



# Eruptive stars spectroscopy

## Cataclysmics, Symbiotics, Novae, Supernovae



ARAS Eruptive Stars  
Information letter n° 10 11-10-2014

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**Nova Cen 2013** : nebular phase, slowly declining

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**AG Dra, AG Peg, BF Cyg, CH Cyg, CI Cyg, EG And, Z And, UV Aur, V627 Cas**

#### Microquasars

**SS433** New radio and optical flare in september  
Cygnus X1

#### Comments about Nova Cyg 2014 By Steve Shore

#### Recent publications about eruptive stars

### 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](http://www.astrosurf.com/aras/Aras_DataBase/DataBase.htm)

#### ARAS BeAM

<http://arasbeam.free.fr/?lang=en>

#### Observing

**V339 Del = Nova Del 2013**

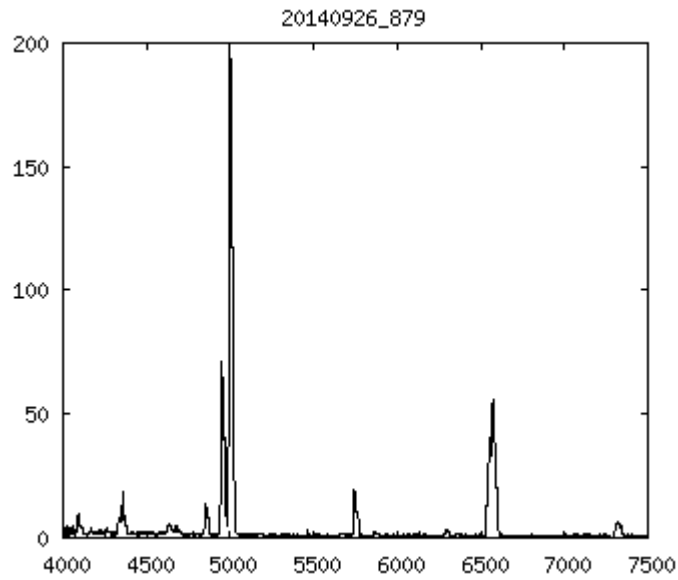
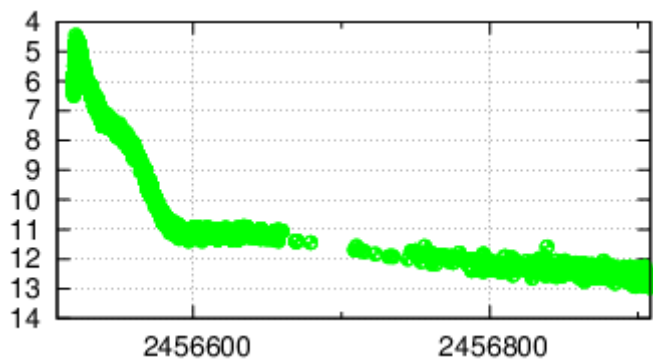
**Request from S. Shore :**

« We have observations coming up of V339 Del, with STIS/GHST a NOT, and any coverage by the group will be a wonderful gift »

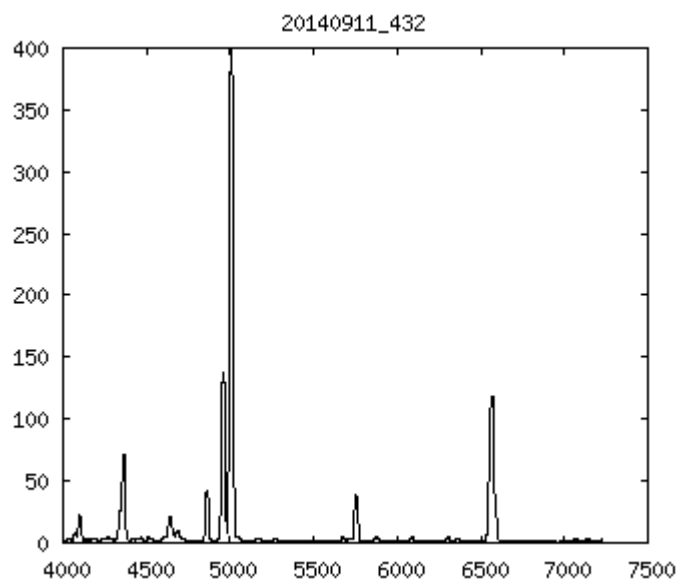
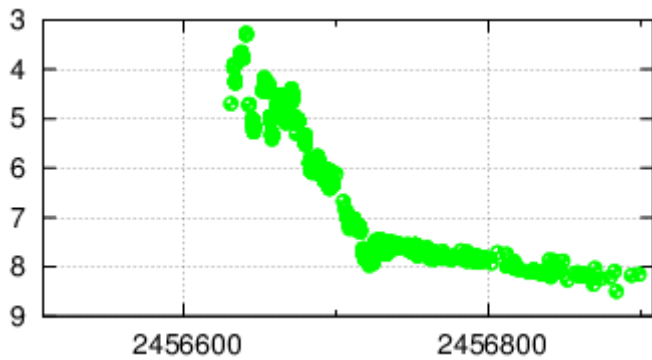
Acknowledgements : V band light curves from AAVSO photometric data base  
<http://www.aavso.org/>

## Status of current novae

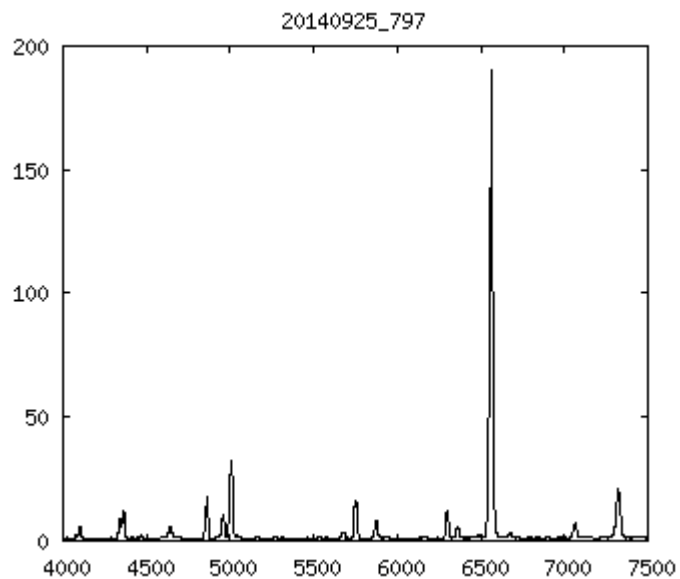
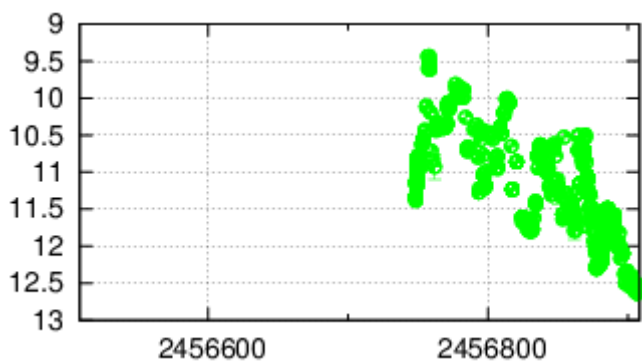
| Nova Del 2013      | V339 Del   |
|--------------------|------------|
| Maximum            | 14-08-2013 |
| Days after maximum | 421        |
| Current mag V      | 12.8       |
| Delta mag V        | 8.3        |



| Nova Cen 2013      | V1369 Cen  |
|--------------------|------------|
| Maximum            | 14-12-2013 |
| Days after maximum | 301        |
| Current mag V      | 8.2        |
| Delta mag V        | 4.9        |



| Nova Cyg 2014      | V2659 Del  |
|--------------------|------------|
| Maximum            | 09-04-2014 |
| Days after maximum | 184        |
| Current mag V      | 12.8       |
| Delta mag V        | 3.4        |



**Nova Cyg 2014 = V2659 Cyg**

**Luminosity**

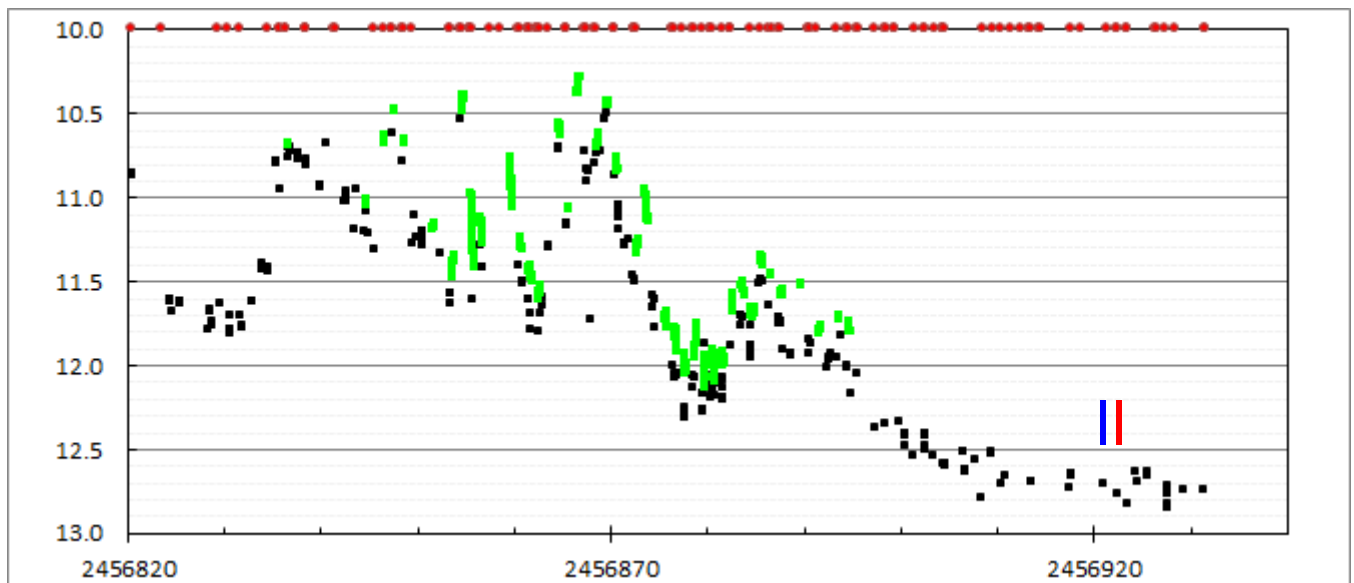
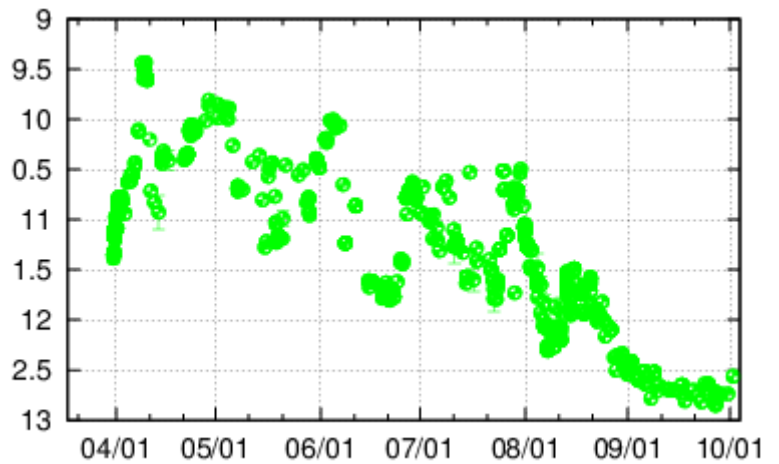
Mag V = 12.7 (30-09-2014)

In September, the strong oscillations which characterized the first decline stopped ; the decline becomes smooth.

**Spectroscopy**

Nova Cyg enters in nebular phase with strong [OIII] emission

**Observing** : ungoing observations during nebular phase

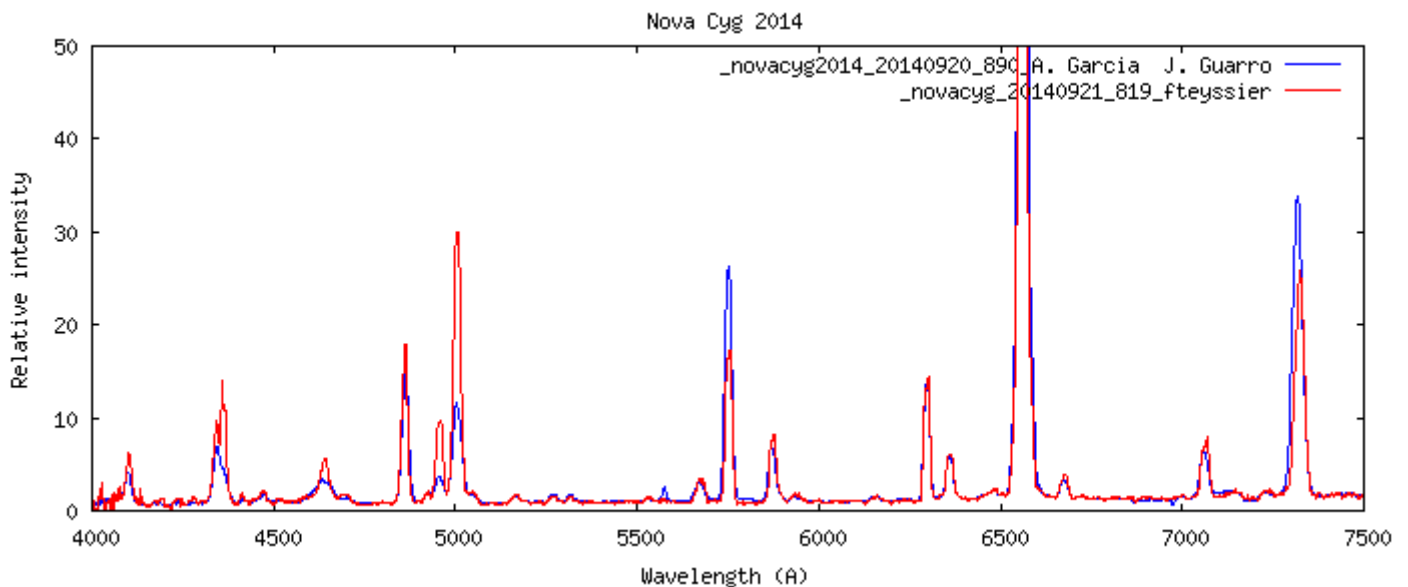


**Spectroscopy**

High ionisation lines increased slowly during September. Between 20<sup>th</sup> and 21<sup>th</sup> of September a fast evolution is detected with noticeably a sudden increase of [OIII] 5007, 4959 and 4359 lines . [OI] stable and [OII] 7320, 7325 (blend) decrease.

AAVSO V band : black squares

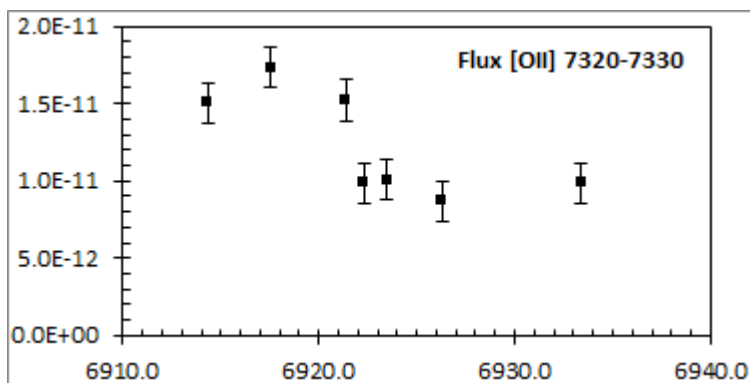
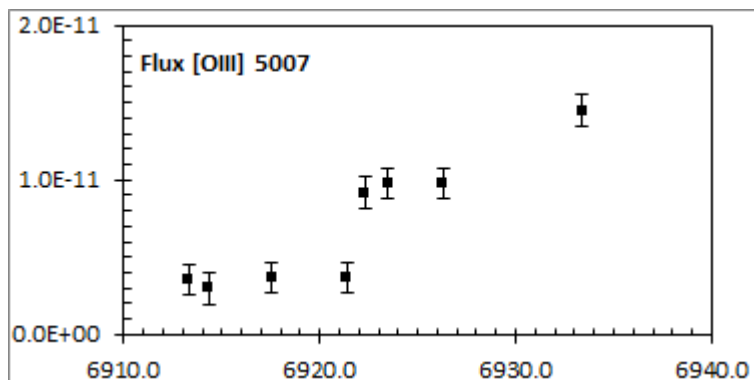
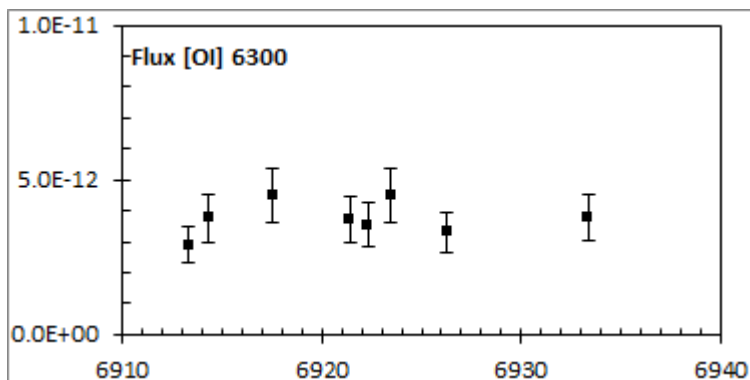
Joan Guarro and Antonio Garcia : green squares



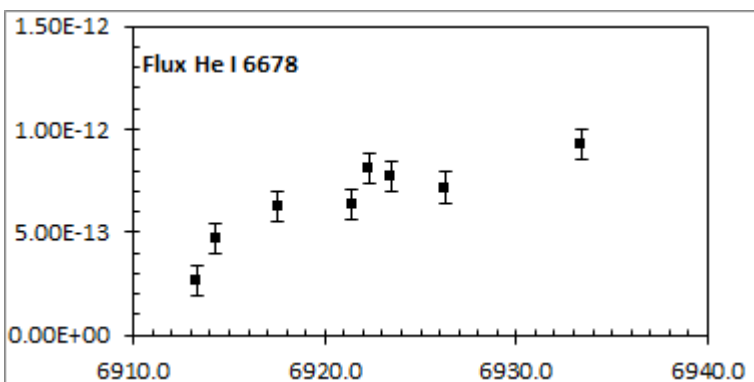
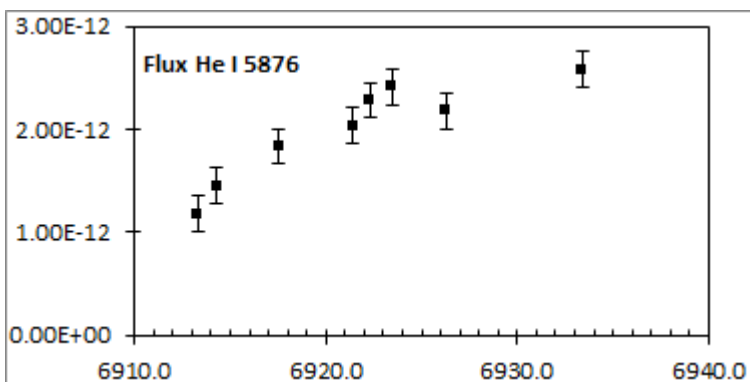
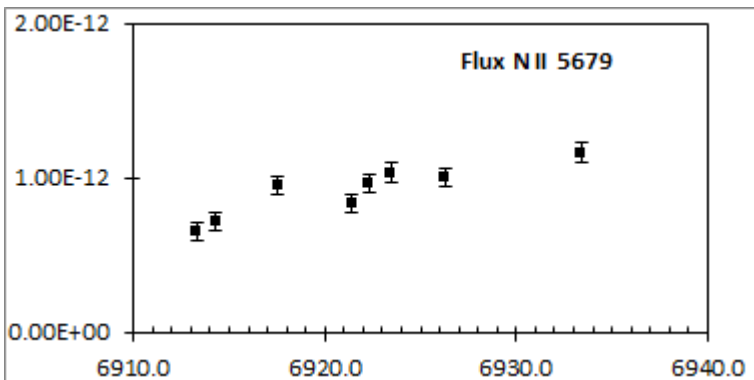
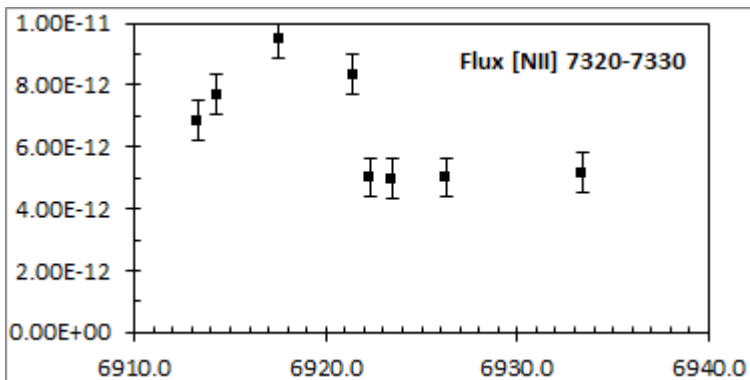
Flux in erg/s/cm<sup>2</sup>/Å

The spectra are not dereddened

X scale : JD - 2450000



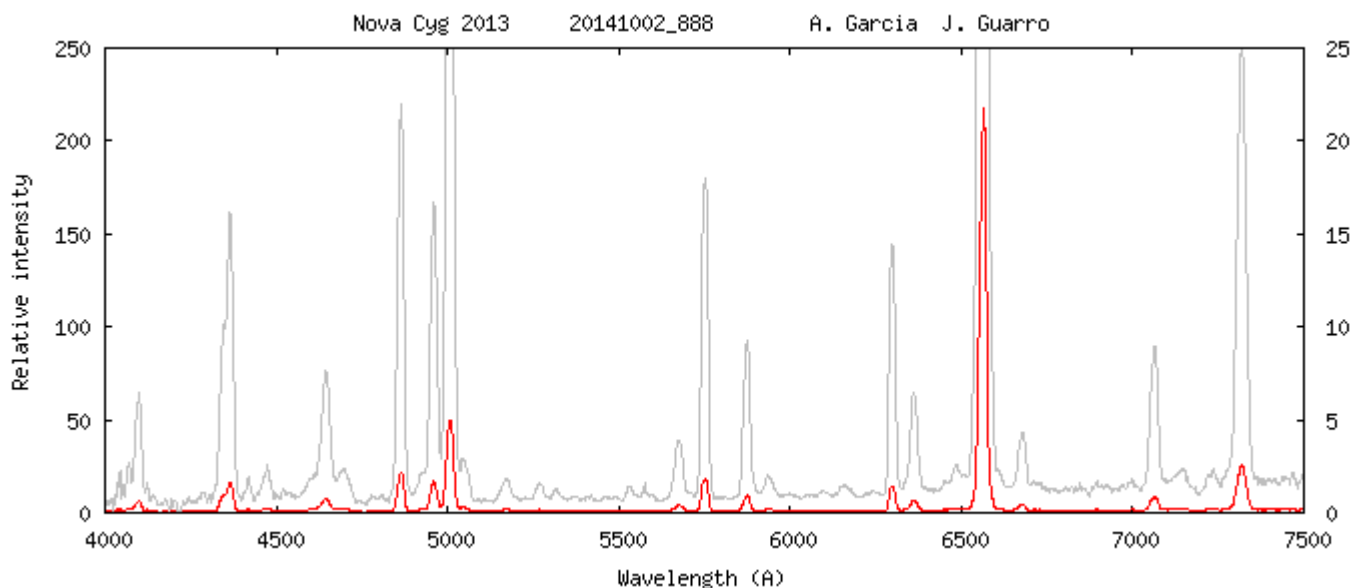
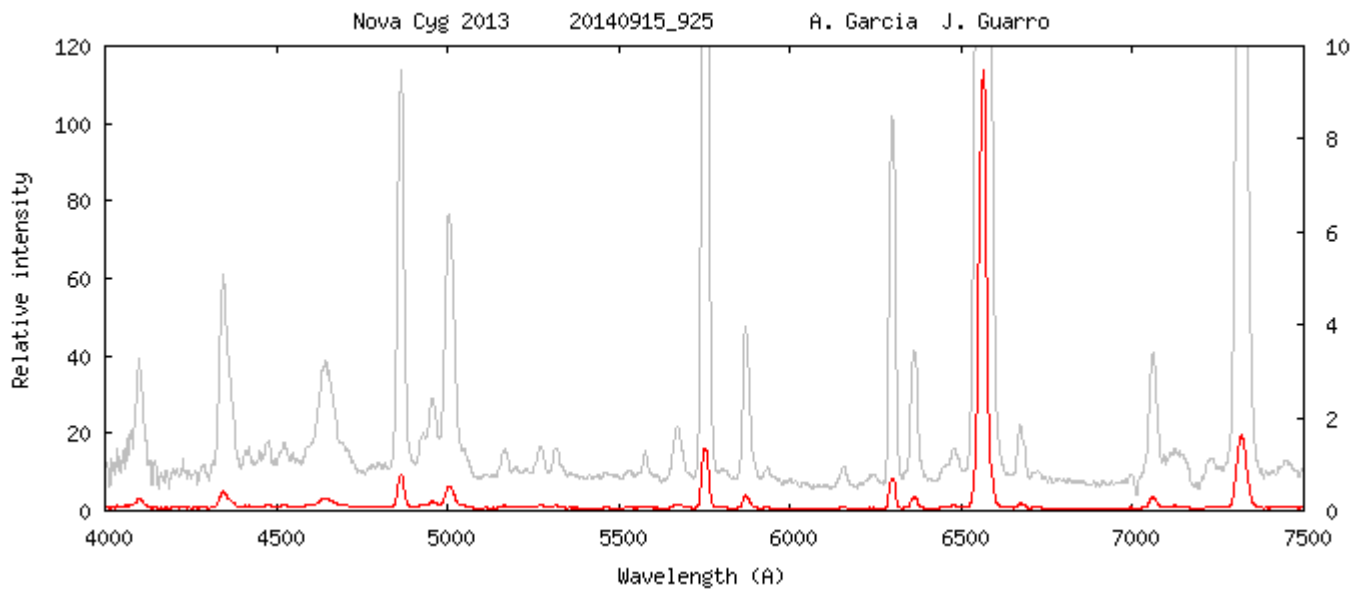
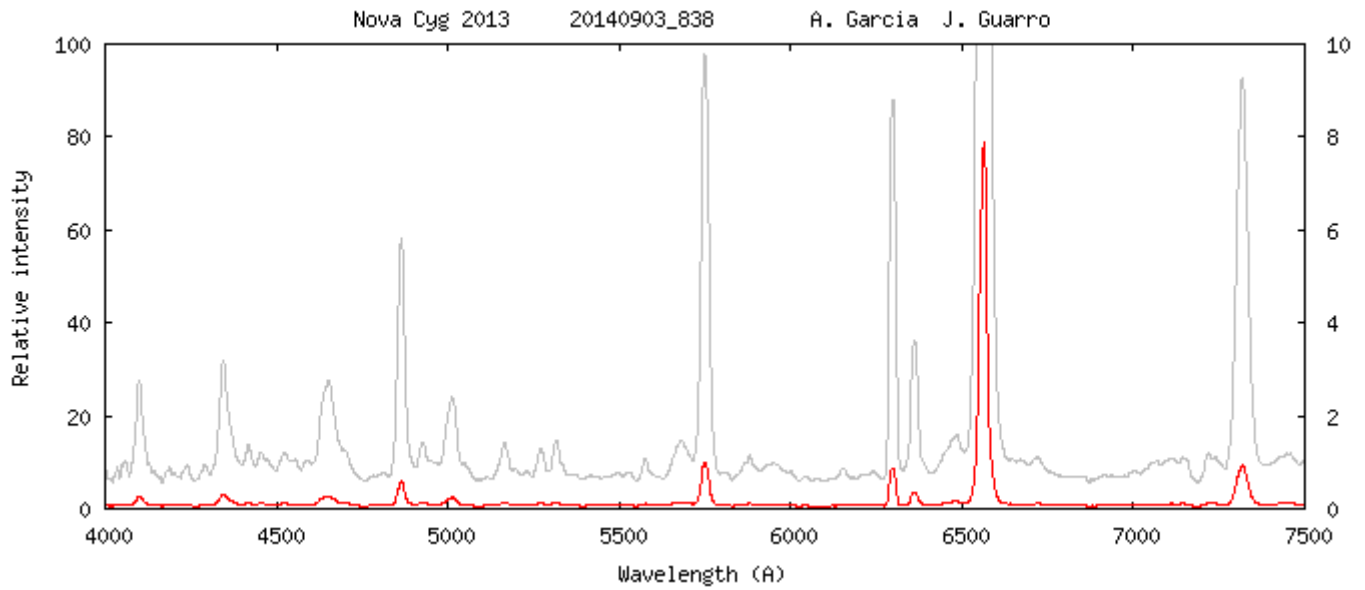
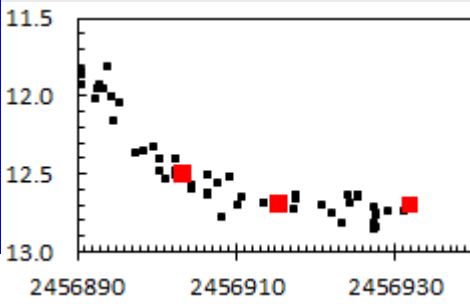
The [OIII] 5007 flux (also 4959 and 4359, not shown in these graphs) suddenly increased between 20<sup>th</sup> and 21<sup>th</sup> of september, 2014, while [OI] 6300 (and 6363) remains almost constant and [OII] decreases.

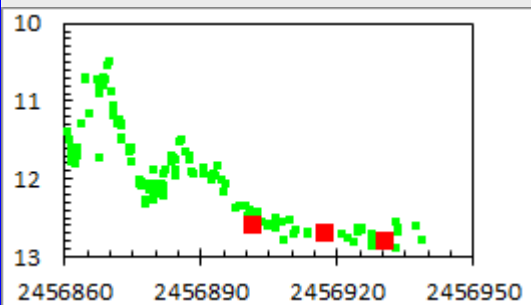


**Observers** : Tim Lester | Christian Buil | Paul Gerlach | Olivier Garde | François Teyssier | Jacques Montier | Antonio Garcia | Joan Guarro  
Paolo Berardi | Franck Boubault | Peter Somogyi | Miguel Rodriguez | F. Boubault | O. Thizy

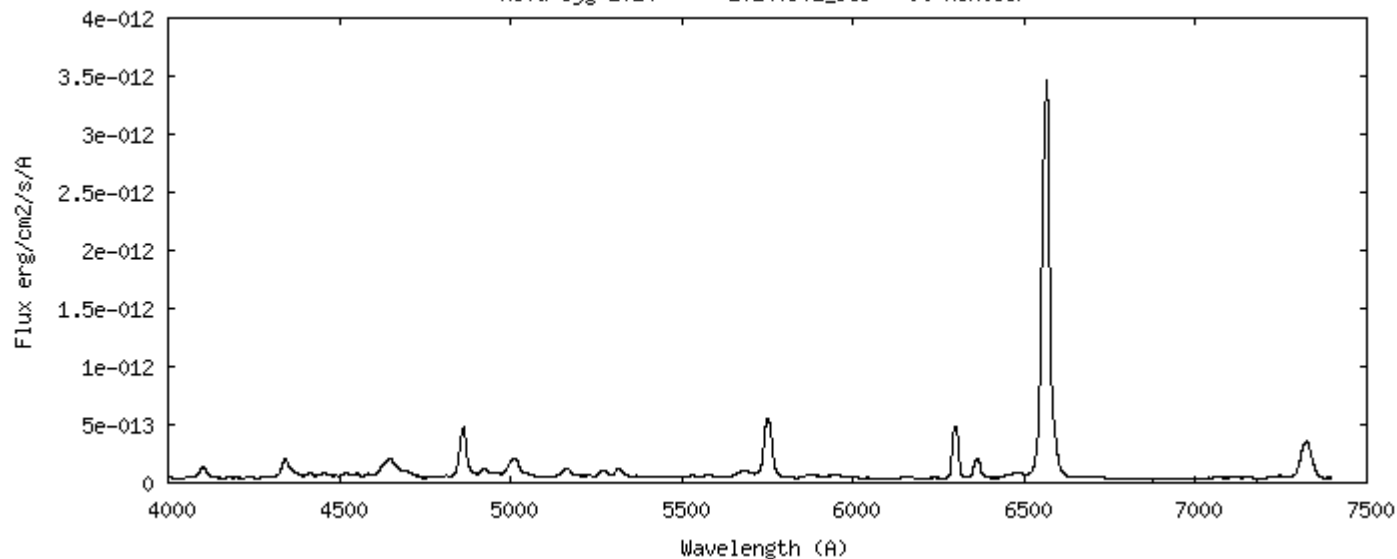
ARAS DATA BASE : 142 spectra [http://www.astrosurf.com/aras/Aras\\_DataBase/Novae/Nova-Cyg-2014.htm](http://www.astrosurf.com/aras/Aras_DataBase/Novae/Nova-Cyg-2014.htm)

Web Page : <http://www.astrosurf.com/aras/novae/NovaCyg2014.html>

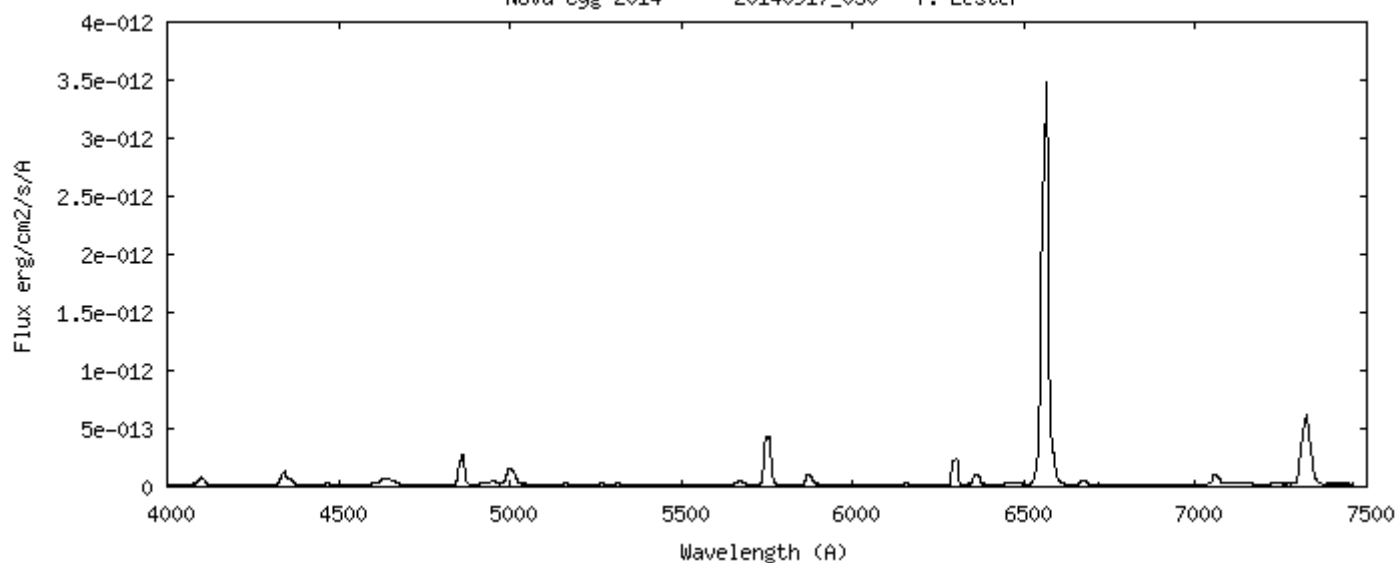




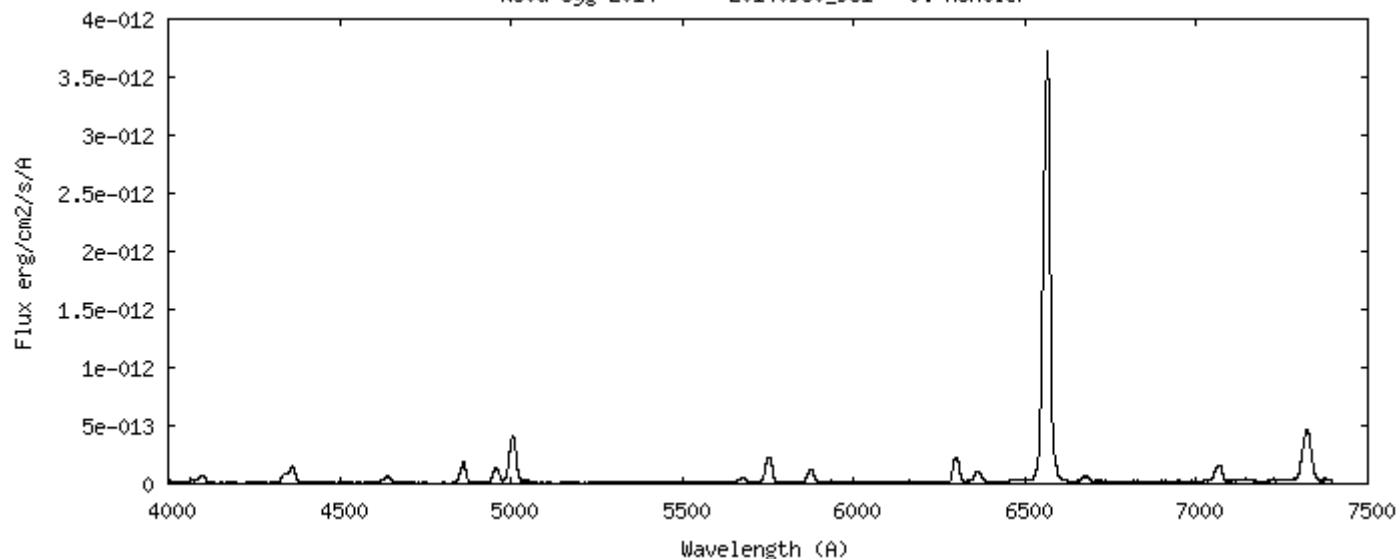
Nova Cyg 2014 20140901\_969 J. Montier

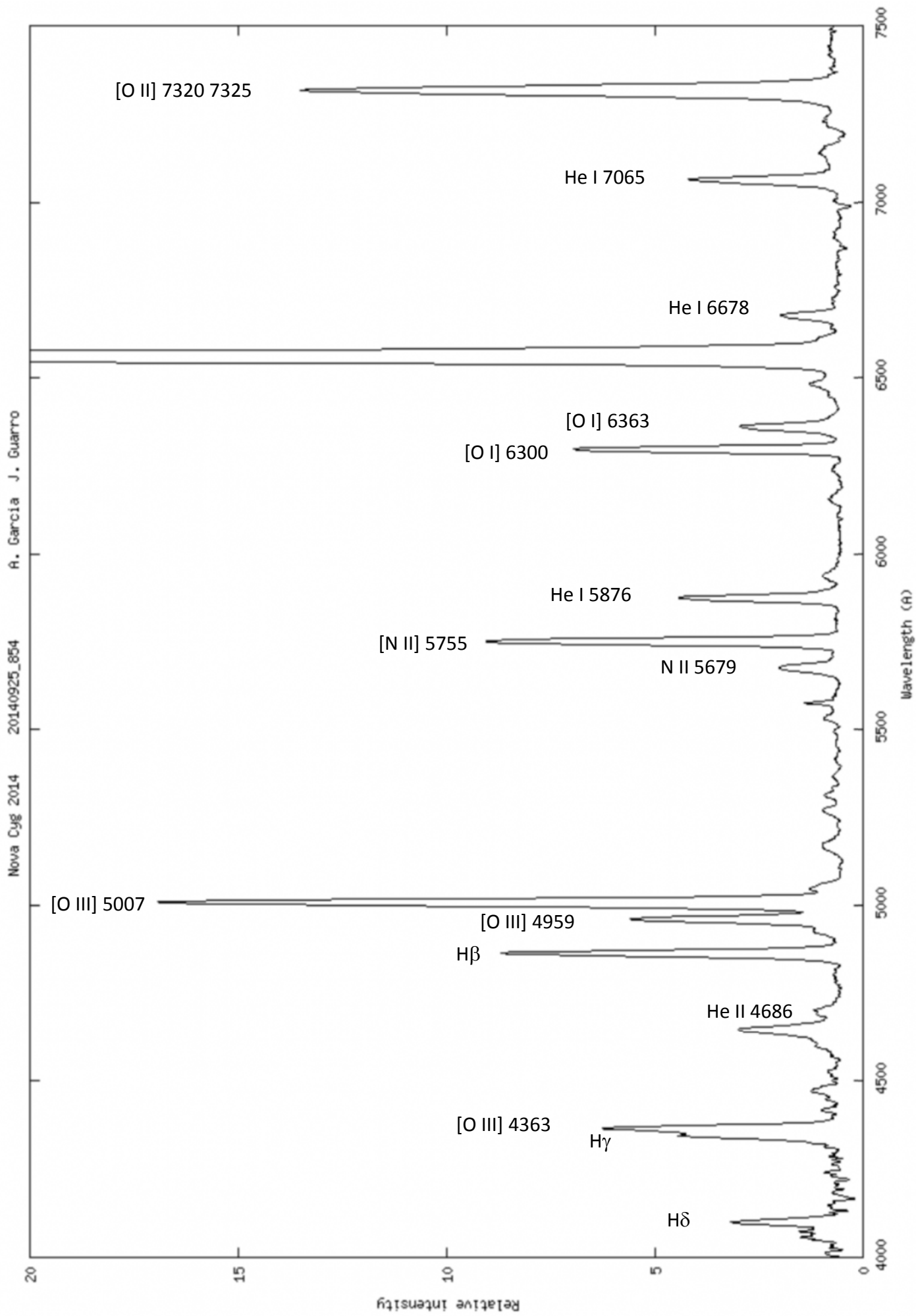


Nova Cyg 2014 20140917\_030 T. Lester



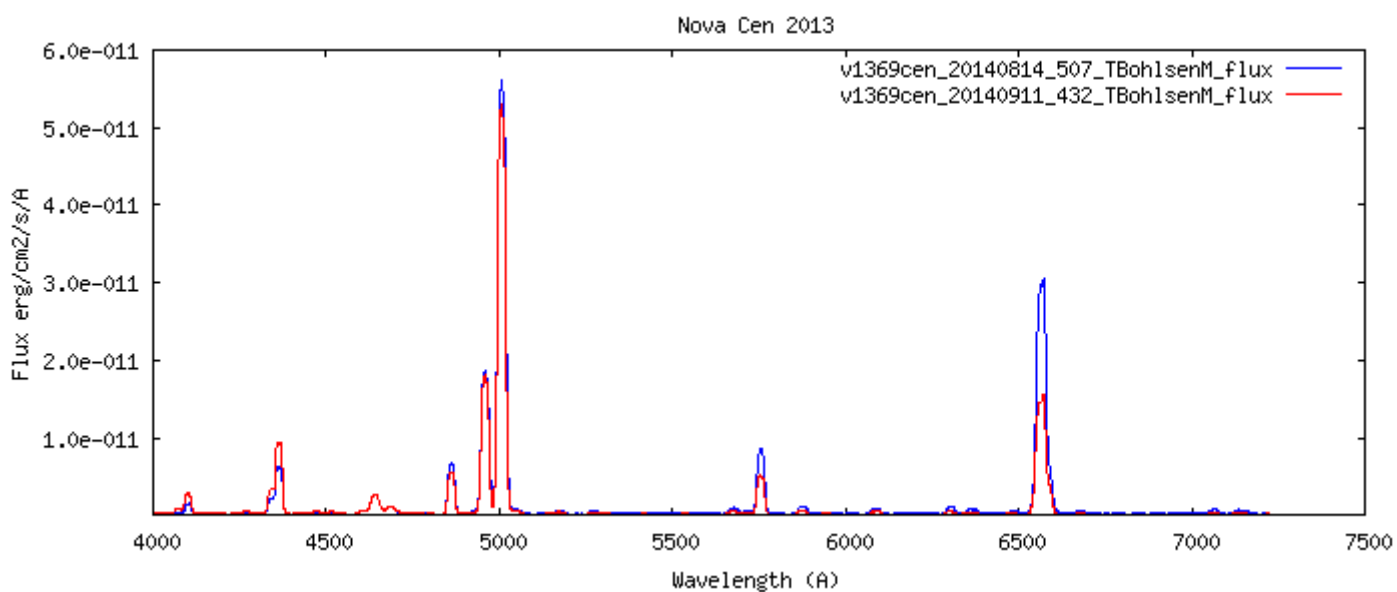
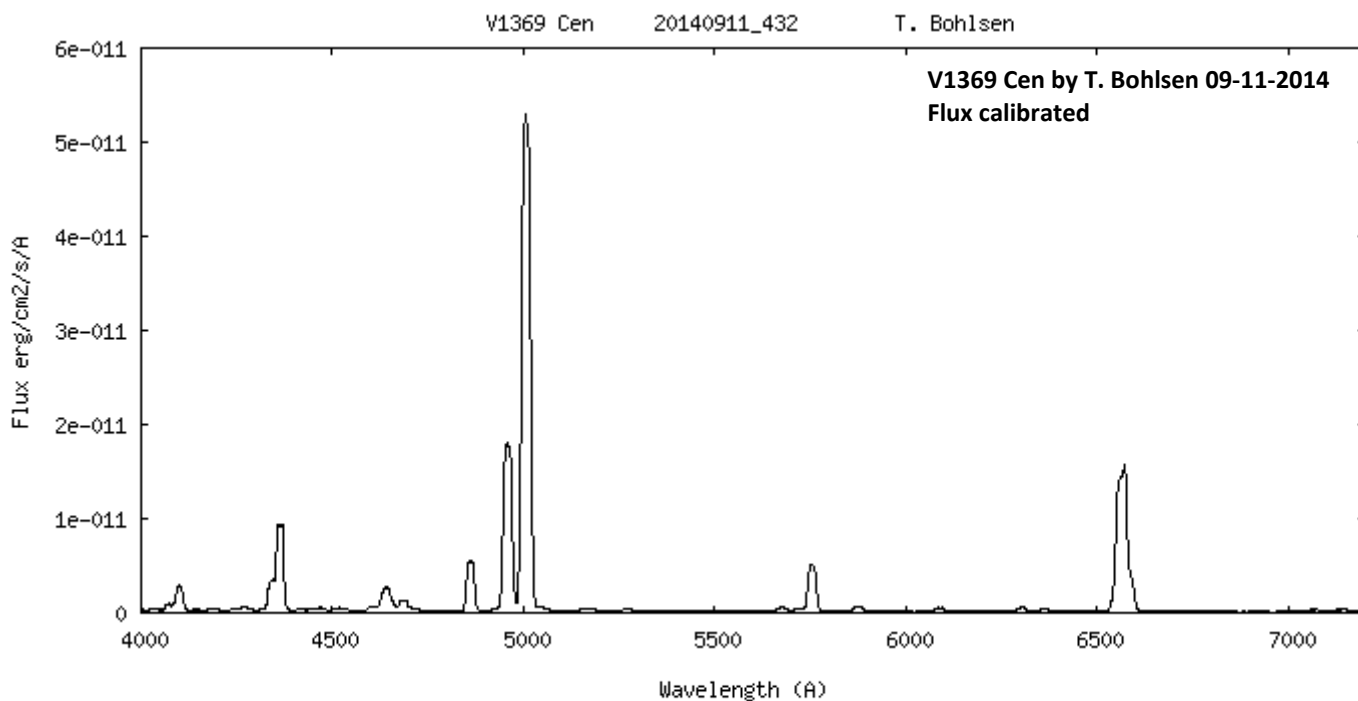
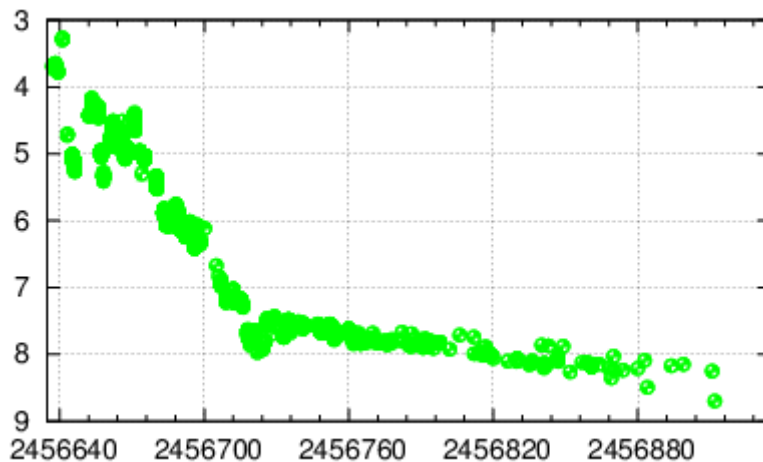
Nova Cyg 2014 20140930\_931 J. Montier





**Luminosity**  
 Mag V = 8.25 (10-09-2014)  
 Slow decline

**Observing**  
 New spectrum from Terry Bohlsen just before  
 Nova Cen disappears behind the Sun



V1369 Cen evolution from 14-08 to 11-09-2014

Observers : Terry Bohlsen - Malcom Locke - Jonathan Powles - Ken Harrison - Julian West - Tasso Napoleao - Rogerio Marcon

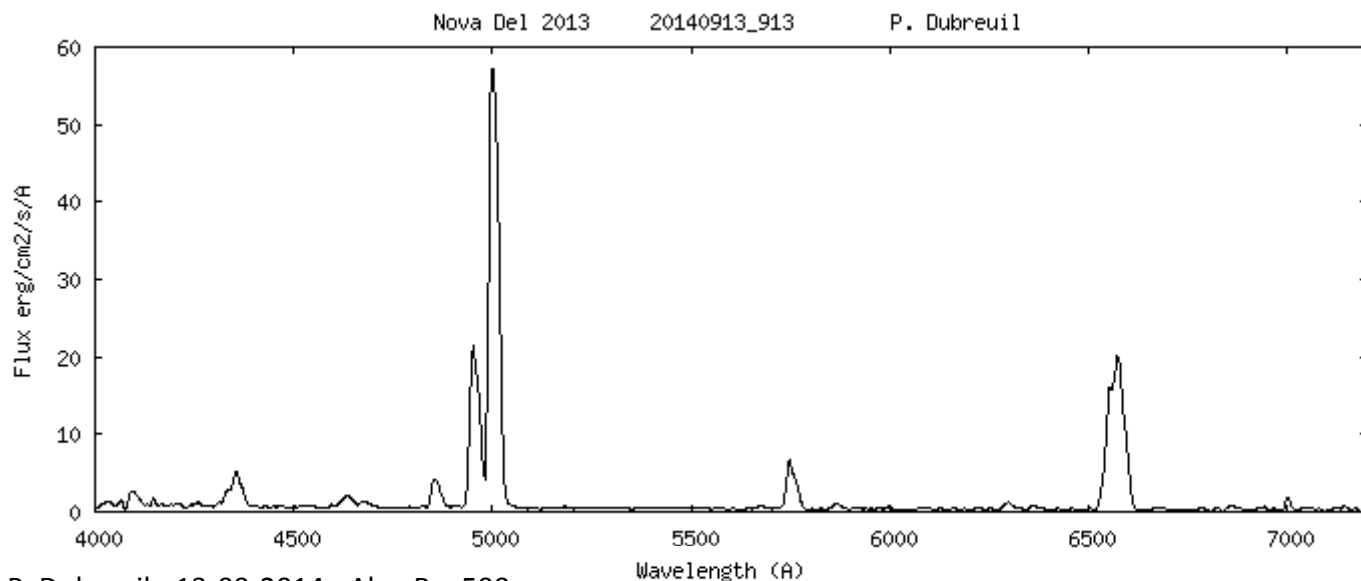
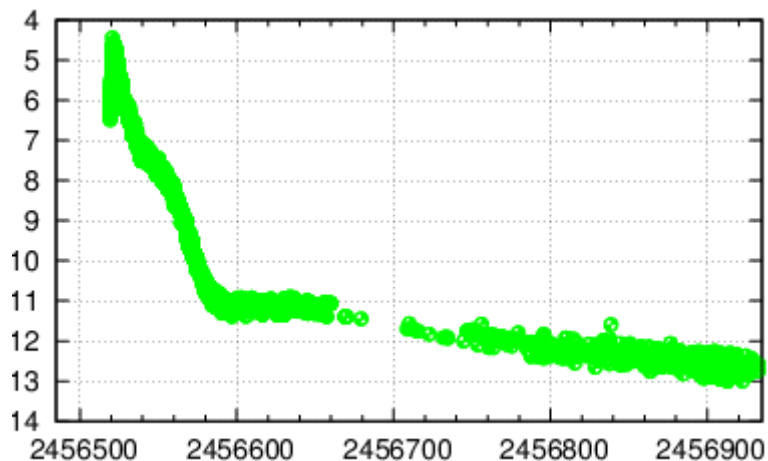
ARAS DATA BASE : 160 spectra [http://www.astrosurf.com/aras/Aras\\_DataBase/Novae/Nova-Cen-2013.htm](http://www.astrosurf.com/aras/Aras_DataBase/Novae/Nova-Cen-2013.htm)



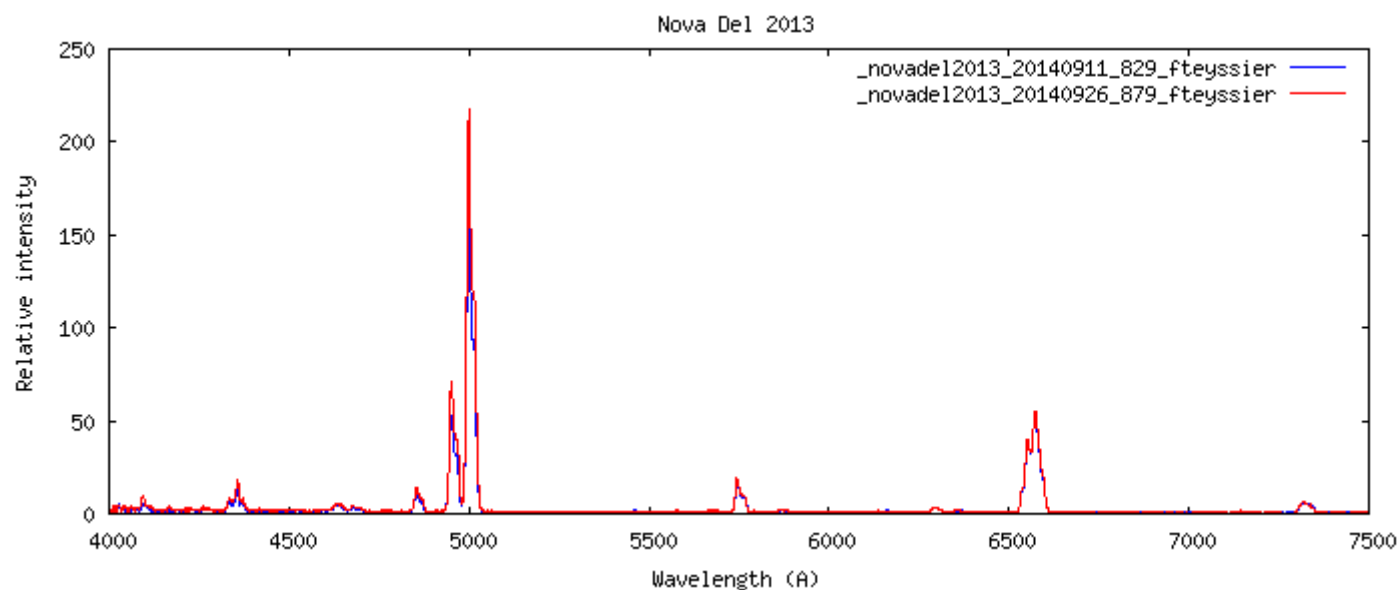
**Luminosity**  
 Mag V ~ 12.6 (30-09-2014)  
 Slowly declining

**Observing**  
 Spectra required (one a week)

Ungoing observations, more than 400 days after its outburst



P. Dubreuil - 13-09-2014 - Alpy R = 500



Almost constant spectrum in september - F. Teyssier - LISA R = 1200

**Observers (2014) :** C. Buil - T. Lester - F. Teyssier - D. Boyd - A. Garcia O. Garde - T. Bohlsen - P. Berardi - M. Dubs - P. Dubreuil - J. Edlin - T. Bohlsen

ARAS DATA BASE 2014 | 34 spectra | [http://www.astrosurf.com/aras/Aras\\_DataBase/Novae/Nova-Del-2013\\_2.htm](http://www.astrosurf.com/aras/Aras_DataBase/Novae/Nova-Del-2013_2.htm)  
 ARAS Web Page for Nova Del 2013 : <http://www.astrosurf.com/aras/novae/Nova2013Del.html>

The most recent spectra of Nova Cyg 2014 in the database show that it has finally made the transition to a fully ionized state for the bulk of the ejecta. This was signaled by the so-called "oxygen flash", the rapid appearance of the [O III] nebular lines. We know nothing about the state of the X-ray source, but from the absence of the [Fe VII] 6087 it is a good bet that the central source is not a strong XR emitter.

From the line profiles, something about the ejecta structure can be reconstructed. The H $\alpha$  line is still present and broad but the [N II] 6548, 6583 nebular lines are also blended with about the same strength as [O III] so this accounts for its excessive width at FWZI. The densities have fallen below about  $10^7 \text{ cm}^{-3}$  based on the strength of these nebular transitions, the [N II] 5755/(6548+6583) lines are isoelectronic to [O III] 463/(4959+5007), as we've discussed, but all have the problem of being severely blended. The other (permitted) N II lines, especially 5679 and 6482, are also strong but the 4636 feature is considerably weaker than He II 4686. Together this points to a complete ionization of the bulk of the ejecta with the line profiles for the most of the transitions are similar and a close match to He I 5876, 6678. The N II 6482 line is, on the other hand, broader than I might have expected from the structure and ionization state.

Now about that abrupt increase in the O<sup>+2</sup> lines. Francois' plot of the ratio of the individual lines tells that tale well (*see page 4*). The transition to strong nebular emission took only a few days but remember that the expansion velocities range from about 1000 to 3000 km/s, depending on the geometry assumed for the ejecta. The [O III] lines are both recombination and pumped and the change in O II shows that ionization is the dominant cause. The He II 4686 line, which is a probe of the He ionization, increased but not by much so it isn't likely that only the He II 303 line is responsible for the sudden increase in the O III. As the ejecta expand, remember, the opacity changes because of changes in the condition at the WD and the column density and absorber abundance in the ejecta. When the light ions ionize, the conti-

num opacity decreases in the far UV and this provokes a further ionization of the outer parts that, because of the lower density, can't recombine. So you should see, in the next week or so, a new effect. When the density is low enough that the recombination rate is lower than that of the expansion, the ionization state freezes out. We've discussed this a long time back for V339 Del. This has been noted as one of the signals of the XR turnoff, but it is also an effect of the luminosity. If the supersoft source is weak enough you will get the same effect.

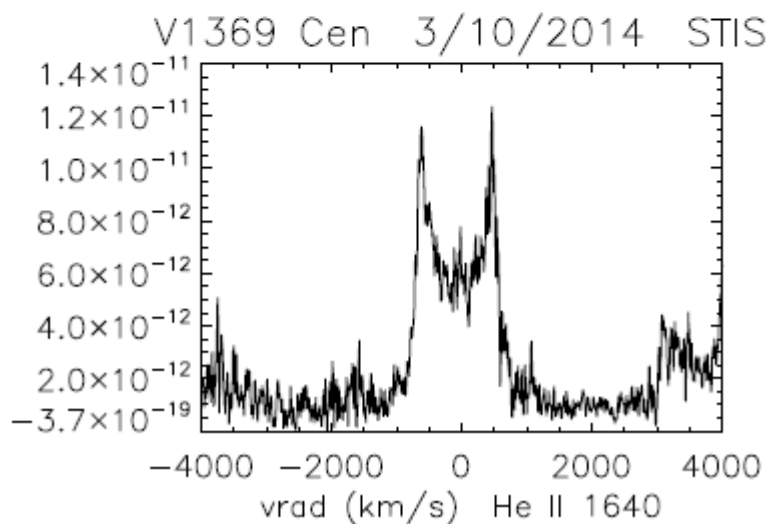
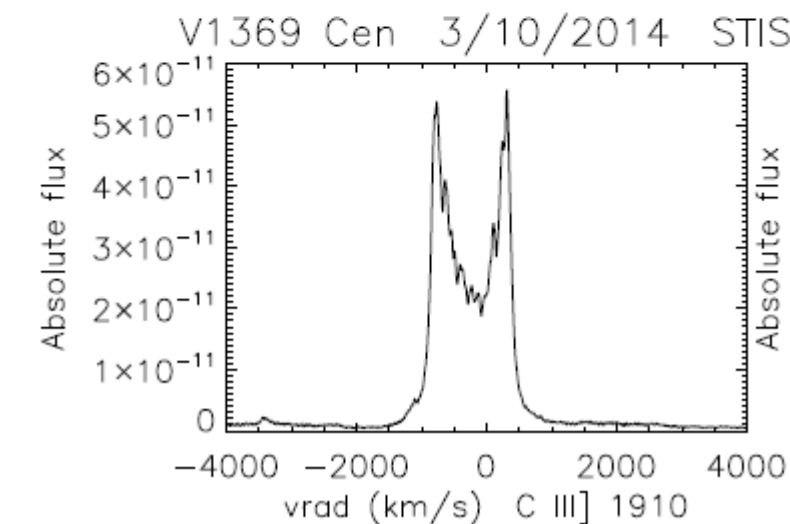
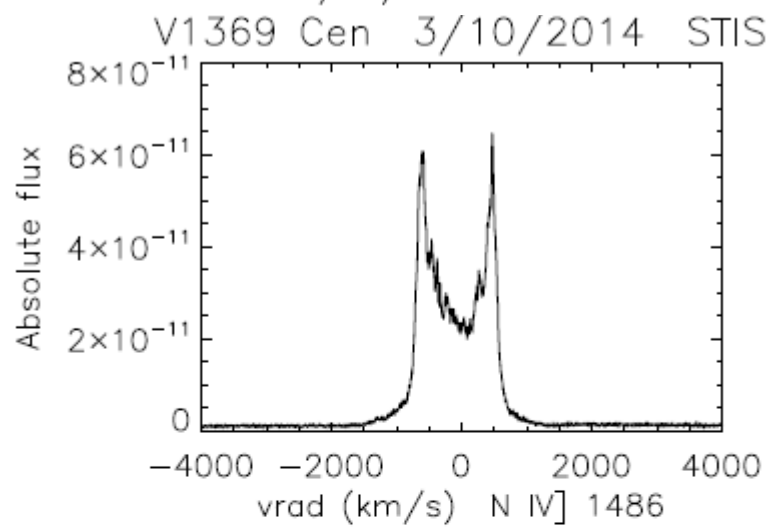
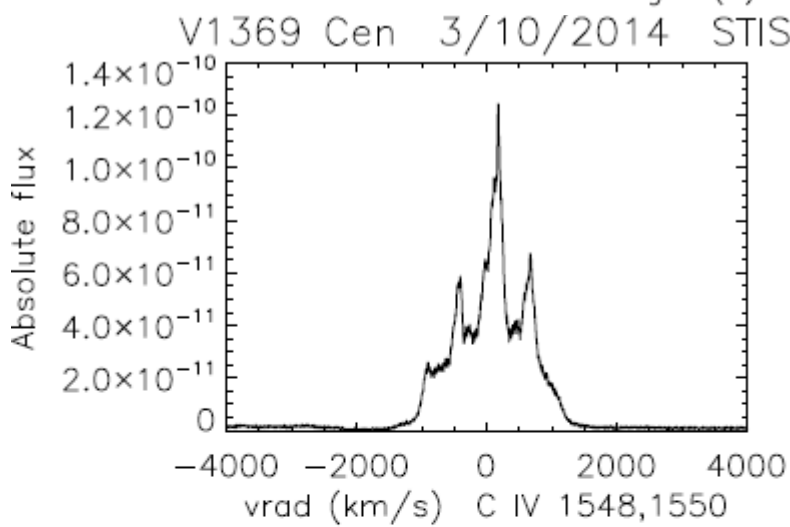
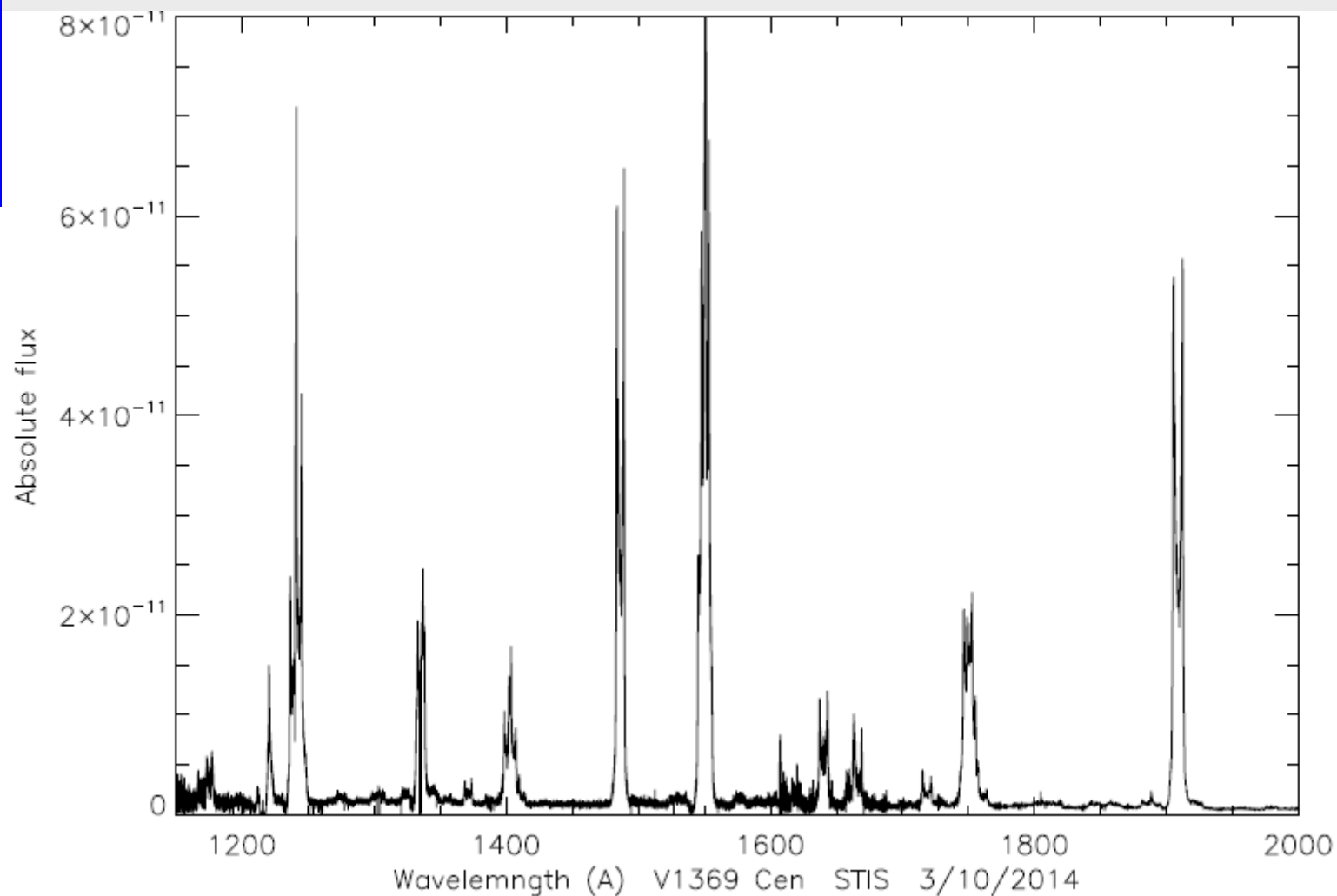
For now, since the lines are increasing (especially the permitted lines) it is likely that a source of photons at around 100 eV is still on. The strange thing is the absence of any very highly ionized lines; an important observation will be to follow the lines of [Fe VII] 6087, [Ca V] 5309,6376, and [Ar III] 7135. The last may be there now, it has a profile similar to that on the [Ar IV] lines at 7237,7263.

The Balmer line profile is, as seen now in many novae, quite different from that of the ions. It is a tracer of the recombination so to understand how the individual portions of the ejecta are structured

it's very important to have profiles of at least Hbeta and Halpha. The comparison is needed because the Hbeta is isolated and (as used for other systems) the benchmark profile for the hydrogen. Alas, this nova wasn't -- and won't -- be observed in the UV, it is too faint, so everything has to be done by comparison with other, active novae.

We have observations coming up of V339 Del, with STIS/GHST and NOT, and any coverage by the group will be a wonderful gift.

The V1369 Cen material from 3 Oct. is now being worked on but I'm sending one example of the spectrum so you can get an idea of what the star looks like in the UV (*see page 11*)



| Target |                          |            |            |         |          | Reference Star |            |             |       |        |         |
|--------|--------------------------|------------|------------|---------|----------|----------------|------------|-------------|-------|--------|---------|
| #      | Name                     | AD (2000)  | DE (2000)  | Mag V * | Interest | Name           | AD (2000)  | DE (2000)   | Mag V | E(B-V) | Sp Type |
| 1      | <a href="#">AX Per</a>   | 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      | <a href="#">UV Aur</a>   | 5 21 48.8  | 32 30 43.1 | 10      |          | HD 39357       | 05 53 19.6 | +27 36 44.1 | 4.557 |        | A0V     |
| 3      | <a href="#">ZZ CMi</a>   | 7 24 13.9  | 8 53 51.7  | 10.2    |          | HD 61887       | 07 41 35.2 | +03 37 29.2 | 5.955 |        | A0V     |
| 4      | <a href="#">BX Mon</a>   | 7 25 24    | -3 36 0    | 10.4    | +        | HD 55185       | 07 11 51.9 | -00 29 34.0 | 4.15  |        | A2V     |
| 5      | <a href="#">V694 Mon</a> | 7 25 51.2  | -7 44 8    | 10.5    | ++       | HD 55185       | 07 11 51.9 | -00 29 34.0 | 4.15  |        | A2V     |
| 6      | <a href="#">NQ Gem</a>   | 7 31 54.5  | 24 30 12.5 | 8.2     |          | HD 64145       | 07 53 29.8 | +26 45 56.8 | 4.977 |        | A3V     |
| 7      | <a href="#">T CrB</a>    | 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      | <a href="#">AG Dra</a>   | 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      | <a href="#">RS Oph</a>   | 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     | <a href="#">YY Her</a>   | 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     | <a href="#">V443 Her</a> | 18 22 8.4  | 23 27 20   | 11.3    | ++       | HD 171623      | 18 35 12.6 | +18 12 12.3 | 5.79  | 0      | A0Vn    |
| 12     | <a href="#">BF Cyg</a>   | 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     | <a href="#">CH Cyg</a>   | 19 24 33   | 50 14 29.1 | 7       | +        | HD 184006      | 19 29 42.4 | +51 43 47.2 | 3.769 | 0      | A5V     |
| 14     | <a href="#">CI Cyg</a>   | 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     | <a href="#">StHA 190</a> | 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     | <a href="#">AG Peg</a>   | 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     | <a href="#">Z And</a>    | 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     | <a href="#">R Agr</a>    | 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

**Observations**  
 from 01-09 to 30-09-2014

| New spectra |    |
|-------------|----|
| AG Dra      | 1  |
| AG Peg      | 6  |
| AX Per      | 10 |
| BF Cyg      | 1  |
| CH Cyg      | 3  |
| CI Cyg      | 5  |
| EG And      | 1  |
| PU Vul      | 1  |
| UV Aur      | 1  |
| V627 Cas    | 1  |
| Z And       | 2  |

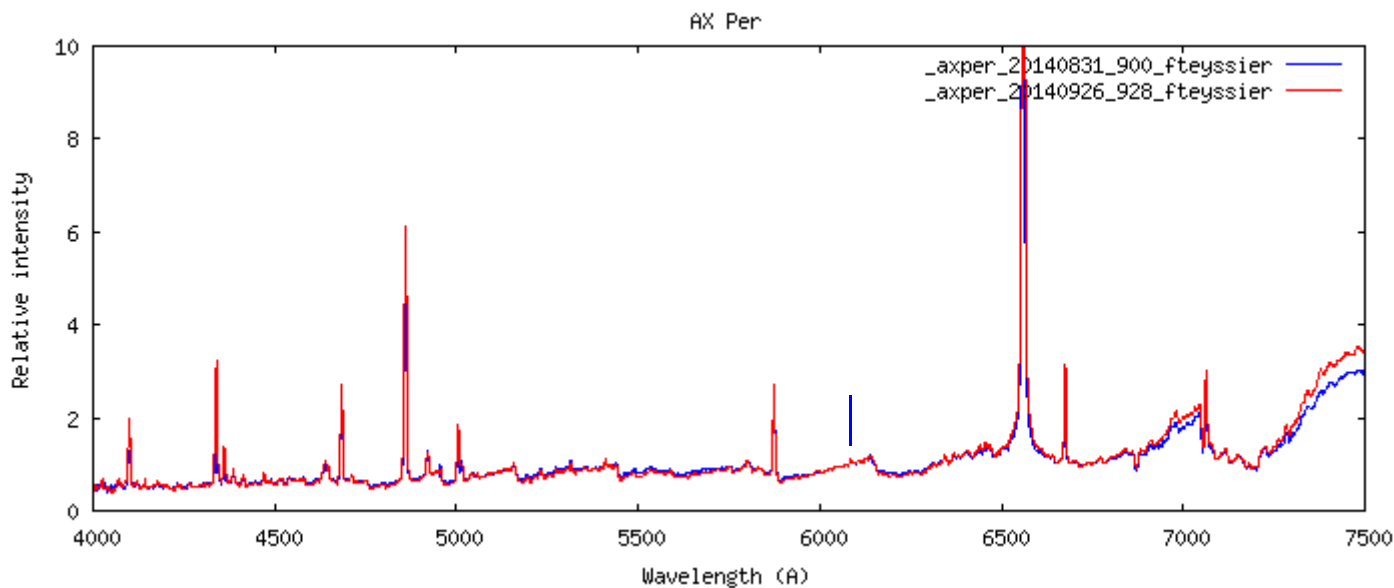
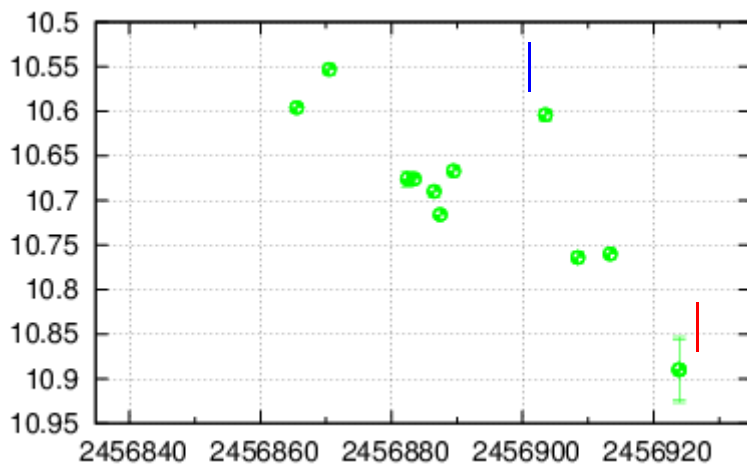
**Observing**

AX Per returning to quiescent state  
 Detect high state of V694 Mon in the morning sky

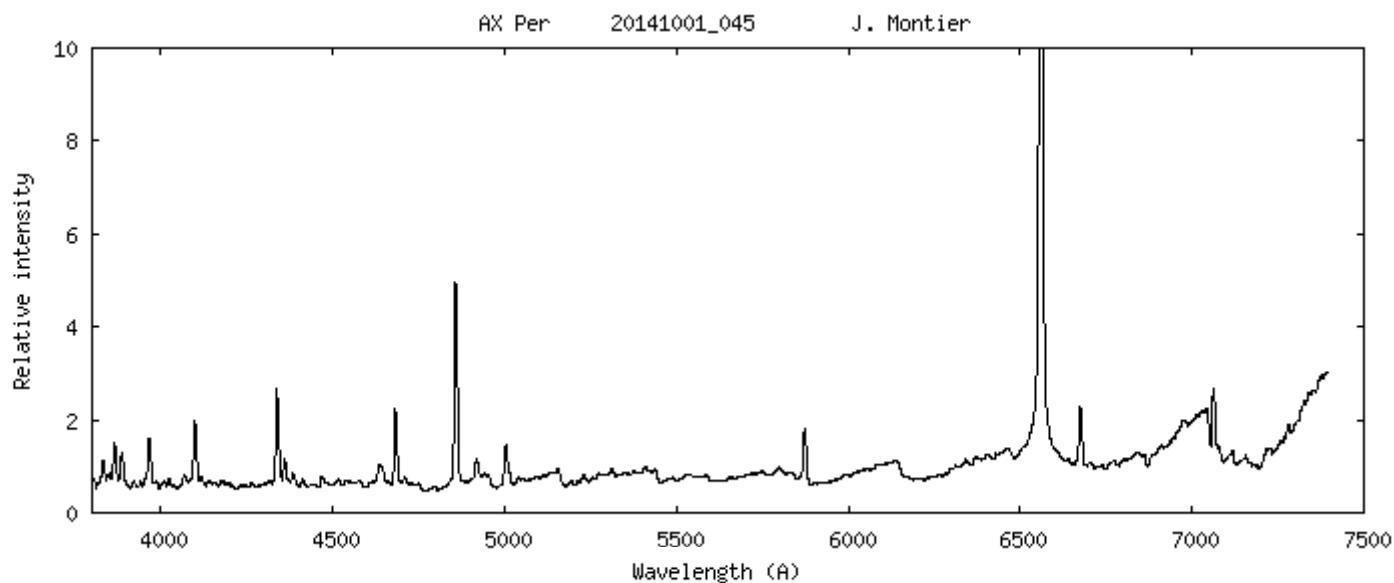
# AX Per Outburst

The prototype Symbiotic **AX Per** has been detected in outburst in august 2014 by ANS collaboration See [ATel #6382](#)  
 The current mag is about 10.9 (declining)  
 Spectra of this event are welcome for ARAS data base [Data Base AX Per](#)  
 Aras topic for exchanges [Forum](#)

| Coordinates (2000.0) |                  |
|----------------------|------------------|
| R.A.                 | 01 h 36 m 22.7 s |
| Dec.                 | +54° 15' 2.5"    |

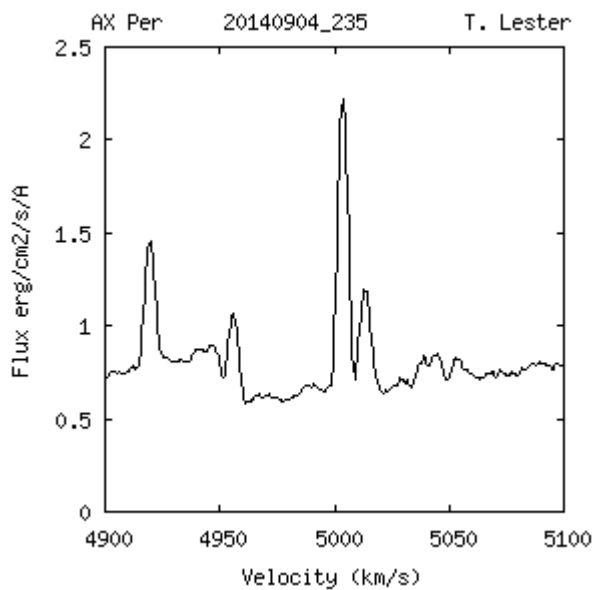
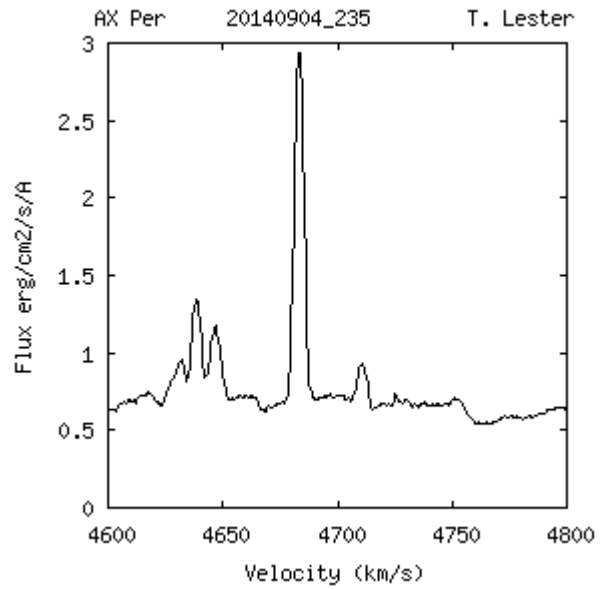
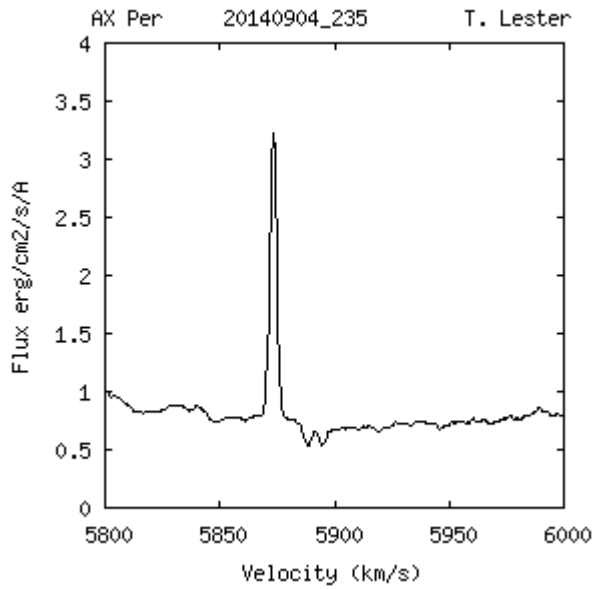
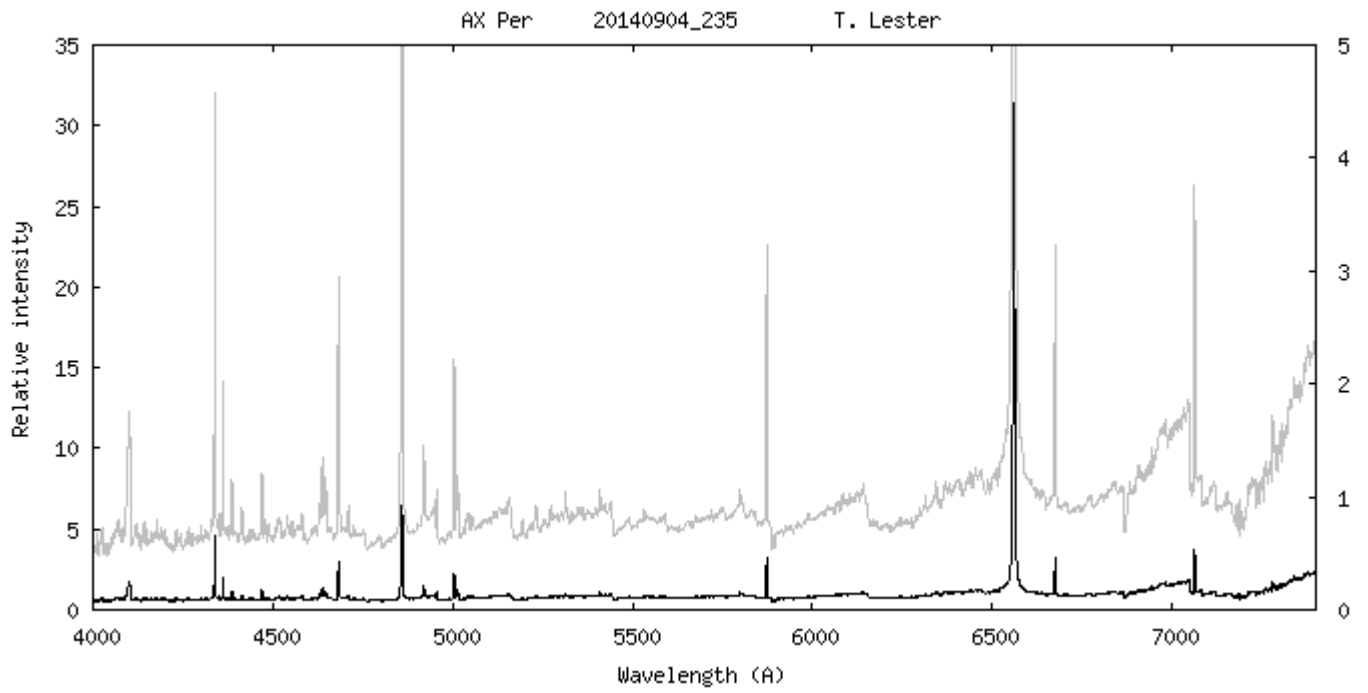


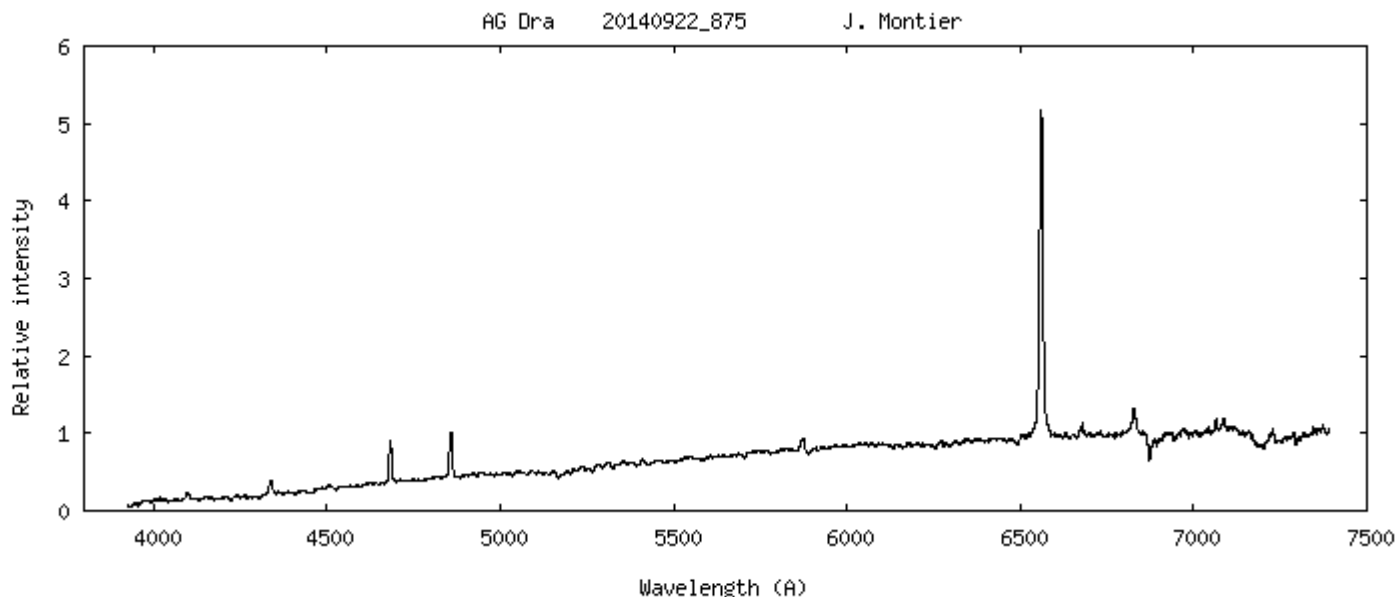
In september, AX Per declined of about 0.3 mag (V). Late September a faint increase of [Fe VII] is detected. LISA R = 1000



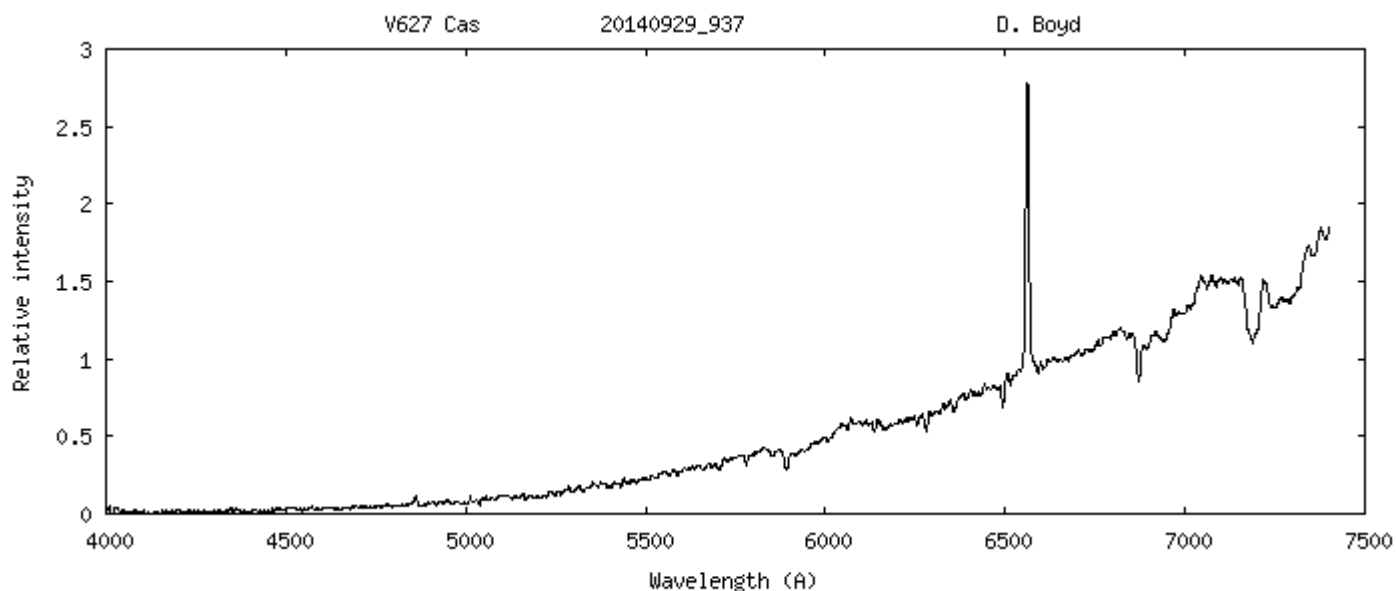
AX Per with an Alpy600 - Note the [Ne III] line 3868. [Ne III] 3967 is blended with HI 3970

AX Per Outburst

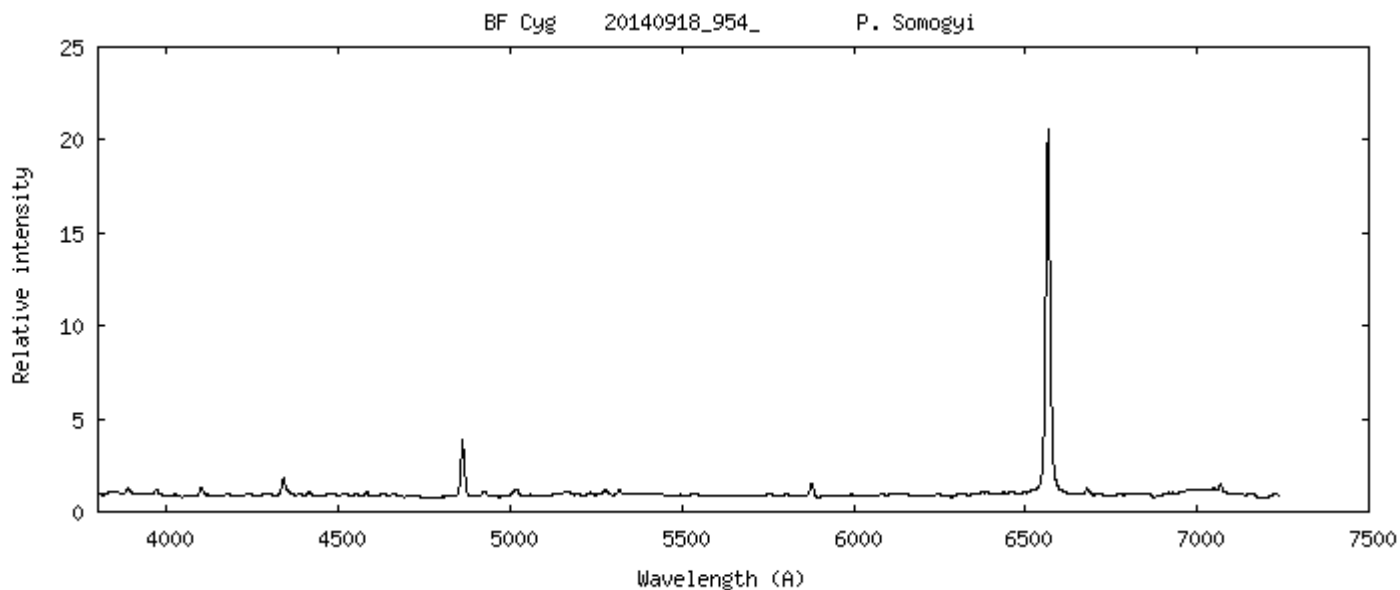




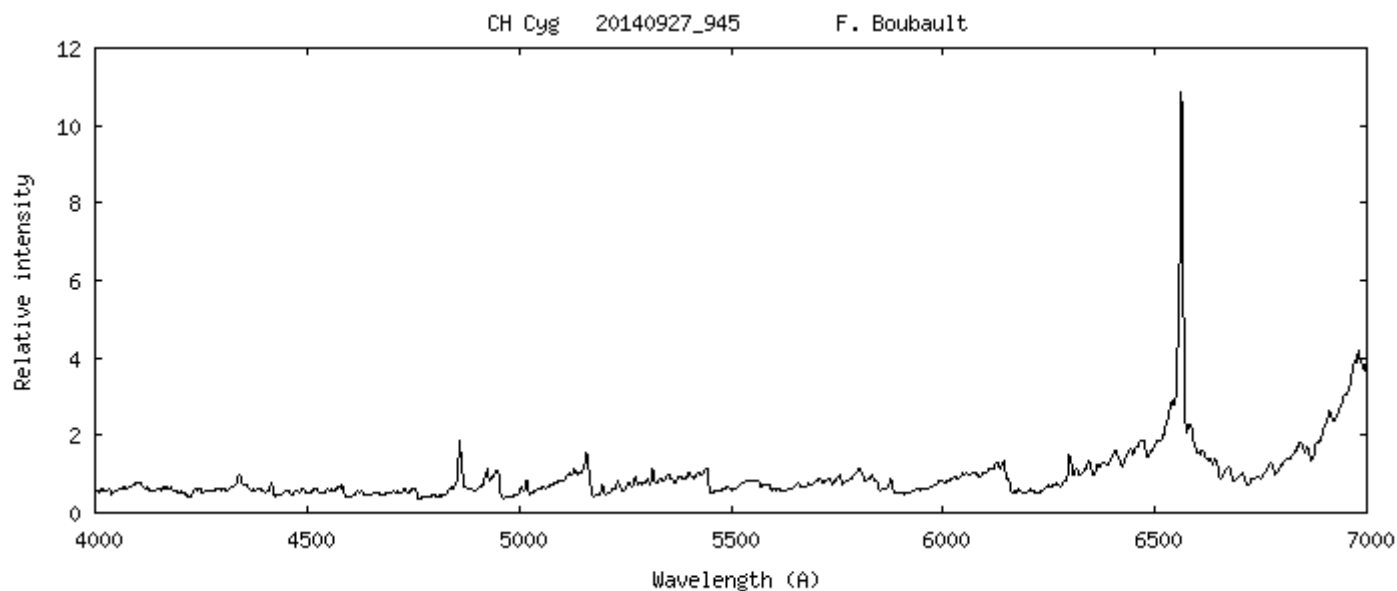
AG Dra - 2014-09-22.875- Jacques Montier - Alpy600 - R = 600



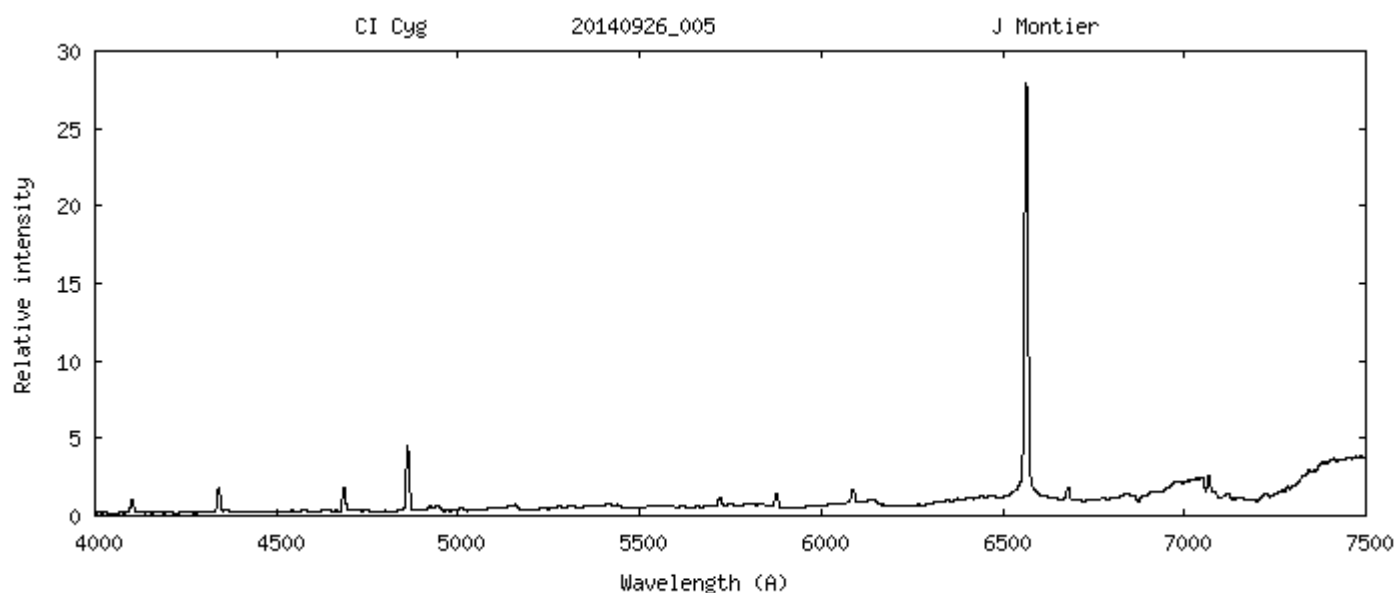
V627 Cas - 2014-09-29.937 - David Boyd - LISA - R = 1000



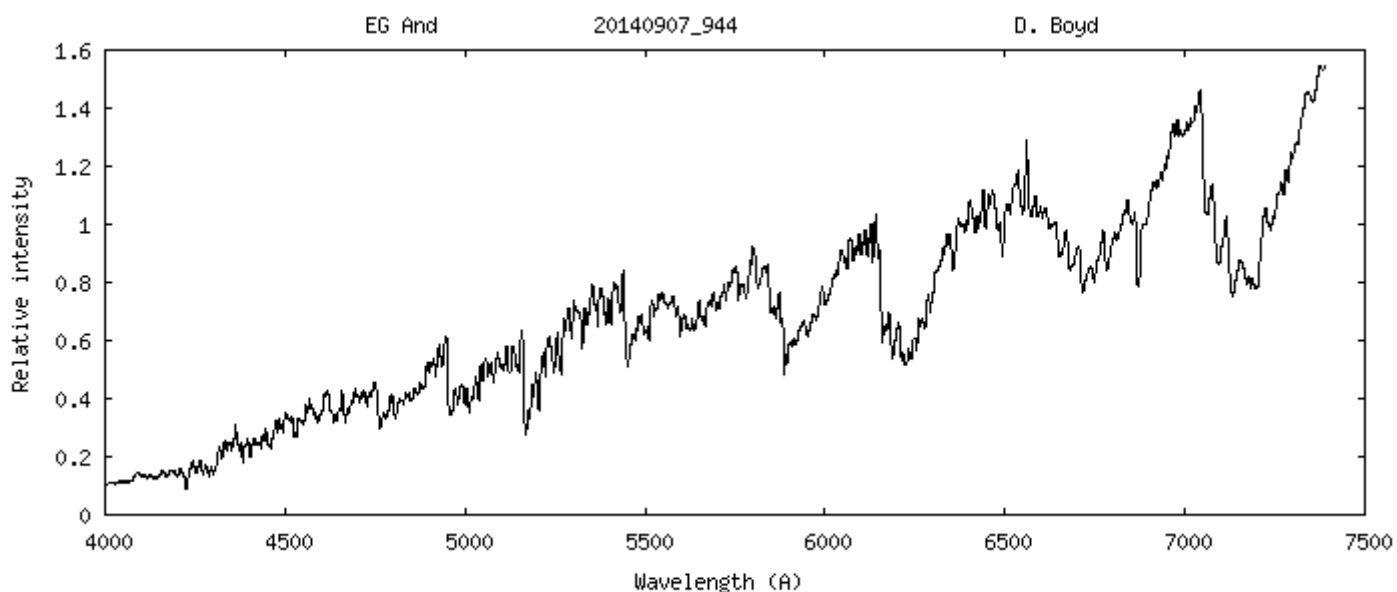
BF Cyg - 2014-09-18.954 - P. Somogyi - LISA - R = 600



CH Cyg - 2014-09-27.945 Franck Boubault - LISA - R = 1000 Note [O I] 6300, 6363

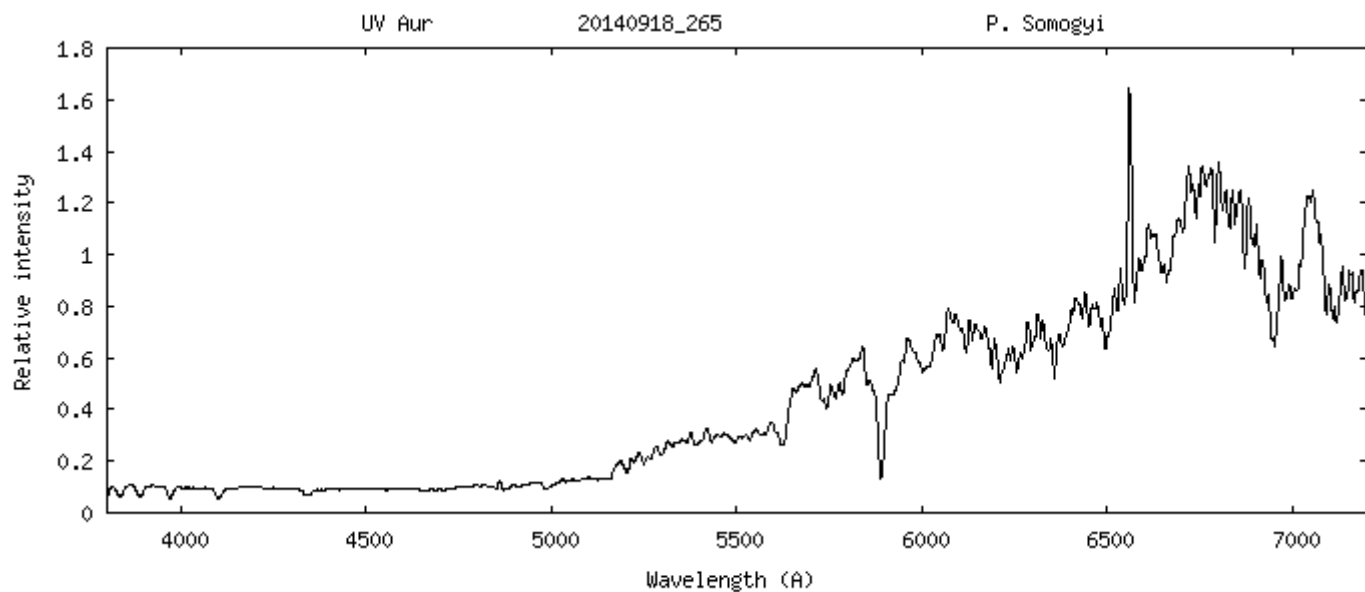


CI Cyg - 2014-09-26.005 Jacques Montier - Alpy600- R = 600

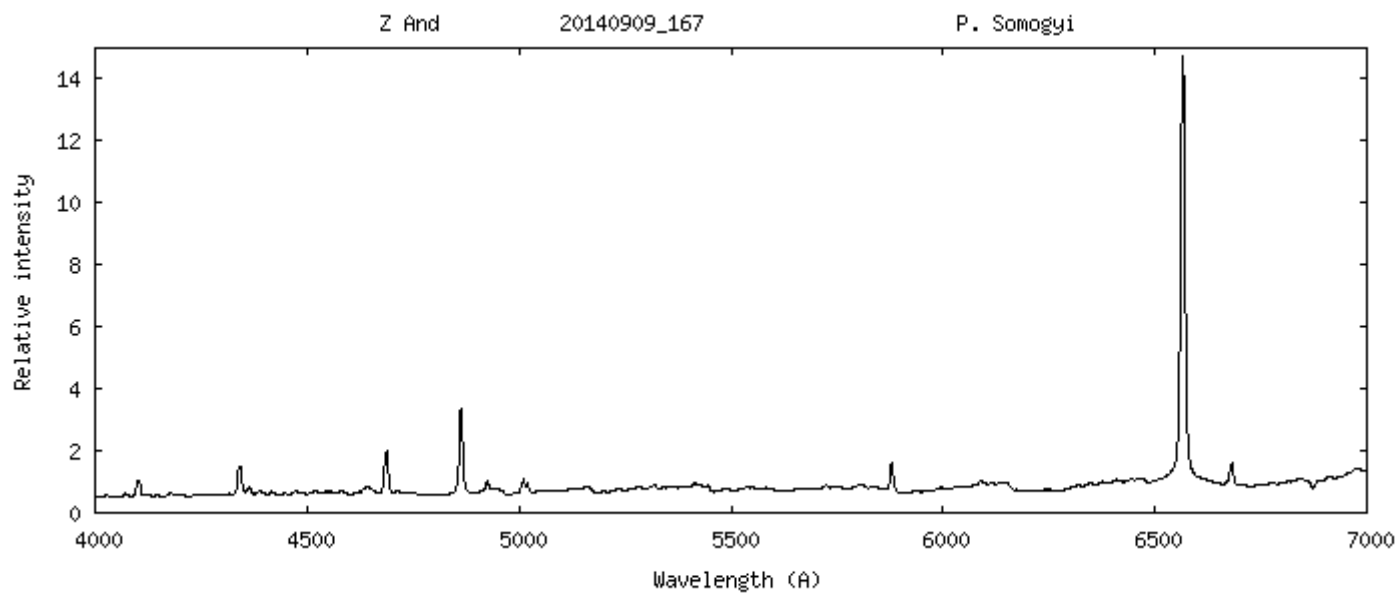


EG And - 2014-09-07.944 David Boyd - LISA - R = 1000





UV Aur - 2014-09-18.265 Peter Somogyi - Alpy600 - R = 600



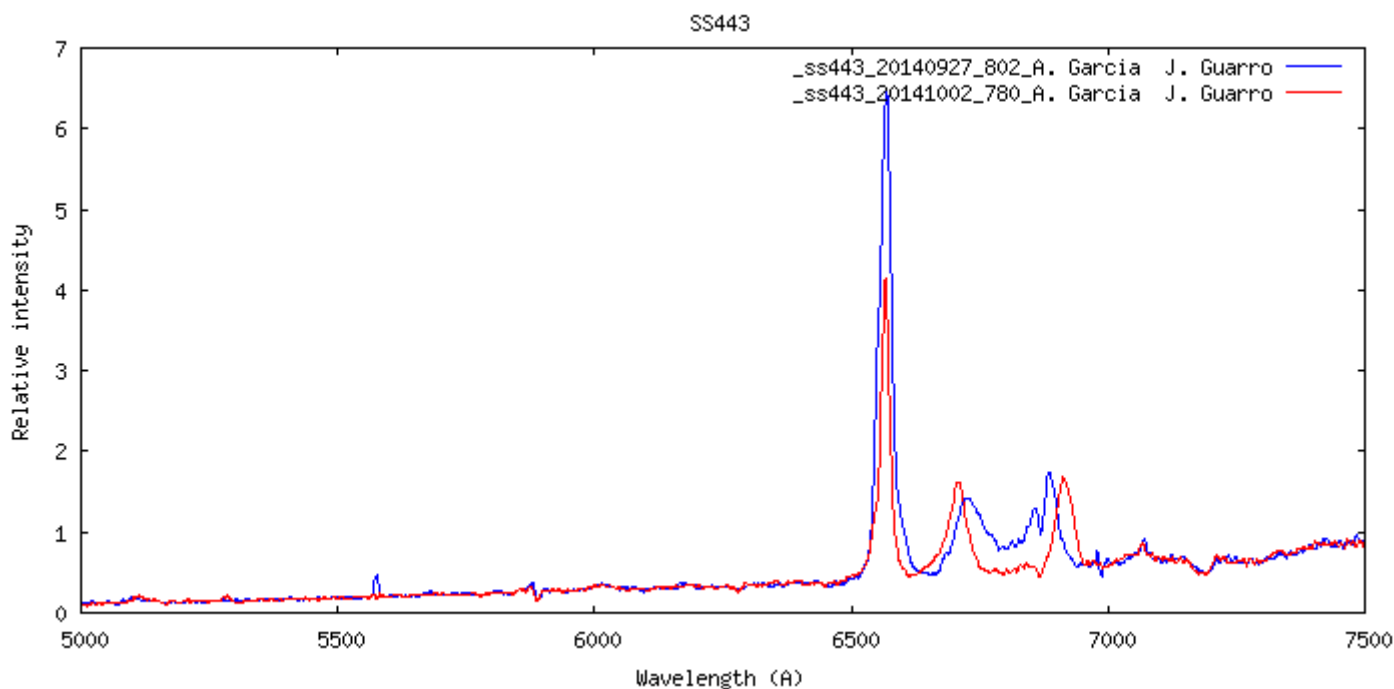
Z And - 2014-09-09.167 - Peter Somogyi - Alpy600 - R = 600

**Coordinates (2000.0)****R.A.** 19 11 49.57**Dec.** +04 58 57.8

In the daily monitoring of microquasars program with the RATAN-600 radio telescope, a new powerful flare from the X-ray binary SS433 has been detected on 23 September (ATel#6492, S. A.Trushkin & al.). The radio flare is recorded in visual range : on Sep 21.72 the V mag is 13.71. On Sep 25.78, the star recovers quiescent stage, with a V mag = 14.9 (ATel#6504, V. P Goranskij, A. V. Zharova.

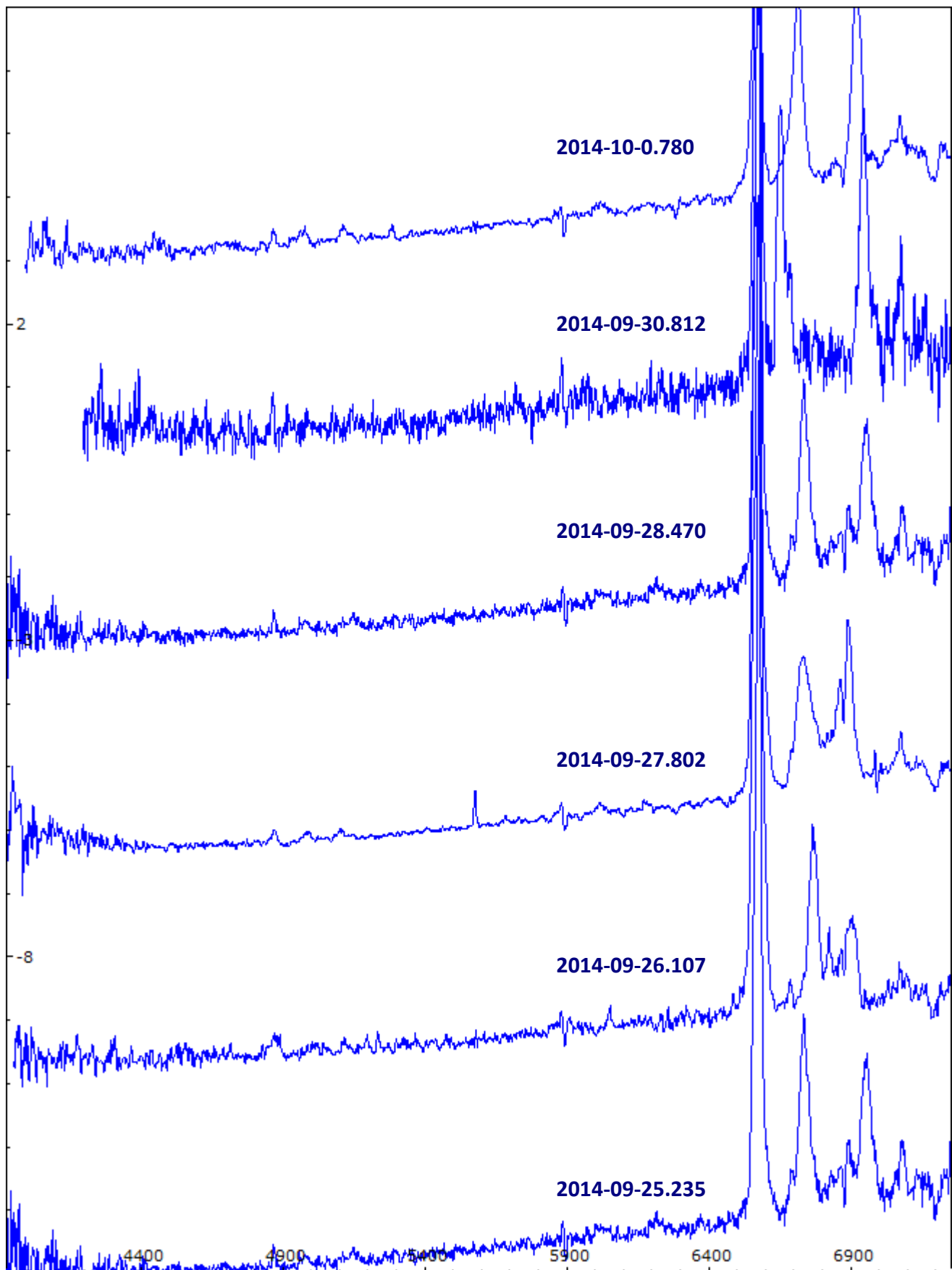
**Giant radio flare of SS 433 recorded in optical range**ATel #6504; *V. P Goranskij, A. V. Zharova (SAI, Moscow University)**on 27 Sep 2014; 09:13 UT**Credential Certification: Vitaly Goranskij (goray@sai.msu.ru)*

We continue optical monitoring of SS 433 at the Special Astrophysical Observatory and at the Crimean Station of the Sternberg Astronomical Institute using different telescopes and devices, and have partly covered the radio event reported in ATel #6492 with multicolor photometry. On 2014 Sep 19.69 UT just before the radio flare, object was active with UBV<sub>Rc</sub> magnitudes respectively 17.85, 16.58, 14.41, 12.79, 11.33 (SAO 1-m telescope and CCD photometer). On Sep 21.72 UT the object became brighter with BVR<sub>clj</sub> magnitudes 16.11, 14.14, 12.59, 10.29 and reached maximum brightness on Sep 22.78 UT with BVR<sub>clj</sub> = (15.73, 13.71, 12.02, 9.66) (SAI 60-cm telescope, CCD Apogee-47p, magnitudes corrected for systematical difference). Later this night on 22.89 UT, we estimated the star using 25-cm telescope and an image tube with  $R_c = 12.24 \pm 0.07$ . This flare occurred at the orbital phase of 0.40 and the precession phase of 0.68. In the 4.65 GHz radio-flux curve the optical maximum falls on the ascending branch at the flux level of 940 mJy, and coincides with the local minimum in 8.2, 11.2 and 21.7 GHz fluxes. The star showed moderate red and infrared excess in maximum brightness estimated in V-R<sub>c</sub> color of about 0.15 mag what is characteristic of advanced phase of a flare. While the radio fluxes increased after optical maximum up to 1350 mJy on 4.65 GHz on Sep 25, BVR<sub>clj</sub> magnitudes fell down to quiet state on Sep 25.78 UT with the values (17.02, 14.90, 13.06, 10.85). In the attachment we give the R<sub>c</sub>-band light curve plotted versus time between May and September 2014 in the time scale respective to that one given in ATel #6492.



See ARAS Forum topic : <http://www.spectro-aras.com/forum/viewtopic.php?f=5&t=875>

ARAS DATA BASE | [http://www.astrosurf.com/aras/Aras\\_DataBase/MicrosQuasars/SS443.htm](http://www.astrosurf.com/aras/Aras_DataBase/MicrosQuasars/SS443.htm)



With spectra from Jim Edlin, Jacques Montier, Joan Guarro and Antonio Garcia,

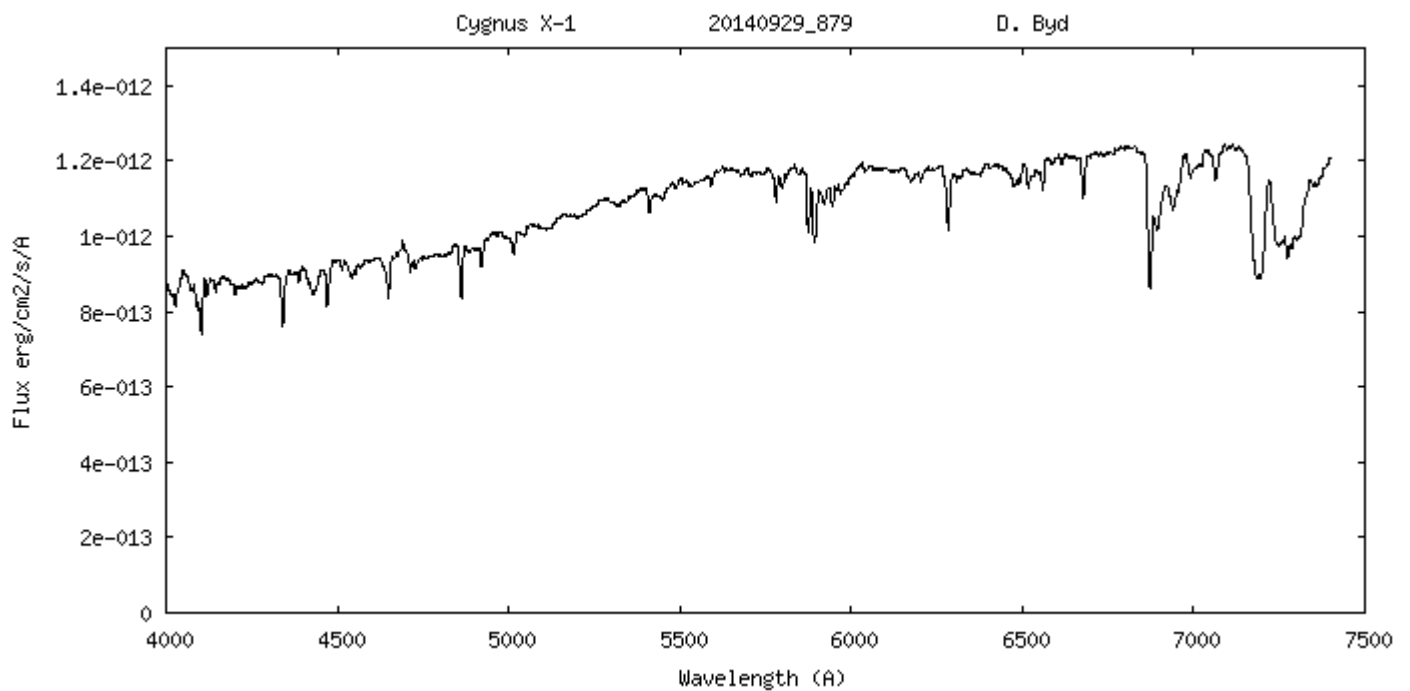
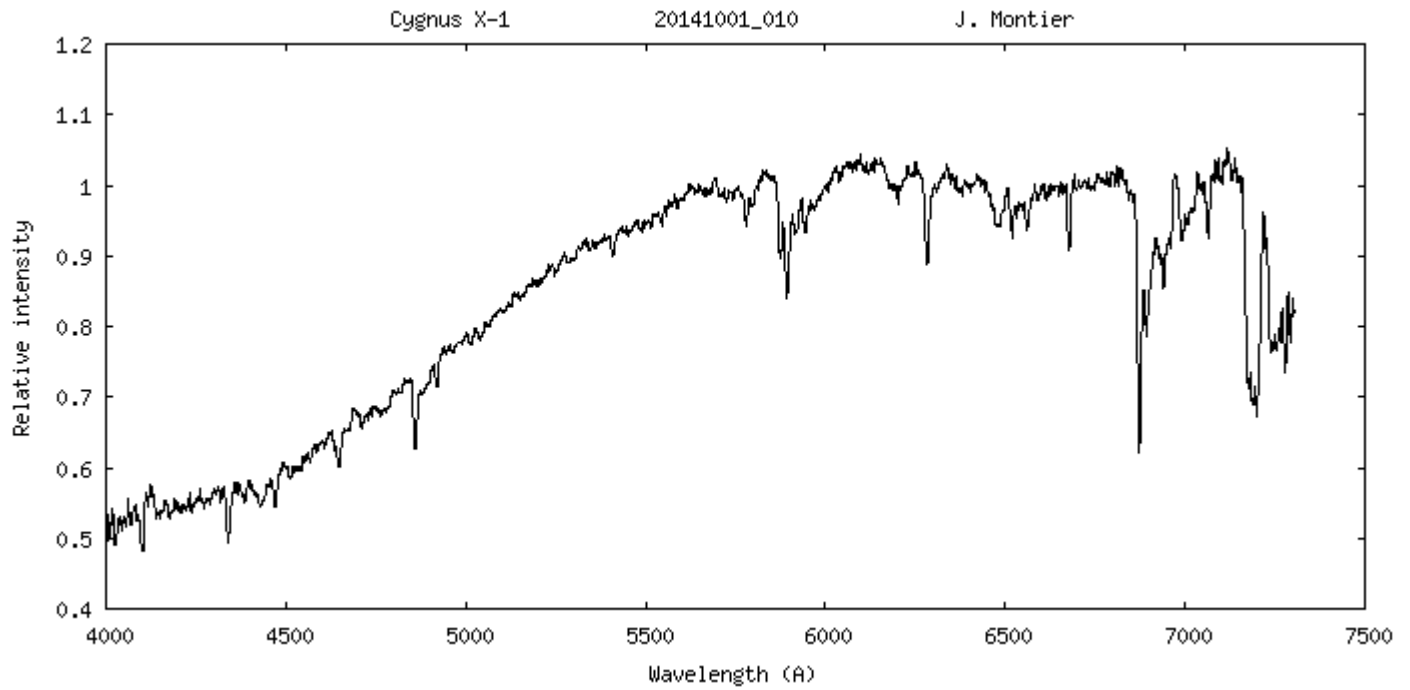
Cygnus X-1 (V1357 Cyg)

Coordinates (2000.0)

R.A. 19 58 21.7

Dec. +35 12 05.8

Mag V ~ 9



Ionisation energy (eV) for main lines in Novae and Symbiotics

|    | 0    | 0    | 2+   | 3+   | 4+    | 5+    | 6+  |
|----|------|------|------|------|-------|-------|-----|
|    | I    | II   | III  | IV   | V     | VI    | VII |
| H  | 13.6 |      |      |      |       |       |     |
| He | 24.6 | 54.4 |      |      |       |       |     |
| C  | 11.3 | 24.4 | 47.9 | 64.5 |       |       |     |
| N  | 14.5 | 29.6 | 47.4 | 77.5 | 97.9  |       |     |
| O  | 13.6 | 35.1 | 54.9 | 77.4 | 113.9 | 138.1 |     |
| Ne | 24.6 | 41   | 63.4 | 97.2 | 126.2 |       |     |
| Na | 5.1  | 47.3 | 71.6 | 98.9 | 138.4 |       |     |
| Mg | 7.6  | 15   | 80.1 |      |       |       |     |
| Al | 6    | 18.8 | 28.4 |      |       |       |     |
| S  | 10.4 | 23.3 | 34.9 |      |       |       |     |
| Ar | 15.8 | 27.6 | 40.7 | 59.6 | 74.8  |       |     |
| Ca | 6.1  | 11.9 | 50.9 | 67.3 | 84.3  |       |     |
| Fe | 7.9  | 16.2 | 30.7 | 54.9 | 75    | 99    | 125 |

Legend

|  |                   |               |
|--|-------------------|---------------|
|  | 0 < E < 13.6      | Fe II         |
|  | 13.6 = < E < 24.6 | H I           |
|  | 24.6 = < E < 54.4 | He I          |
|  | 54.4 = < E < 100  | He II, [OIII] |
|  | E > 100           | [Fe VII]      |

**A useful spreadsheet : Find and visualise Miles Standarts**

“Excel spreadsheet used to browse the Miles spectral library. The purpose is to facilitate the selection of suitable reference stars for observing sessions”

By Paolo Berardi and Marco Leonardi

Download : [http://quasar.teoth.it/html/varie/MILES\\_SEARCH\\_V1\\_1.zip](http://quasar.teoth.it/html/varie/MILES_SEARCH_V1_1.zip)

See Aras Topic : <http://www.spectro-aras.com/forum/viewtopic.php?f=8&t=941>

## Novae

### Fermi establishes classical novae as a distinct class of gamma-ray sources

Ackermann, M.; Ajello, M.; Albert, A.; Baldini, L.; Ballet, J.; Barbiellini, G.; Bastieri, D.; Bellazzini, R.; Bissaldi, E.; Blandford, R. D.; Bloom, E. D.; Bottacini, E.; Brandt, T. J.; Bregeon, J.; Bruehl, P.; Buehler, R.; Buson, S.; Caliandro, G. A.; Cameron, R. A.; Caragiulo, M.; Caraveo, P. A.; Cavazzuti, E.; Charles, E.; Chekhtman, A.; Cheung, C. C.; Chiang, J.; Chiaro, G.; Ciprini, S.; Claus, R.; Cohen-Tanugi, J.; Conrad, J.; Corbel, S.; D'Ammando, F.; de Angelis, A.; den Hartog, P. R.; de Palma, F.; Dermer, C. D.; Desiante, R.; Digel, S. W.; Di Venere, L.; do Couto e Silva, E.; Donato, D.; Drell, P. S.; Drlica-Wagner, A.; Favuzzi, C.; Ferrara, E. C.; Focke, W. B.; Franckowiak, A.; Fuhrmann, L.; Fukazawa, Y.; Fusco, P.; Gargano, F.; Gasparrini, D.; Germani, S.; Giglietto, N.; Giordano, F.; Giroletti, M.; Glanzman, T.; Godfrey, G.; Grenier, I. A.; Grove, J. E.; Guiriec, S.; Hadasch, D.; Harding, A. K.; Hayashida, M.; Hays, E.; Hewitt, J. W.; Hill, A. B.; Hou, X.; Jean, P.; Jogler, T.; Jóhannesson, G.; Johnson, A. S.; Johnson, W. N.; Kerr, M.; Knödseder, J.; Kuss, M.; Larsson, S.; Latronico, L.; Lemoine-Goumard, M.; Longo, F.; Loparco, F.; Lott, B.; Lovellette, M. N.; Lubrano, P.; Manfreda, A.; Martin, P.; Massaro, F.; Mayer, M.; Mazziotta, M. N.; McEnery, J. E.; Michelson, P. F.; Mitthumsiri, W.; Mizuno, T.; Monzani, M. E.; Morselli, A.; Moskalenko, I. V.; Murgia, S.; Nemmen, R.; Nuss, E.; Ohsugi, T.; Omodei, N.; Orienti, M.; Orlando, E.; Ormes, J. F.; Paneque, D.; Panetta, J. H.; Perkins, J. S.; Pesce-Rollins, M.; Piron, F.; Pivato, G.; Porter, T. A.; Rainò, S.; Rando, R.; Razzano, M.; Razzaque, S.; Reimer, A.; Reimer, O.; Reposeur, T.; Saz Parkinson, P. M.; Schaal, M.; Schulz, A.; Sgrò, C.; Siskind, E. J.; Spandre, G.; Spinelli, P.; Stawarz, Ł.; Suson, D. J.; Takahashi, H.; Tanaka, T.; Thayer, J. G.; Thayer, J. B.; Thompson, D. J.; Tibaldo, L.; Tinivella, M.; Torres, D. F.; Tosti, G.; Troja, E.; Uchiyama, Y.; Vianello, G.; Winer, B. L.; Wolff, M. T.; Wood, D. L.; Wood, K. S.; Wood, M.; Charbonnel, S.; Corbet, R. H. D.; De Gennaro Aquino, I.; Edlin, J. P.; Mason, E.; Schwarz, G. J.; Shore, S. N.; Starrfield, S.; Teysier, F.; Fermi-LAT Collaboration  
**Science, Volume 345, Issue 6196, pp. 554-558 (2014)**

### On the Raman O VI and related lines in classical novae

Steven N. Shore (U. Pisa, INFN-Pisa), Ivan De Gennaro Aquino (U. Pisa, Hamburger Sternwarte), Simone Scaringi (KU Leuven, MPI-extraterrestrische Physik), Hans van Winckel (KU Leuven)

<http://arxiv.org/pdf/1409.3240.pdf>

### Morpho-kinematic Modeling of Nova Ejecta

Valério A. R. M. Ribeiro

<http://arxiv.org/abs/1410.0152>

### On the Evolution of the Late-time *Hubble Space Telescope* Imaging of the Outburst of the Recurrent Nova RS Ophiuchi (2006)

Valério A. R. M. Ribeiro, Michael F. Bode, Robert E. Williams

<http://arxiv.org/pdf/1410.0148.pdf>

### A WISE view of novae. I. The data

A. Evans (Keele University, UK), R. D. Gehrz, C. E. Woodward (Minnesota Institute of Astrophysics), L. A. Helton (SOFIA Science Center, US-RA, NASA Ames Research Center)

<http://arxiv.org/abs/1407.5570>

## Supernovae

### Photometric and spectroscopic observations, and abundance tomography modelling of the type Ia supernova SN 2014J located in M82

C. Ashall, P. Mazzali, D. Bersier, S. Hachinger, M. Phillips, S. Percival, P. James, K. Maguire

<http://arxiv.org/pdf/1409.7066.pdf>

### See also :

#### Spectroscopic observations of the bright RV Tauri variable R Scuti

D. Boyd

J.Br.Astron.Assoc. 124 (2014) 267-269

<http://arxiv.org/abs/1409.8598v1>

### Amateur Spectroscopy in publications

Olivier Thizy built a great list of (non-exhaustive) publications involving amateurs

<http://thizy.free.fr/shelyak/bookcover/BiblioArticlesProAm.htm>



## 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 for August

[http://www.astrosurf.com/aras/surveys/beactu/report2014/BeSS%20report\\_august2014.pdf](http://www.astrosurf.com/aras/surveys/beactu/report2014/BeSS%20report_august2014.pdf)

Previous issues :

<http://www.astrosurf.com/aras/surveys/beactu/index.htm>

### Searching for new Be Stars

Andrew Smith and Thierry Lemoult

<http://www.spectro-aras.com/forum/viewforum.php?f=32>

### New ARAS Page

[http://www.astrosurf.com/aras/be\\_candidate/auto-be-candidate.html](http://www.astrosurf.com/aras/be_candidate/auto-be-candidate.html)

### High resolution spectra of Deneb (BRICE context support)

Christian Buil

<http://www.spectro-aras.com/forum/viewtopic.php?f=6&t=936>

### Contribution to ARAS data base

From 01-09 to 30-09-2014

T. Bohlsen  
F. Boubault  
D. Boyd  
C. Buil  
P. Dubreuil  
J. Edlin  
J. Jacquinot  
A. Garcia  
J. Guarro  
T. Lester  
J. Montier  
P. Somogyi  
F. Teyssier  
O. Thizy

Please :

**Submit your spectra**

- respect the procedure
- check your spectra BEFORE sending them

Resolution should be at least  $R = 500$

For new transients, 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

Further information :

Email [francoismathieu.teyssier at bbox.fr](mailto:francoismathieu.teyssier@bbox.fr)

Download previous issues :

<http://www.astrosurf.com/aras/novae/InformationLetter/InformationLetter.html>