

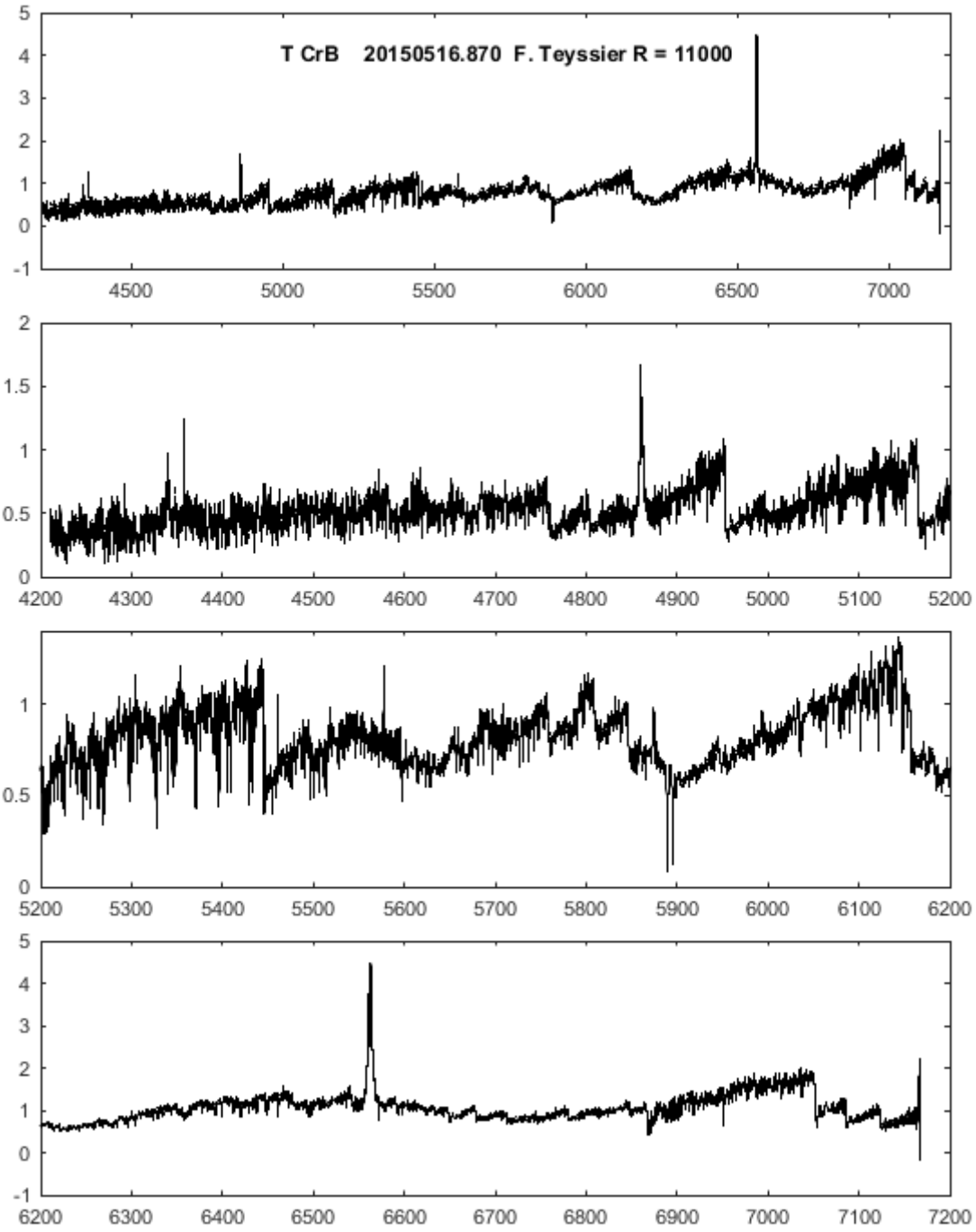


The historical light curve (V + Vis) from AAVSO data base (since 1941)
Showing the slow decline of the nova outburst, periodic orbital variations and the current outburst)

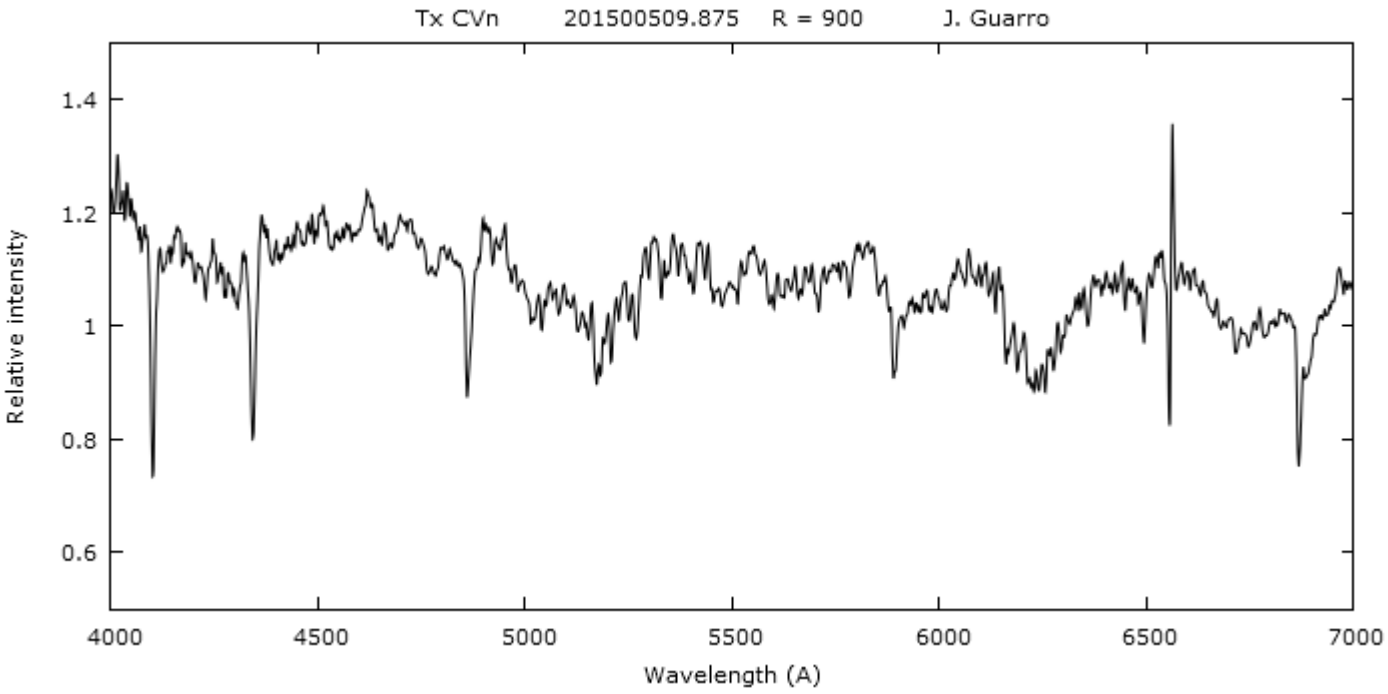
T CrB

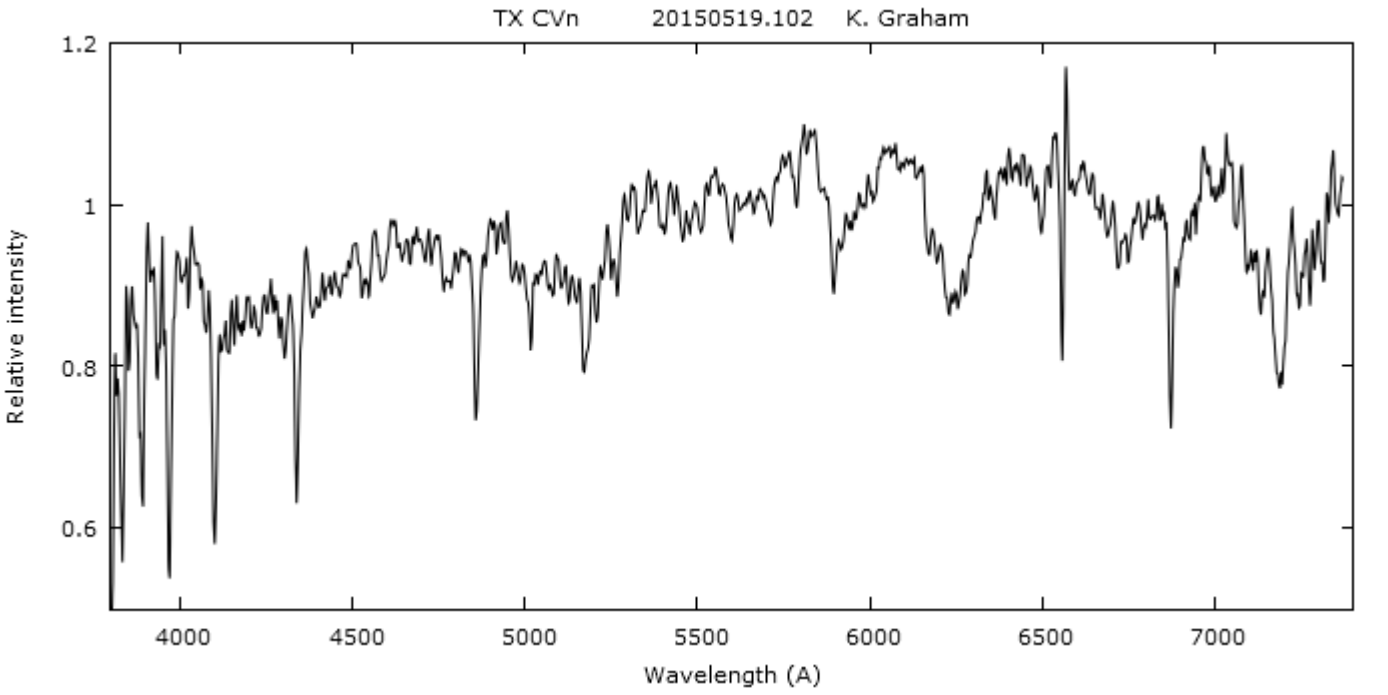
Coordinates (2000.0)	
R.A.	15 59 30.16
Dec.	+25 55 12.6
Mag	10.2




T CrB 20150516.870 F. Teyssier R = 11000

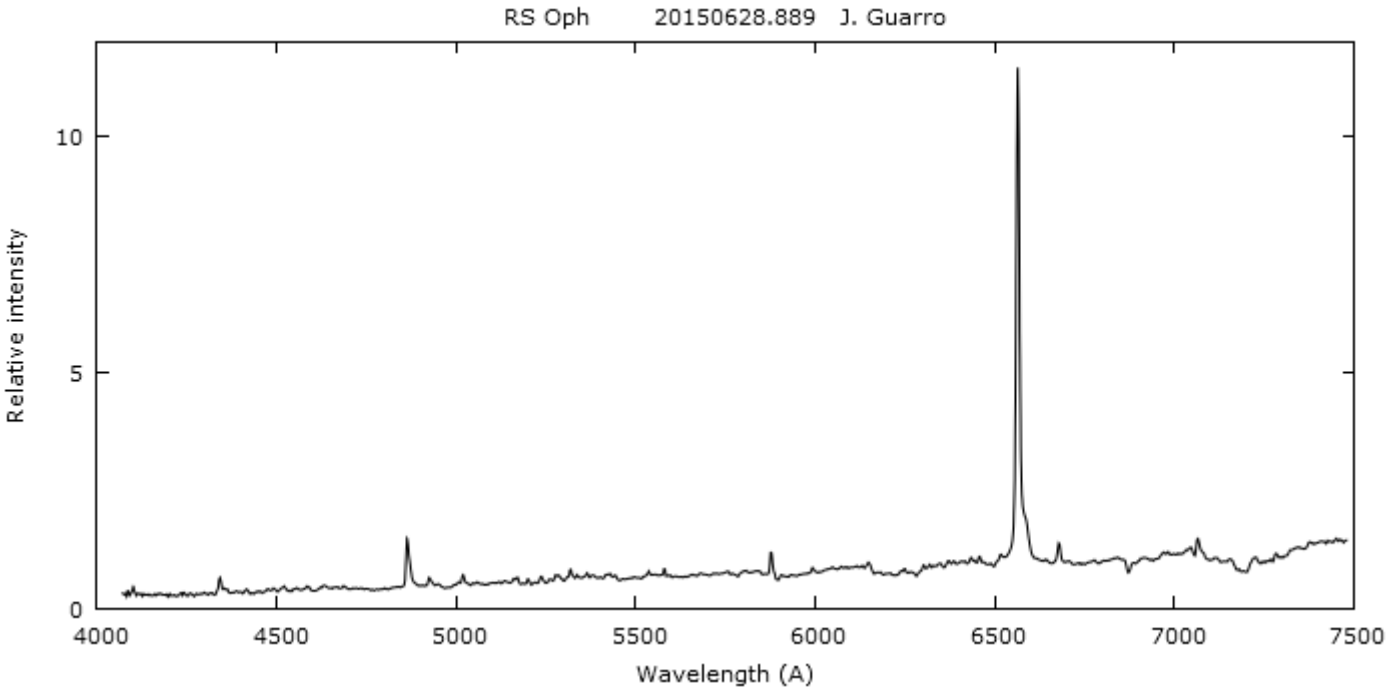
Coordinates (2000.0)	
R.A.	12 44 42.0
Dec.	+36 45 50.6
Mag V	9.8

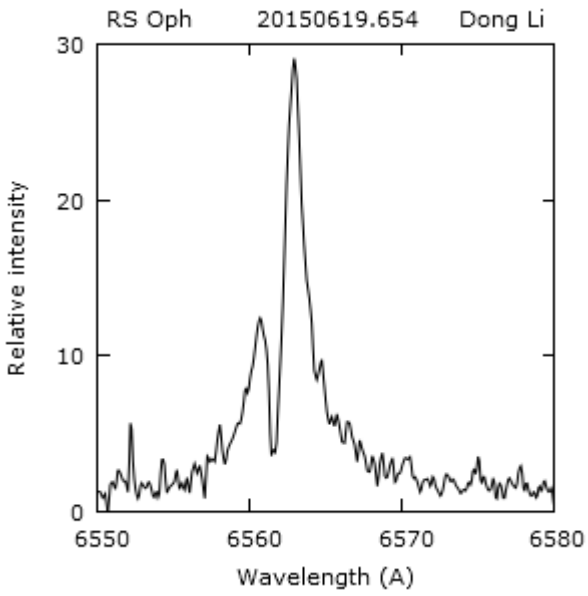


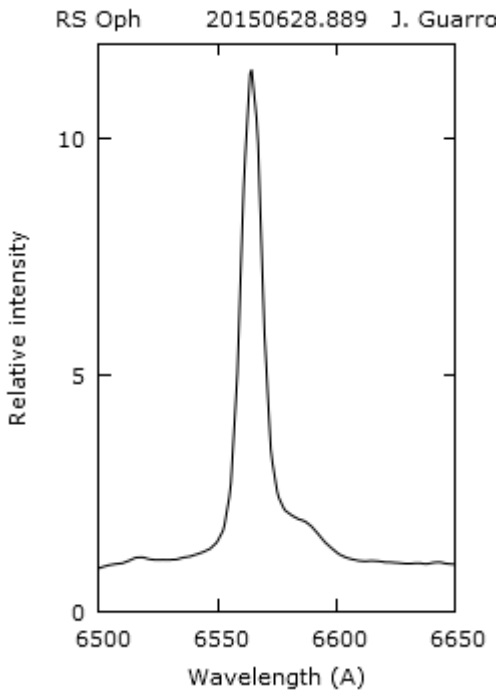


RS Oph

Coordinates (2000.0)	
R.A.	17 50 13.2
Dec.	-06 42 28
Mag V	



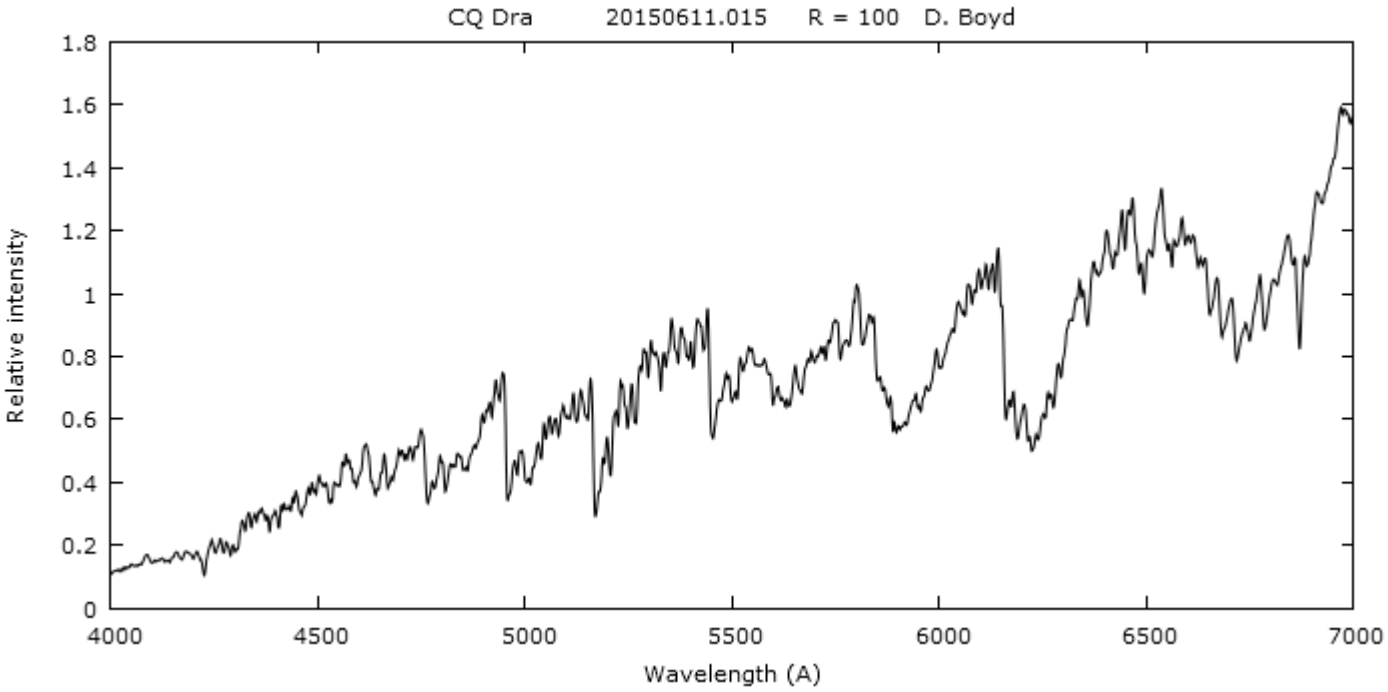




CQ Dra

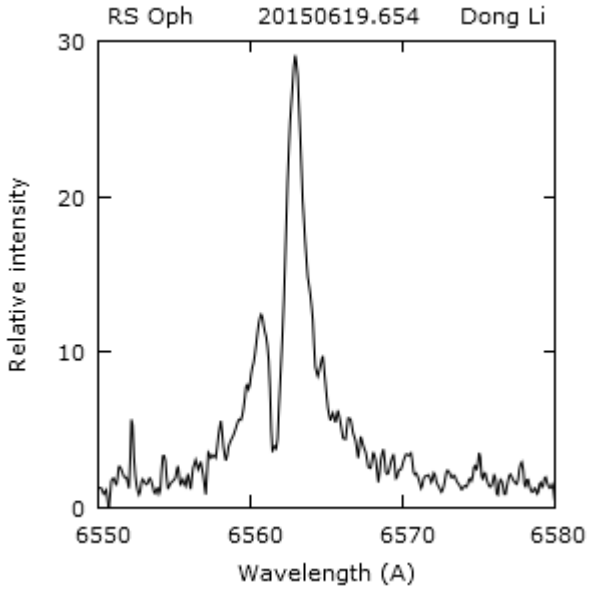
Coordinates (2000.0)	
R.A.	12 30 06,6
Dec.	+69 12 04
Mag V	12

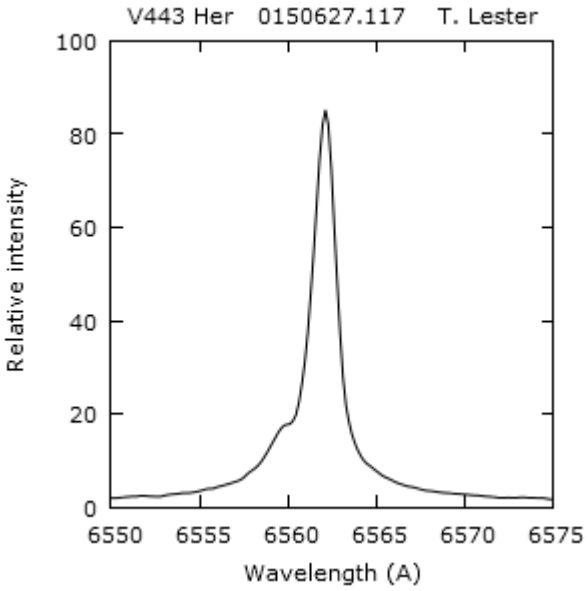
A new symbiotic in the data base.

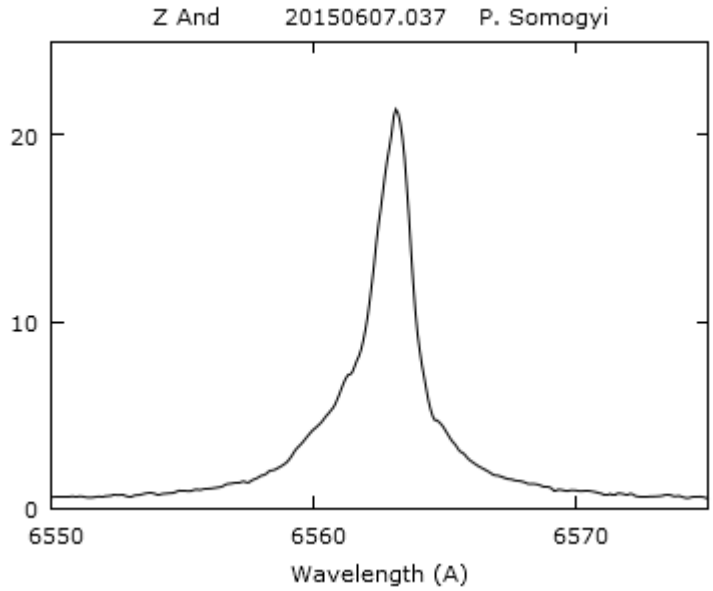


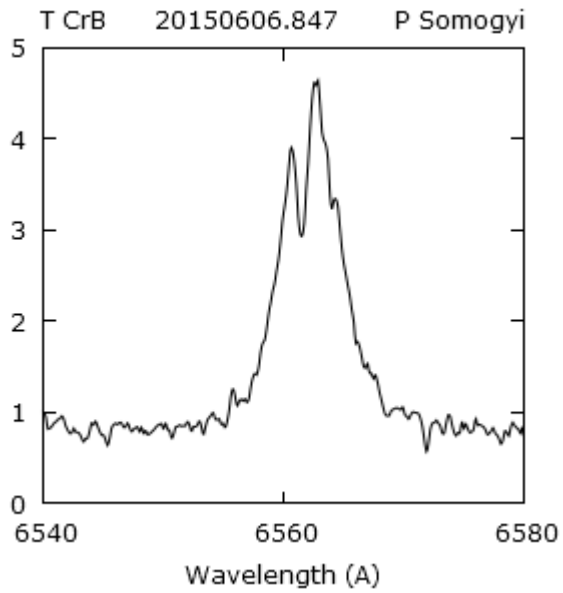
http://adsabs.harvard.edu/abs/2003MNRAS.346..855W

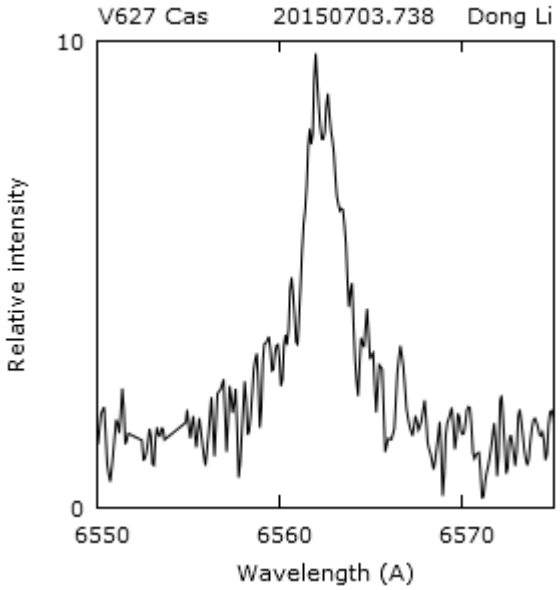
Interesting results of H alpha lines at high resolution by Peter Somogyi and Dong Li
See also Spectra of





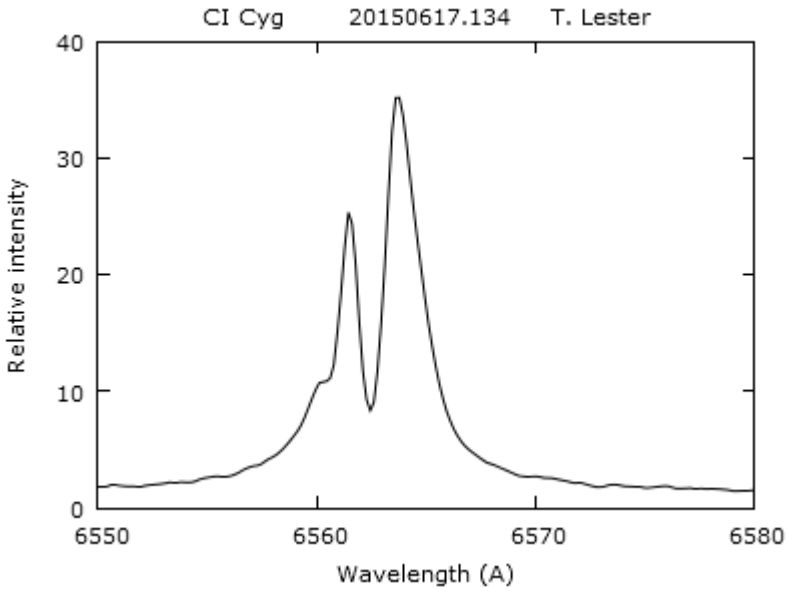


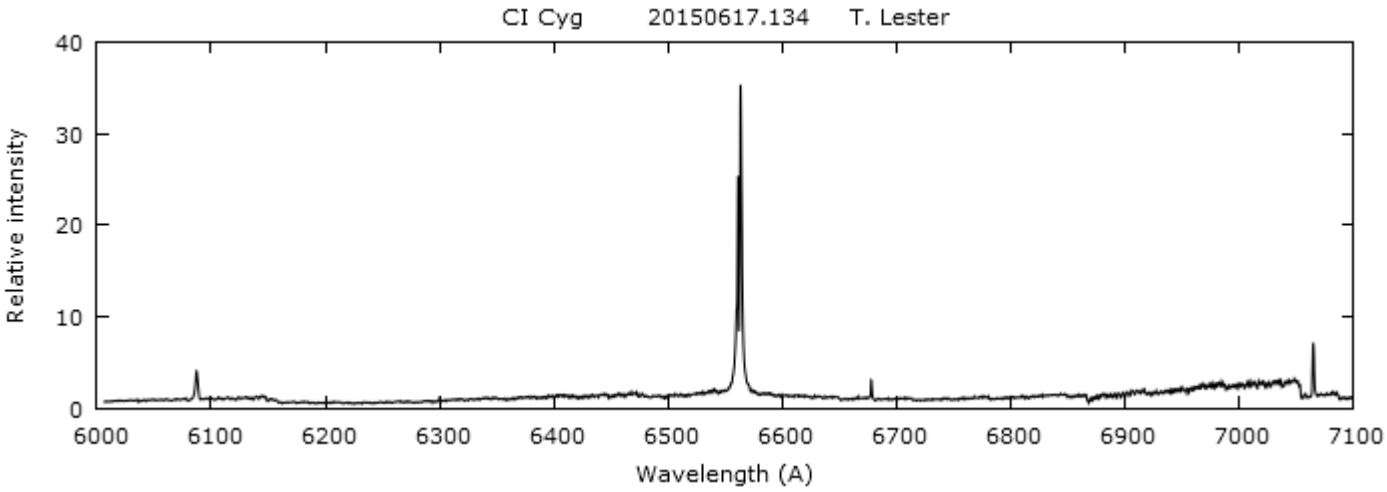


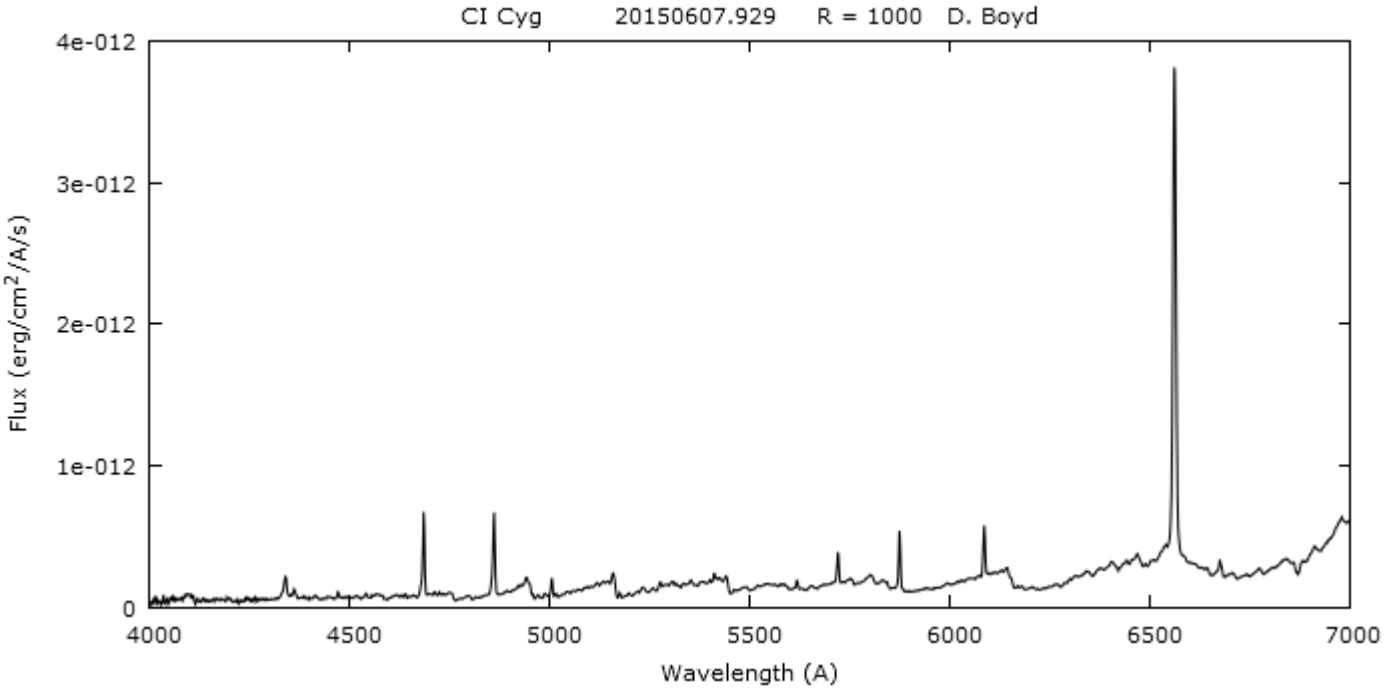


CI Cyg

Coordinates (2000.0)	
R.A.	19 50 11.8
Dec.	+35 41 03.0
Mag V	11

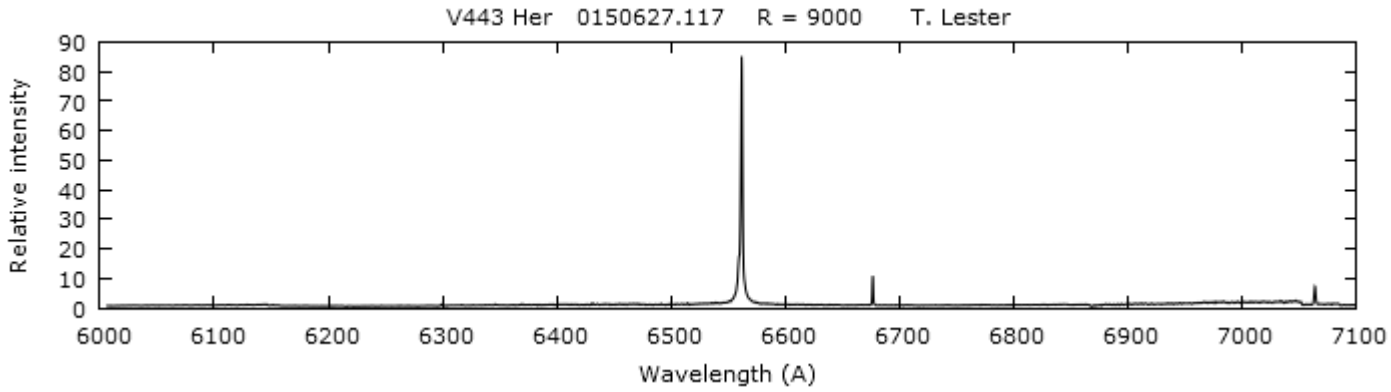


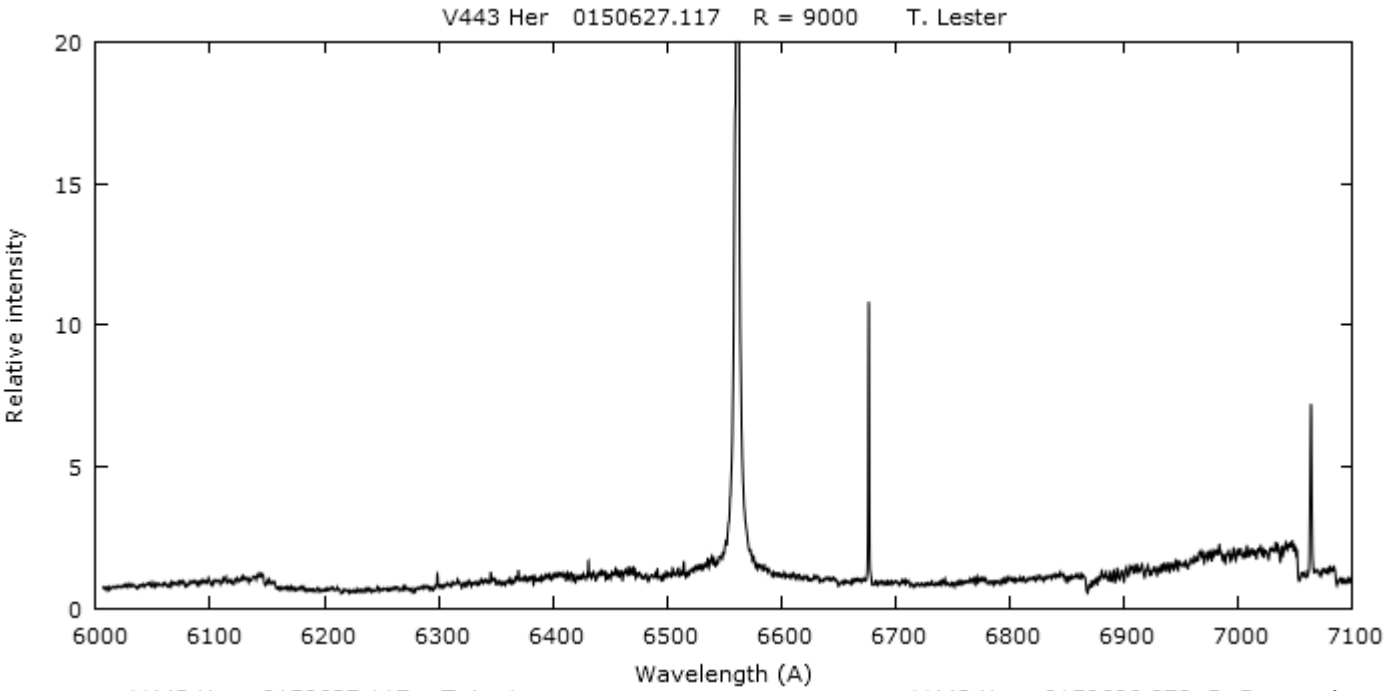


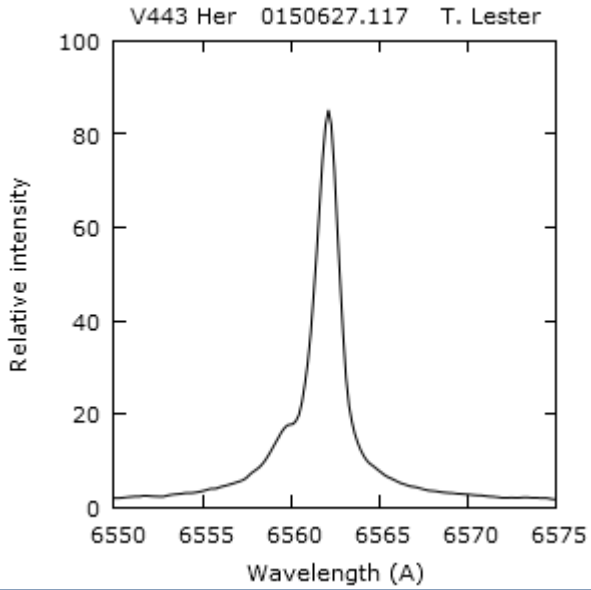


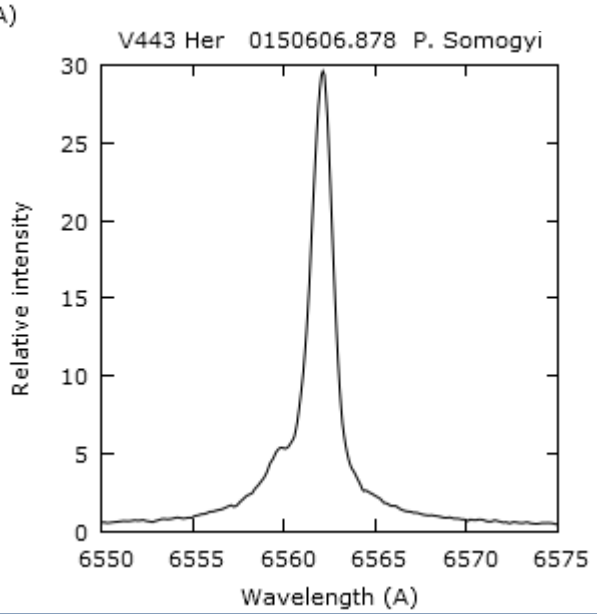
V443 Her

Coordinates (2000.0)	
R.A.	18 22 08.4
Dec.	+23 27 20.0
Mag V	~11.4







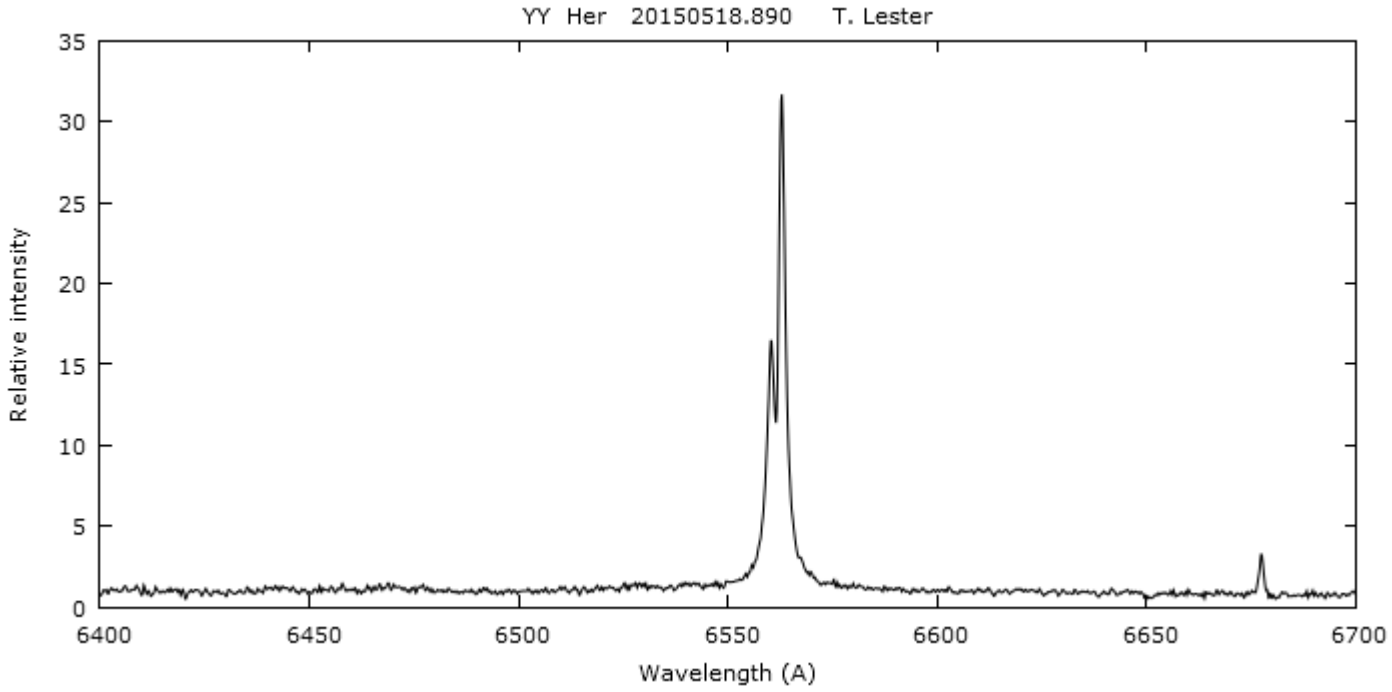


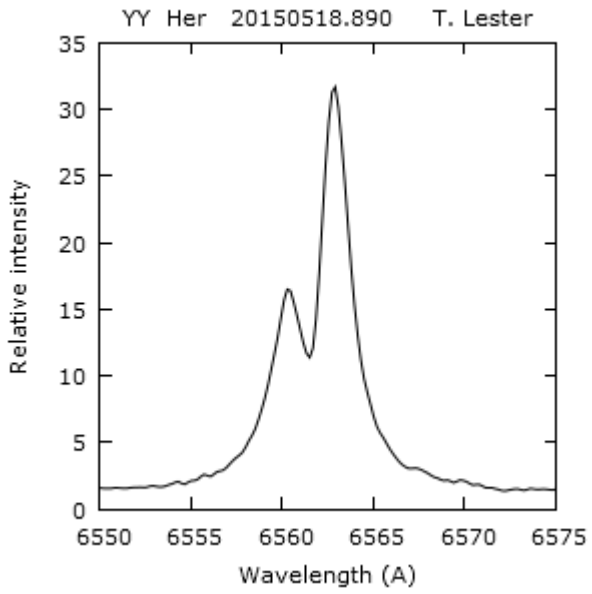
ARAS DATA BASE | http://www.astrosurf.com/aras/Aras_DataBase/Symbiotics/V443Her.htm

YY Her

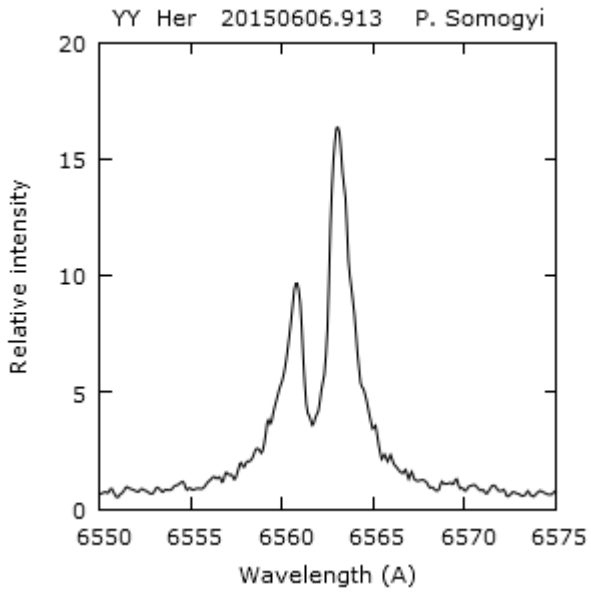
Coordinates (2000.0)	
R.A.	18 14 34.2
Dec.	+20 59 21.3
Mag V	12.8

YY Her is a faint classical symbiotic (mag V ~13)





R = 9000



R = 12000

Nova Sgr 2015 No. 2 forms dust: the event and the physics

Steve Shore

You will likely all have heard by now that the awaited event -- the formation of a dust envelope in the ejecta of nova Sgr 2015 no. 2 -- began about one week ago (around Jun 17-19) and has almost reached its minimum. This i only the second time in the last thirty years that such an event has been seen panchromatically, the last time being V705 Cas 1993.

Observations are ongoing with *Swift* in X-rays (using the XRT) and in the ultraviolet and optical (using UVOT) but with one great addition. This time there are also low resolution spectra (R ~ 1000, not far from Alpy) covering 1600-6000 Å with the grism mounted on the UVOT. Supporting UV photometry is being obtained in several broadband filters but that is secondary to the spectroscopy. At the start of the observations, the source was bright enough that the strongest emission in the optical and the windows in the UV were saturated but now that the flux has dropped almost a factor of 10 (as of this writing) the spectra are all well exposed and taken with a cadence of several days to cover as far as possible the dust event. This is far better than the archival coverage of V705 Cas.

But to put this in context , let me explain one more piece of the physics that was missing in the earlier, more breathless discussion of the dust forming event. As the ejecta expand, the equilibrium temperature of the material drops. That is a hard way of saying that th flux being constant (almost) from the central star, the radiation becomes more ``dilute'' in time and the kinetic energy density in the ejecta decreases with time so the ejecta cool. Even if there is still only a minor radiative loss from the gas, collisions producing emission lines in an optically thin medium rob the kinetic energy of the gas particles to excite the emission that then escapes from the ejecta. The combined effects of this cooling is that if there is any attractive interaction among the gas particles, for instance a neutral interaction caused by the dipole-dipole (mutual polarizability) attraction (this is also called the *van der Waals* force), the atoms can coalesce to form small clusters. This is another way of saying they form large molecules. These grow from sticky collisions until they become, in essence, so large with so many possible modes of vibration that they are really little solids. At this point they are {\it grains}. The stability of these then depends only on the total energy and there is a critical temperature below which they are stable, called the Debye temperature, that depends on the density of the solid (not its volume) and the internal sound speed (rather, the acoustic velocity for a compression, similar to what you'd get in a seismic disturbance in a macroscopic sample). When the energy in the different vibrational modes of the crystal are equally distributed, the matter is at the Debye temperature. It's another way of saying the solid (crystal,m grain) vibrates but doesn't rupture. When the temperature that balances the photon heating with radiative cooling of the grain reaches or falls below this temperature, the solid is stable. This does not guarantee that the cluster will form, no less grow, but it means that once a cluster has formed it will remain without evaporating or shattering. Note, importantly, that this is not a function of ambient density, just the rate at which the mods of the crystal are excited because it is warm.

Now two things can happen and we do not know which is dominant, if either. In a simple condensation process, small nuclei grow (like droplets in clouds) around condensation nuclei (that come from a thermally unstable medium that starts to form blobs) and the instability causes progressively m,ore of these to appear rapidly as the preferred state of the gas shifts from the atomic or small molecular to clusters and hierarchical clusters. In symbiotic stars, those of the so-called *D-type*, the winds form dust somewhere and this drives the mass loss and also produces a characteristic emission signature in the infrared (more on that in a moment). The alternate scenario is that as the UV becomes more transparent, if there is a weak ionizing continuum (above a few eV), then the gas becomes partly ionized and can

induce dipole interactions that are both faster and more efficient than the vn der Waals and the clusters grow by literally attracting particles.

What we know from the UV observations of Sgr 2015 no. 2 is that the UV is becoming stronger, the Fe curtain is lifting, and the ejecta is showing emission from atomic ions (e.g. C II). The successive wavs of brightenings that we discussed a while back, might still be happening but they're being obscured by the dust. The critical temperature is about 1000-1500 K and this is reached (with the observed expansion velocity of the nova) in about 70-90 days (depending on the geometry the observed maximum velocity is always an underestimate). If the ejecta are too optically thin, the matter will become ionized rapidly and this inhibits the coagulation by either mechanism. If, on th other hand, the ionization is too low the nucleation may not be rapid enough to form a thick shell. The observed UV spectrum indicates that a sort of opaque screen is falling over the lines, blocking your view as an external observer but not affecting th incident radiation on the ejecta from the central star, so the most distant matter is where the dust appears to be forming. As it obscures the ejecta, there is another clue to the location of formation. Imagine this is not only in the periphery but throughout the ejecta. Then, since dust is a continuum absorber (not lines, as in a wind), the receding parts of the ejecta are more absorbed than the approaching *if* the dust is uniformly forming *or* forms mainly in the inner ejecta. On the contrary, if dust forms mainly in the periphery then the two sides are roughly equally extinguished. The former produces blueshifted emission (the red side disappears) while the latter produces a more uniform change. So even low resolution spectra can detect the difference. In supernovae, you see this asymmetric effect. In novae, it seems we don't but this is the ideal test case (even in the optical).

Now to continue with the energy budget, consider a grain that absorbs a fraction of the incident light. It isn't just absorbing a line, whatever radiation is incident can be absorbed with an efficiency that depends on the grain composition. Think of a typical mineral. It has a broadlband color but seen spectroscopically has broad bands rather than single lines. This is an effect of the solid, the mutual interaction between the constituent atoms in a lattice or matrix of the solid is so strong that the levels broaden out into bands. So for an incident flux at some wavelength λ F_λ, some fraction is scattered (reflected) -- the fraction called the wavelength dependent *albedo*, A_λ - and some absorbed 1 - A_λ. So the total amount of energy absorbed is the product $(1 - A_\lambda) F_\lambda \pi a^2$. The last factor is the geometric projected area of the grain of radius *a* summed over all possible wavelengths of the incident light. The grain continues to heat until the rate of emission balances that of absorption since the emission rate increases as the temperature rises. The farther the grain is from the central source, the lower the incident flux (recall that the flux varies as $1/d^2$ with distance d) so the total energy emitted produces a progressively lower temperature for the grain as d increases. Since the central source, and inner ejecta that shields the periphery, is always hotter than the grains, and the grain temperature must be below the critical value, the grains will emit in the *infrared* and the total emission depends only on the amount of dust that's formed and not on the grain size. I apologize if this is getting heavy again but you all asked for this. The rise of the infrared is, consequently, the signature of dust formation *if* it is accompanied by a drop in the UV and optical and the total of excess and deficit should be approximately zero if the ejecta completely cover the central source along the line of sight to a distant observer (i.e. you). This is precisely what was seen for V705 Cas, and inferred for such novae as DQ Her 1934 for which dust formation was first hypothesized to explain the deep extended minimum in the optical light curve (long before UV observations and satellites).

Solids, because they also scatter light, act as mirrors (albedo again). But they are irregular and not necessarily uniformly distributed. You know that polaroid sunglasses work best in reducing the intensity of

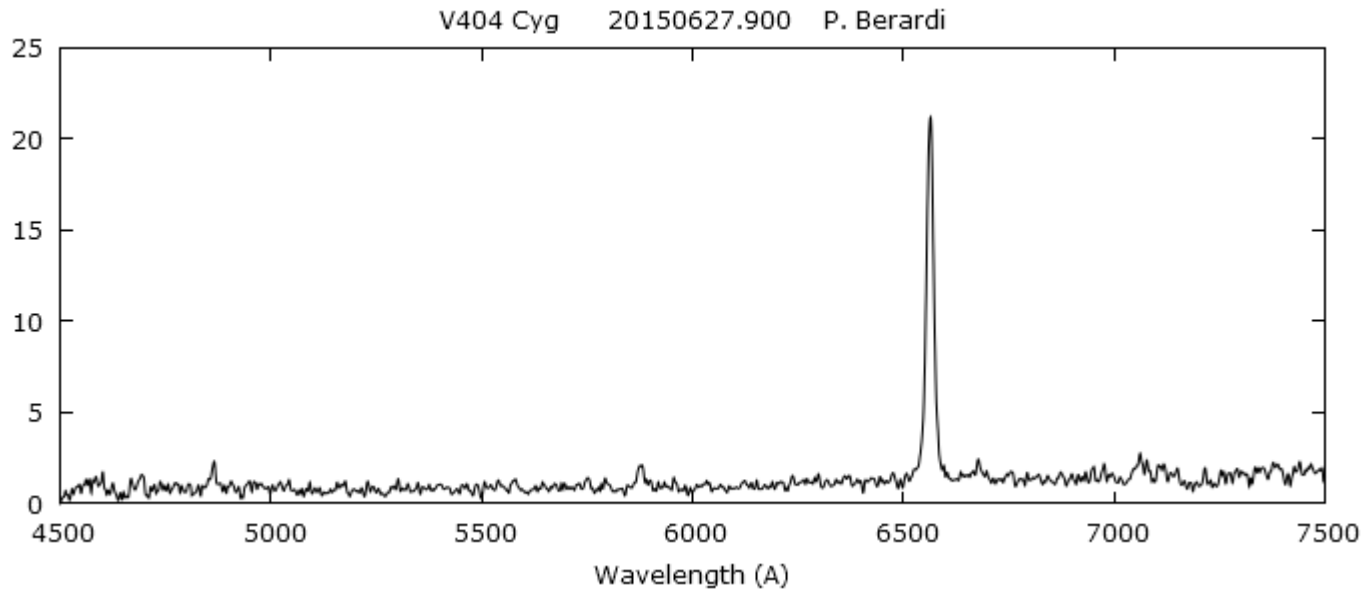
reflected light because, like scattering, it is *polarized.* So polarization is a signature of the solid, since thermal emission is incoherent and unpolarized. For the moment, the Liverpool Robotic Telescope is offline, Murphy's Law strikes again, but there are others who will be getting such photometric (and spectrophotometric) measurements during this event and its recovery. As the expansion thins out the ejecta, the optical depth of the dust drops so eventually the infrared emission remains but the optical an UV recover as you can see through the ejecta again to the inner parts and the central star, so the decline returns to its regularly scheduled rate. We should see this in a few months, the duration of the deep minimum depends on the ejecta mass and maximum expansion velocity. None of this happens in a wind, in which the dust forms at some distance through which the matter continually flows.

Perhaps the most spectacular consequence of dust formation in these beasts is that you can actually pick up a piece of the ejecta to study it. More precisely, the grains are expelled into the interstellar medium where they drift along with all other dust from all the various stellar sources (e.g.l red giant and supergiant winds, supernova explosions) but have distinctive compositions because of the nuclear processing in the TNR stage of the explosion (about which there have already been some notes some time ago). Because the nuclear processing leading to the explosion favors the production of proton rich isotopes (like ^{15}O and ^{13}N) and also continues into the Si and S range, there are very distinctive isotopic patterns that are come from novae and no other known Galactic sources. These grains, when mixed into the other garbage, become part of the star formation process and, in protostellar disks, solidify and grow into planetesimals and meteoritic parent bodies. OK, they are rare but they stand out in any sample and, in meteorites, there is a small population of so-called *pre-solar grains* that actually show the Si and S isotopic ratios predicted for novae. I mean very few, but in meteorites like Murchison (a fall in Australia in 1969, part of which is on display in the US at the National Museum of Natural History) some of these grains have been recovered (see
http://home.dtm.ciw.edu/users/lrn/preprints/nittler-omeg07.pdf
http://arxiv.org/pdf/astro-ph/0405332.pdf
https://journals.uair.arizona.edu/index.php/maps/article/viewFile/15454/15442

This is one of the very few times you can think that there are components of you that were also formed in nova explosions and dispersed in the grains that come from this relatively rare class.

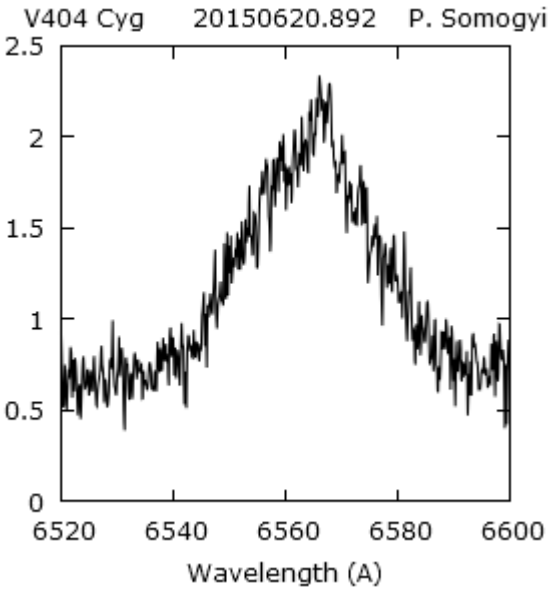
So the bottom line is *keep monitoring this nova spectroscopically.* It will be faint for a while, but you've all done fainter and at lower resolution it will still be valuable to have the coverage. And you will be able to get an idea of what happens during the dust formation in any object, including winds, by following this event.

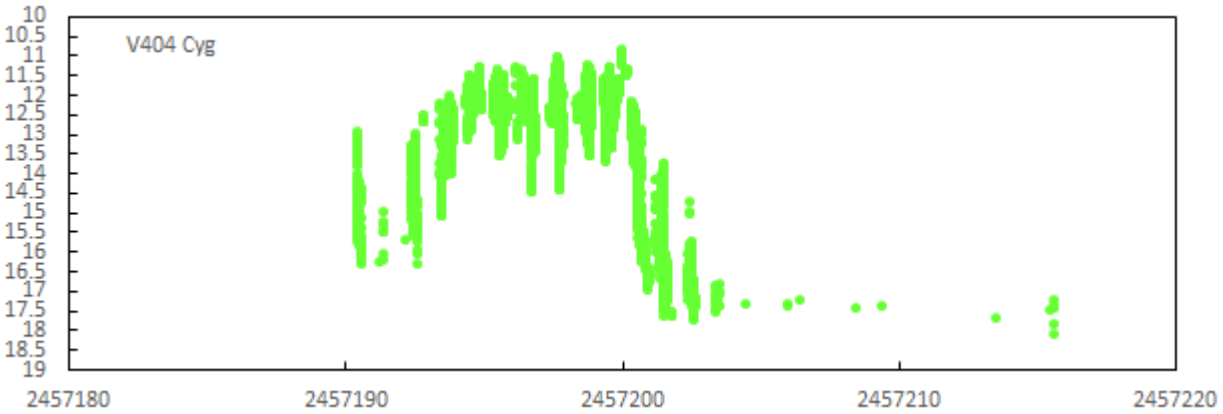
Steve Shore,
25-06-2015



The X-ray nova and LMXB (low mass x-ray binary) V404 Cyg undergone a bright outburst in june.
See for instance
http://www.astronomerstelegram.org/?read=7659
For a description of the spectrum

Paolo Berardi and Peter Somogyi obtained two spectra of this rare event ; a challeging target





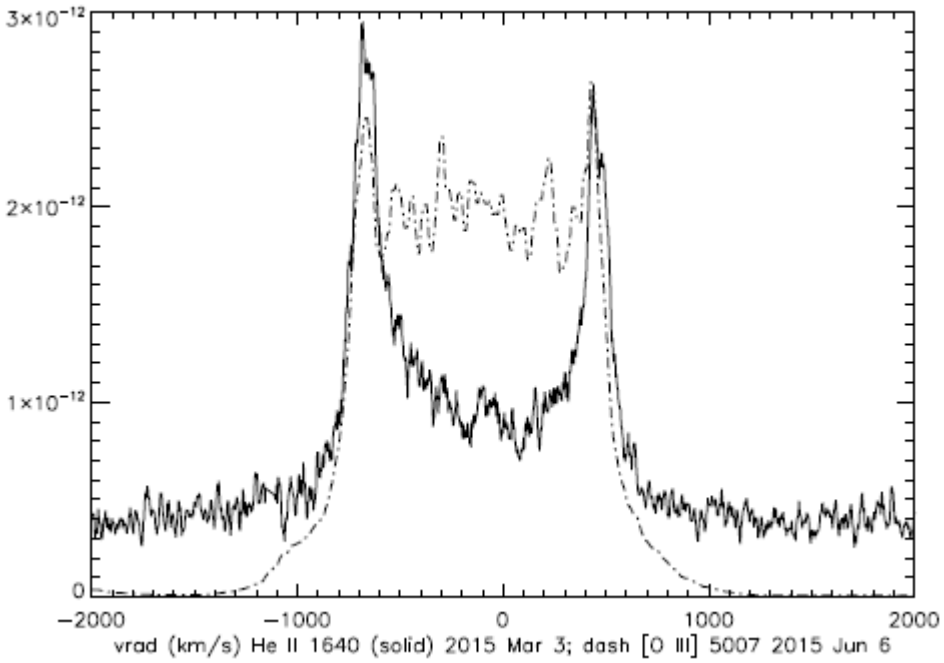
The AAVSO light curve of the outburst
showing the strong oscillations during all the phenomenon

AG Dra, observed with *Swift*

A brief notice. Observations with *Swift*, both grism (UV and optical) and XRT (X-rays) around mid-May came up empty. There are no detectable X-rays but since the source was weak for XMM-Newton and ROSAT, this isn't a great surprise. More interesting is the comparison of a single STIS/HST sequence from 2013 Aug and the latest Swift grism spectra. The flux levels are virtually the same, within about 10-15\%, as they were through most of he spectrum but not between 2000 and 2500\AA. This may be a poor calibration (this is a known problem, as is the second order contribution to the spectrum) or it may be real. The mid-UV is brighter by about 20\% than it had been while the boundary portions remain identical. I don't know many mechanisms that could do this and not leave other spectral signatures, e.g. Fe emission lines, but it's possible that this is a flux excess. Rather than implying a temperature, it's likely indicating a change in opacity. Observations have been temporarily halted because of the activity of both N Sgr 2015 no.2 and V404 Cyg, a black hole binary (period of about one week, similar to several other systems such as Cug X-3) that has gone into its first outburst since 1989 (it's produced a flood of ATel communications but worth reading). This is almost an SS 433 type system so it would be worth a low resolution try (Alpy, for instance).

V1369 Cen, V339 Del

Just a quick note. Observations were taken of V1369 Cen with FEROS at ESO and HST/STIS a week ago and of V339 Del from NOT and HST/Swift about a month ago. Both are clearly in the deep nebular stage post-supersoft turnoff. But what is quite unexpected and (I think) lovely is that the V1369 Cen profiles on UV lines are completely different than the FEROS optical data. The two (see figure) show some features in common but few. But this may indicate an important measurements, almost by chance: the small aperture was used for the UV, with a side of 0.2 arcsec. In the optical, a 1. arcsec fiber was used. The profiles fit a narrow cone or individual filaments in the UV while the larger optical fiber would have covered the source completely. So it looks like the ejecta are resolved spatially and this implies a distance of 2-3 kpc (to produce a size of 0.4 arcsec, about twice the UV small aperture). The comparison is striking when you compare a permitted recombination line, e.g. He II 1640\AA, and a forbidden line with about the same ionization potential (optical, [O III] 5007 Å). The V339 Del status is a continuing decline, the ejecta are now recombining slowly without further ionization from the central source, hence the expansion is controlling everything. The density continues to follow the same law for ballistic expansion we discussed and there's no indication that the ejecta are resolved. The UV absorption lines are definitely present, Si IV 1400, C IV 1550, N V 1240 Å, with velocities that have not changed during these months. But to say why is another question, and it's best to leave that for the next newsletter.



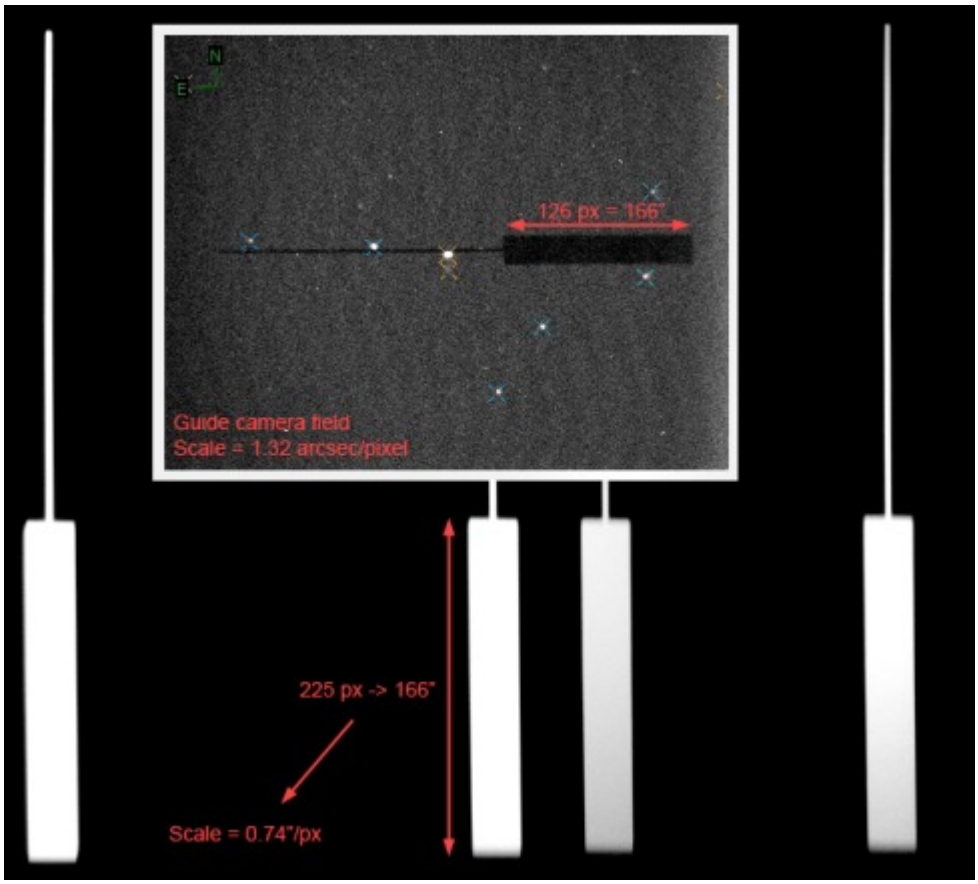
V 1369 Cen - 2015 June, 6
In optical (ESO/FEROS) and UV HST/STIS

A photo-ionized nebula observed around the dwarf nova PNV J03093063+2638031

Paolo Berardi

The optical transient PNV J03093063+2638031 was observed by ARAS spectroscopists shortly after its discovery occurred on 29 October 2014. Our spectra have revealed that the object is a dwarf nova in outburst (ref. CBAT TOCP). Time resolved photometry confirmed the WZ Sge type on the detection of early superhumps (VSNET).

We took several spectra at low (R~1000) and medium (R~6000) resolution, from 30 october to 2 november. The PNV faded very quickly, bringing it beyond the reach of amateur telescopes in a few days.



I found the "Y scale" of 2d spectrum equal to 0.74 arcsec/pixel. This is derived from the length of the slit expressed in arcsec, in turn obtained by measuring its length on the sky (inset: guide camera field

Recently, on 30 June 2015, Astronomy & Astrophysics published an interesting article by U. Munari et al. concerning the discovery of a photo-ionized spatially resolved nebula around the star: http://arxiv.org/abs/1506.08526
Briefly, in some long-slit spectra taken at Asiago Observatory - Italy, the hydrogen Balmer emission lines showed features spatially extending more than the stellar continuum. The presence of a spherical nebula around the star was deduced from the analysis of East-West and North-South slit aligned spectra. There is a clear physical association to the dwarf nova because it has been observed that the nebula expanded over time and turned invisible when the superoutburst has ended (recombination completed). Furthermore, there is no hint of the nebula in the historic red Palomar Sky Survey plates taken during quiescence phases.

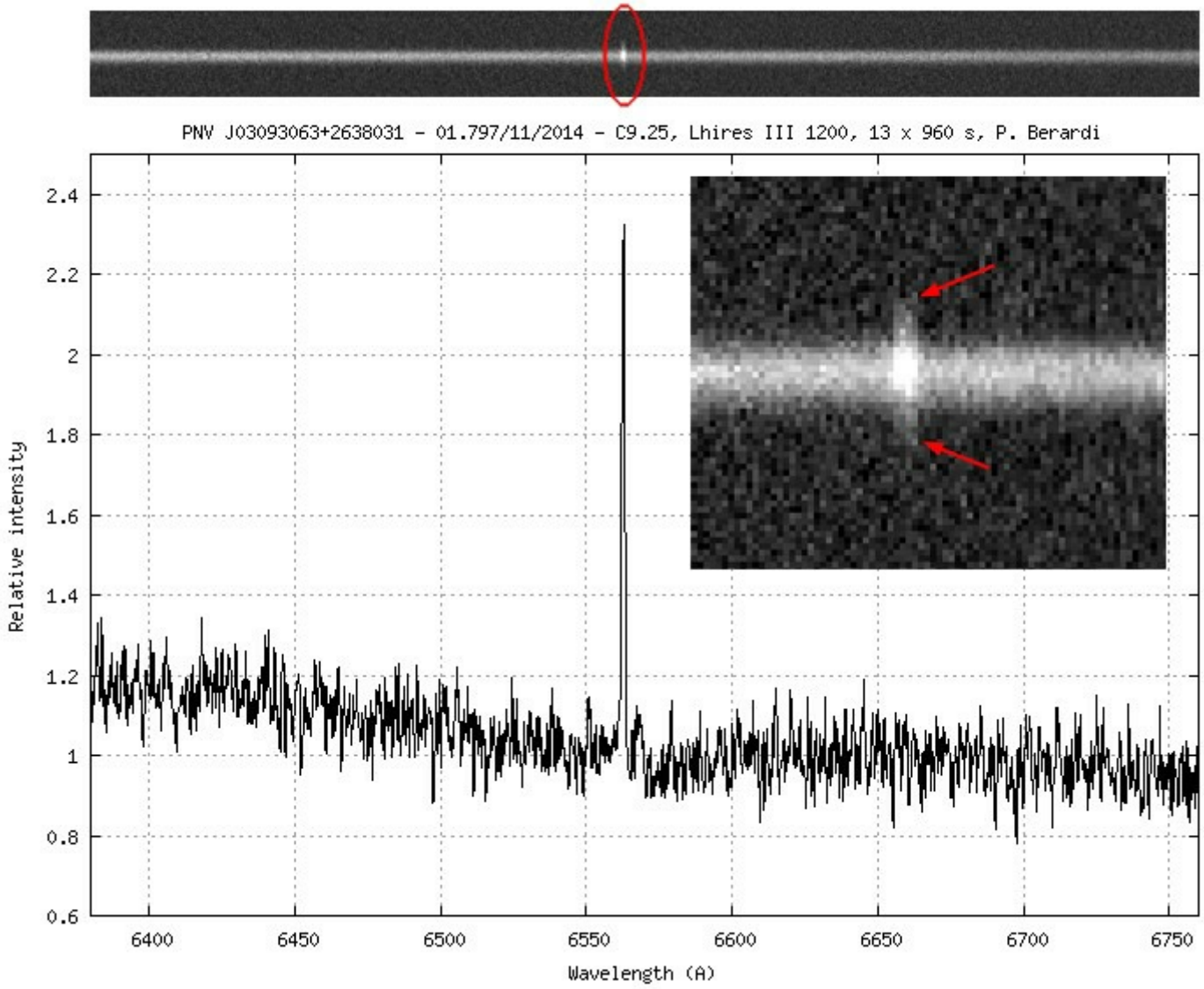
The nebula is also appreciable in the mid-res spectra taken with Lhires III and C9.25 on 1st and 2nd november. From the 1st november two-dimensional spectrum I tried to measure the angular size along the slit axis (E-W oriented).

The spatial FWHM (vertical profile) of H-alpha line comprising the nebula is about 11 pixels (8.1 arcsec). To find the effective size we have to consider the enlargement due to the atmospheric turbulence and small guiding errors. For this reason the stellar continuum FWHM is 7 pixels (5.2 arcsec). Under the assumption of Gaussian profiles, the corrected nebula FWHM along the slit axis should be approximately 6 arcsec. This is only an estimate also because of poor SNR of The nebula spectrum and relatively small focal length (and aperture) of the telescope.

A photo-ionized nebula observed around the dwarf nova PNV J03093063+2638031

Paolo Berardi

Paolo Berardi,



The spectral width of H-alpha emission is very narrow, comparable to the instrumental FWHM, and the line centered at the same wavelength along its vertical extension. This indicates that the gas is not fast expanding or rotating.
The A&A article reports that the detection of a nebula around a WZ Sge star is probably a unique feature. It is suggested to search for similar nebulae around the same type of objects that will be observed in the future. This requires long slit spectrographs. Hopefully it will be a possibile field of research also for amateurs.

Paolo Berardi
25-06-2015

Novae

Early optical spectra of nova V1369 Cen show presence of Lithium
L. Izzo, M. Della Valle, E. Mason, F. Matteucci, D. Romano, L. Pasquini, L.Vanzi, A. Jordan, J. M. Fernandez, P. Bluhm, R. Brahm, N. Espinoza, R. Williams
http://arxiv.org/pdf/1506.08048v1.pdf

The Distance to Nova V959 Mon from VLA Imaging
Linford, J. D.; Ribeiro, V. A. R. M.; Chomiuk, L.; Nelson, T.; Sokoloski, J. L.; Rupen, M. P.; Mukai, K.; O'Brien, T. J.; Mioduszewski, A. J.; Weston, J.
The Astrophysical Journal, Volume 805, Issue 2, article id. 136, 12 pp. (2015)
http://arxiv.org/abs/1503.03899

The slow decline of the Galactic recurrent novae T Pyxidis, IM Normae, and CI Aquilae
Caleo, Andrea; Shore, Steven N.
Monthly Notices of the Royal Astronomical Society, Volume 449, Issue 1, p.25-33
http://arxiv.org/abs/1502.06763

OGLE Atlas of Classical Novae I. Galactic Bulge Objects
P. Mroz, A. Udalski, R. Poleski, I. Soszynski, M. K. Szymanski, G. Pietrzynski, L. Wyrzykowski, K. Ulaczyk, S. Kozlowski, P. Pietrukowicz, J. Skowron
http://arxiv.org/abs/1504.08224

Photoionization Heating of Nova Ejecta by the Post-outburst Supersoft Source
Cunningham, Timothy; Wolf, William M.; Bildsten, Lars
http://arxiv.org/abs/1501.05690

SALT observations of southern post-novae
T. Tomov, E. Swierczynski, M. Mikolajewski, K. Ilkiewicz
http://arxiv.org/abs/1502.03462

Symbiotics

The Curious Case of ASAS J174600-2321.3: an Eclipsing Symbiotic Nova in Outburst?
Stefan Huemmerich, Sebastian Otero, Patrick Tisserand, Klaus Bernhard
JAAVSO Volume 43,2015
http://www.aavso.org/sites/default/files/jaavso/ej295.pdf

Periods in a 87 Years Light Curve of the Symbiotic Star MWC 560
Elia M. Leibowitz, Liliana Formiggini
http://arxiv.org/abs/1506.05584

Symbiotic stars in X-rays III: long term variability
N. E. Nuñez, T. Nelson, K. Mukai, J. L. Sokoloski, G. J. M. Luna
http://arxiv.org/abs/1505.00633

Accretion Flow and Disparate Profiles of Raman Scattered O VI λλ1032, 1038 in the Symbiotic Star V1016 Cygni
Heo, Jeong-Eun; Lee, Hee-Won
Journal of the Korean Astronomical Society, vol. 48, no. 2, pp. 105-112
http://jkas.kas.org/journals/2015v48n2/v48n2p105_hwlee.pdf

The first symbiotic stars from the LAMOST survey
Jiao Li, Joanna Mikołajewska, Xue-Fei Chen, A-Li Luo, Alberto Rebassa-Mansergas, Yonghui Hou, Yuefei Wang, Yue Wu, Ming Yang, Yong Zhang, Zhan-Wen Han
http://arxiv.org/abs/1505.06569

The Astronomer's Telegram

Formation of Dust in Nova Sgr 2015b

ATel #7643; Frederick M. Walter (Stony Brook University)

The bright nova N Sgr 2015b (PNV J18365700-2855420) is fading rapidly at optical wavelengths as reported in, for example, VSNet-alert 18731 and AAVSO Alert notice 519. Observations with the SMARTS/Andicam dual-channel photometer on the SMARTS/CTIO 1.3m telescope show a simultaneous brightening at long wavelength. From MJD 57173.8 through MJD 57187.9 the V magnitude faded by 2.0 mag; J faded by 0.92 mag; the Ks magnitude brightened by 0.25 mag. This is likely due to the formation of dust on the line of sight. The dust appears to be optically thick at least through the J-band.

The nova remains bright with V=7.9 and K=4.5 on MJD 57187.9 (2015 June 14 UT). The near-IR magnitudes are suspect because core of the image is currently saturated at H, and in the non-linear part of the response at K, and are best treated as lower limits.

We urge observers with near-IR spectroscopic capability and with near-IR and mid-IR cameras to monitor the formation of the dust.

Meanwhile, we continue to monitor this nova photometrically in BVRIJHK and spectroscopically with the Chiron echelle at R=78,000. There are prominent absorption systems in H-beta, Fe II 517 nm, and Na D at velocities of -700, -800, -1600, and -1800 km/s. Details of the line profiles change nightly, but no gross changes in line profiles seem to coincide with the dust formation.

About ARAS initiative

Astronomical Ring for Access to Spectroscopy (ARAS) is an informal group of volunteers who aim to promote cooperation between professional and amateur astronomers in the field of spectroscopy.

To this end, ARAS has prepared the following roadmap:

• Identify centers of interest for spectroscopic observation which could lead to useful, effective and motivating cooperation between professional and amateur astronomers.
• Help develop the tools required to transform this cooperation into action (i.e. by publishing spectrograph building plans, organizing group purchasing to reduce costs, developing and validating observation protocols, managing a data base, identifying available resources in professional observatories (hardware, observation time), etc.
•Develop an awareness and education policy for amateur astronomers through training sessions, the organization of pro/am seminars, by publishing documents (web pages), managing a forum, etc.
• Encourage observers to use the spectrographs available in mission observatories and promote collaboration between experts, particularly variable star experts.
• Create a global observation network.

By decoding what light says to us, spectroscopy is the most productive field in astronomy. It is now entering the amateur world, enabling amateurs to open the doors of astrophysics. Why not join us and be one of the pioneers!

Be Newsletter
Previous issues :
http://www.astrosurf.com/aras/surveys/beactu/index.htm

Contribution to ARAS data base
From 01-05 to 30-06-2015

P. Berardi
F. Boubault
T. Bohlsen
D. Boyd
C. Buil
P. Dubreuil
J. Edlin
P. Fosanelli
O. Garde
K. Graham
J. Guarro
D. Li
F. Mete
T. Lester
J. Montier
J. Powles
C. Rives
U. Sollecchia
P. Somogyi
F. Teyssier
E. Wiley

Submit your spectra

Please :
- respect the procedure
- check your spectra BEFORE sending them
Resolution should be at least R = 500
For new transcients, supernovae and poorly observed objects,
SA spectra at R = 100 are welcomed

1/ reduce your data into BeSS file format
2/ name your file with: _novadel2013_yyyymmdd_hhh_Observer
novadel2013: name of the nova, fixed for this object

Exemple: _chcyg_20130802_886_toto.fit

3/ send you spectra to
Novae, Symbiotics : François Teyssier
Supernovae : Christian Buil
to be included in the ARAS database

Download previous issues :
http://www.astrosurf.com/aras/novae/InformationLetter/InformationLetter.html

Further information :
Email francoismathieu.teyssier at bbox.fr