

Latest Developments on Nova and Supernova Observations with TIGRE

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19. December 2016

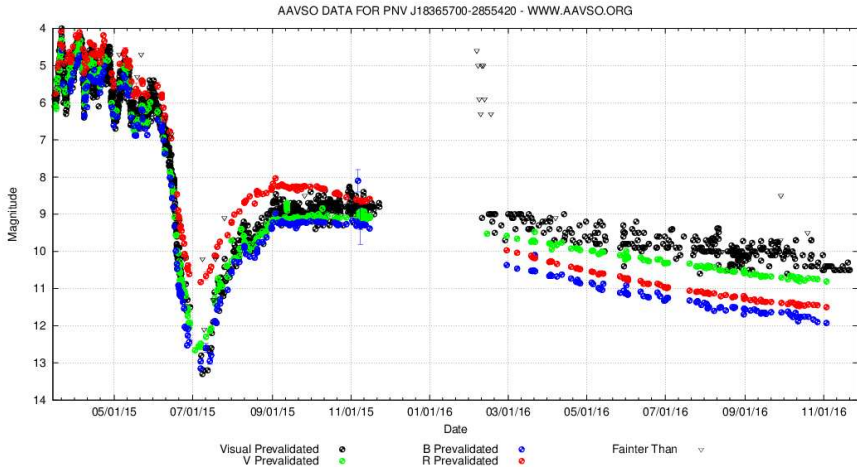


- 1 TIGRE observations of Nova V5668 Sgr
 - The light curve
 - Continued spectral monitoring
- 2 Telluric lines in supernova spectra
 - A new method for their removal
- 3 Interstellar absorption in Novae V5668 Sgr and V339 Del
 - IS absorption features and DIBs
- 4 Conclusions



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Light curve of V5668 Sgr

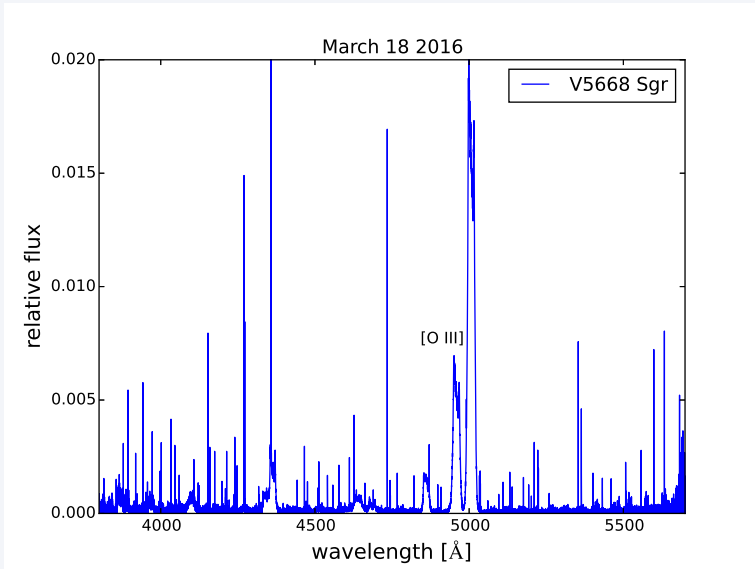




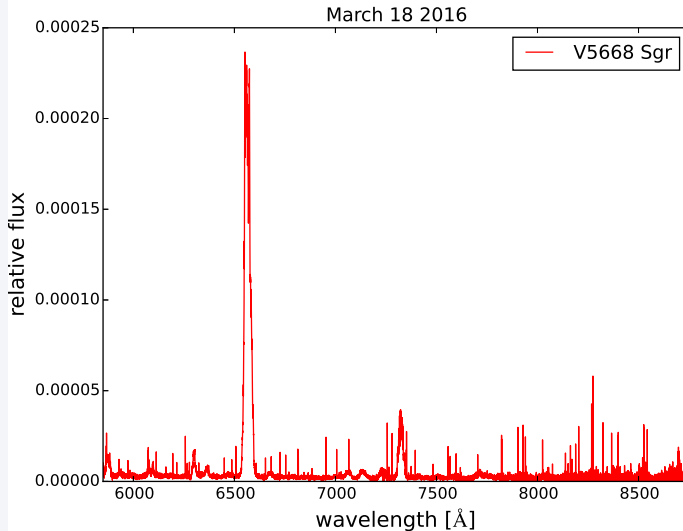
Continued spectral monitoring

- We continued with TIGRE observations of Nova V5668 Sgr starting on March 18 this year
- We obtained spectra on 16 more days in 2016 resulting in a total amount of 88 high resolution spectra
- The last spectrum this year was observed on May 9 just before TIGRE went into maintenance
- Hopefully we can resume our observations in March 2017

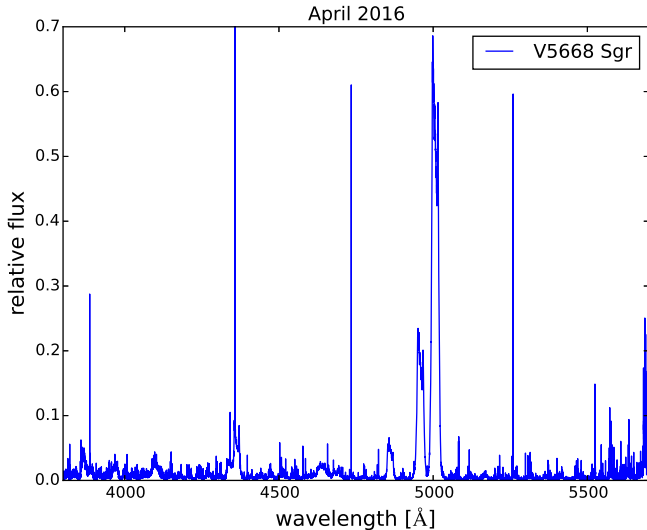
First spectrum on March 18 in 2016



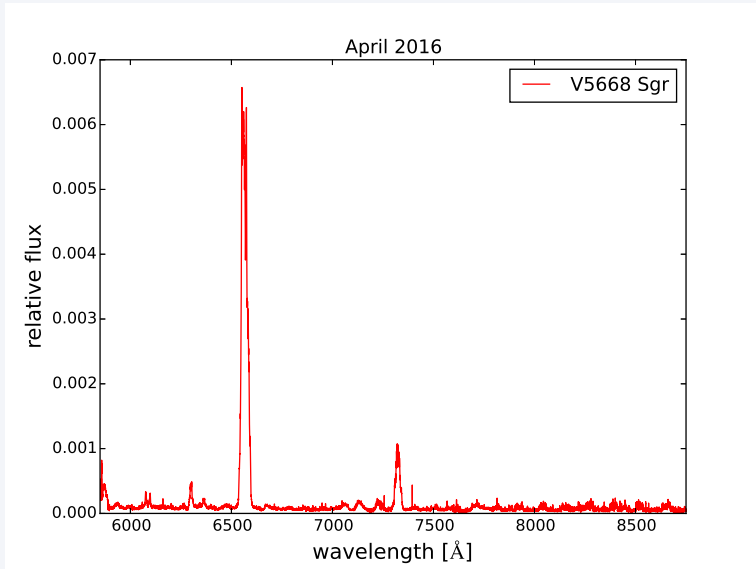
First spectrum on March 18 in 2016



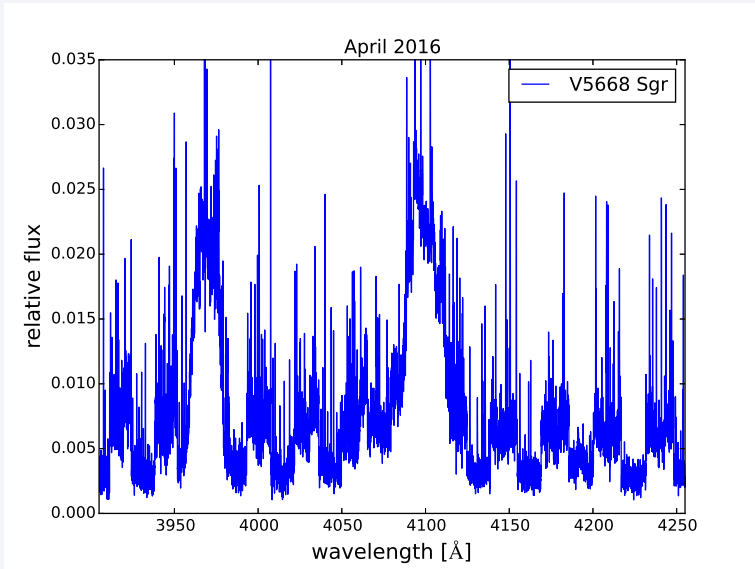
Added spectrum of April 2016



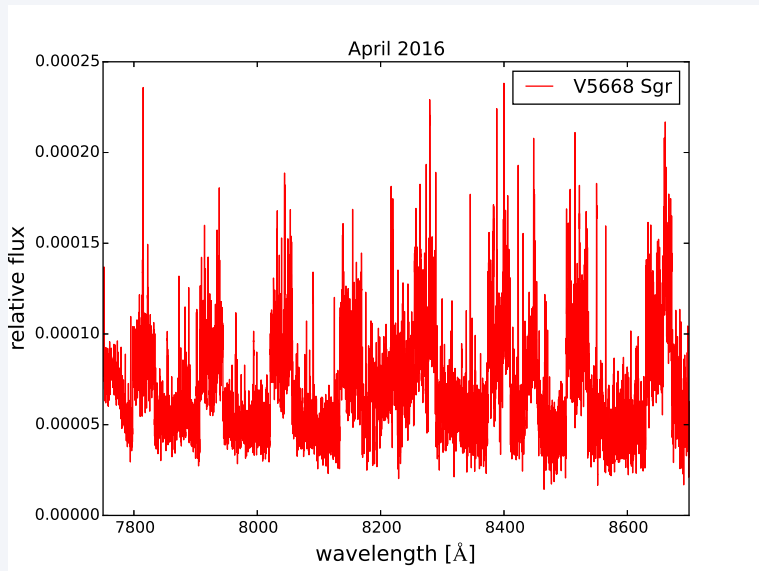
Added spectrum of April 2016



Zoom into the added spectrum of April 2016



Zoom into the added spectrum of April 2016





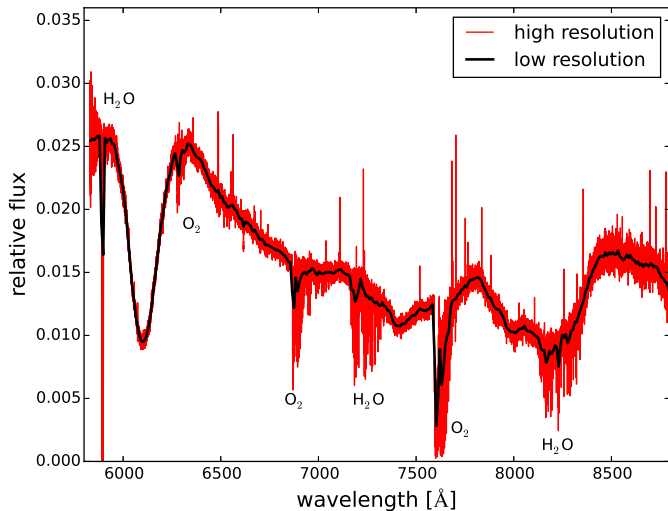
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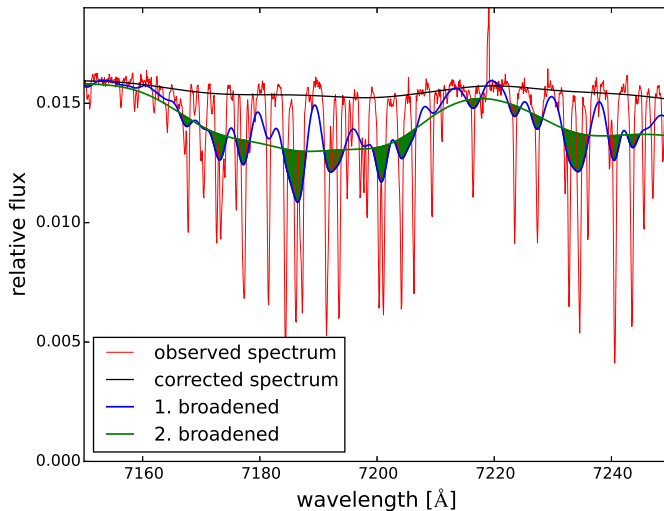
A new method for their removal

- Usually SN spectra are observed with quite low resolution
- We have now high resolution SN spectra that contain telluric lines, noise, cosmic-ray hits, interstellar absorption features, ...
- We want to correct the spectra for all these effects
- The idea is to remove all small scale features from the spectrum
- Only the broad SN features remain

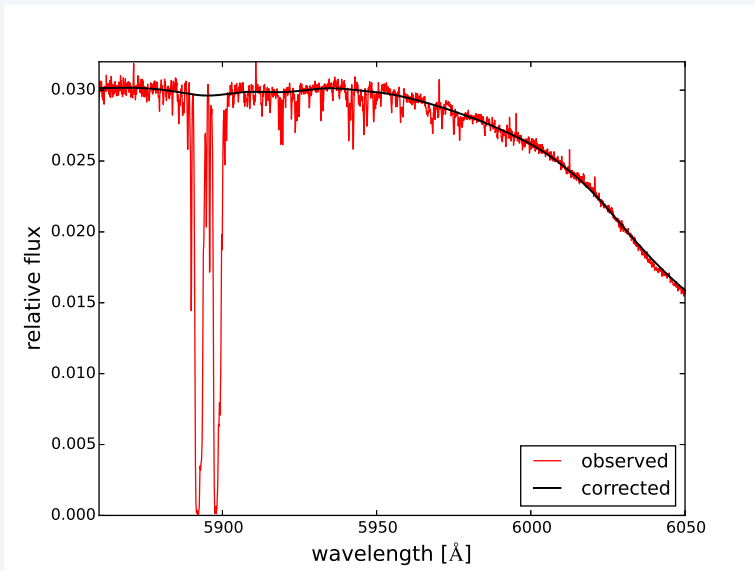
Method for telluric line removal



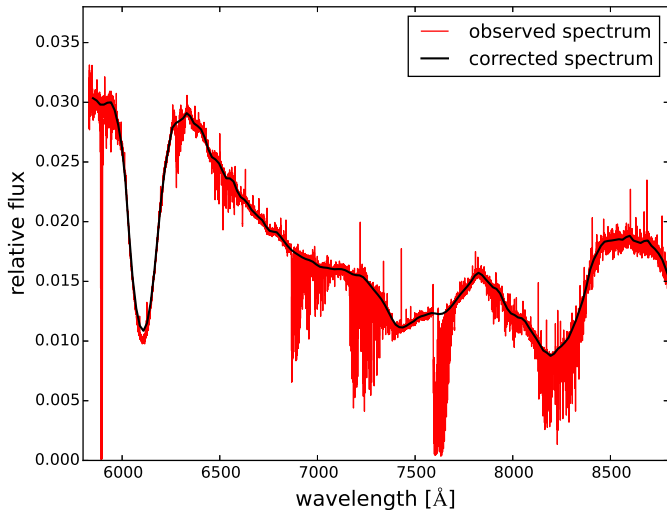
Method for telluric line removal



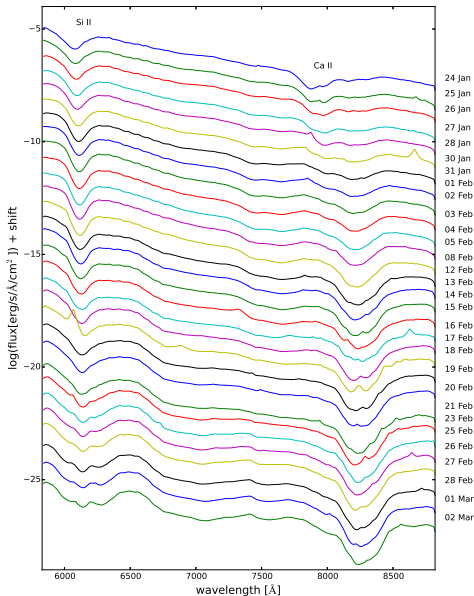
Corrected spectrum of SN 2014J around Na I



Corrected spectrum of SN 2014J



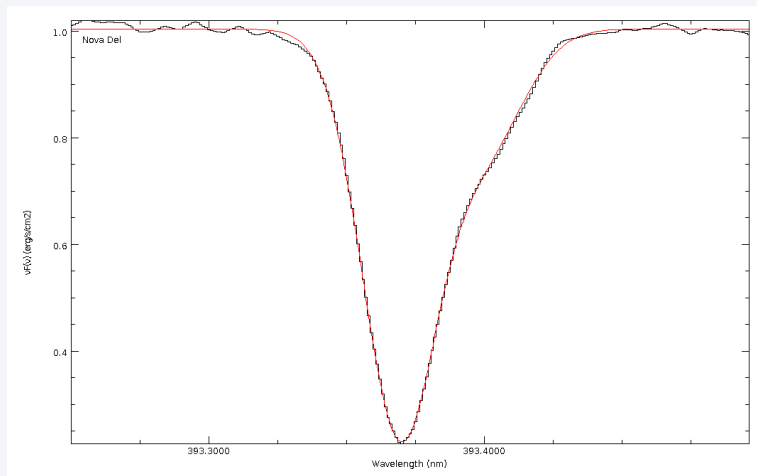
Complete set of SN 2014J spectra



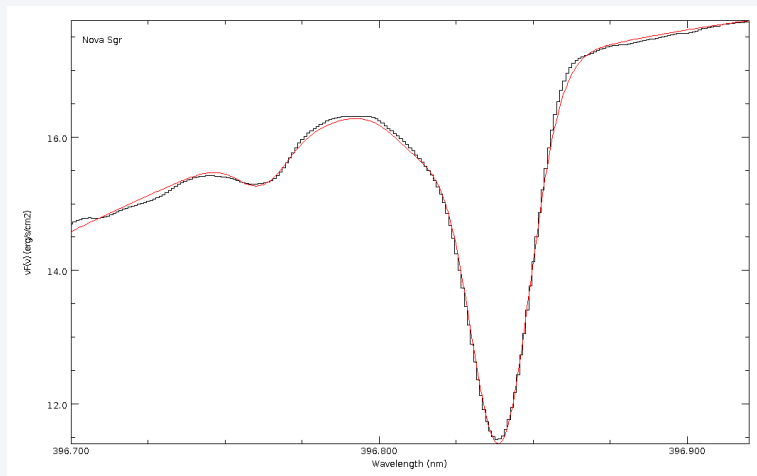


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Interstellar Ca II absorption in Nova V339 Del



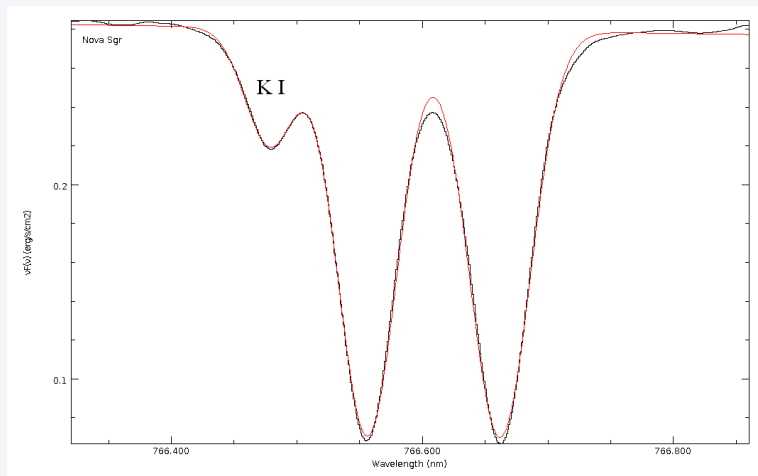
Interstellar Ca II absorption in Nova V5668 Sgr

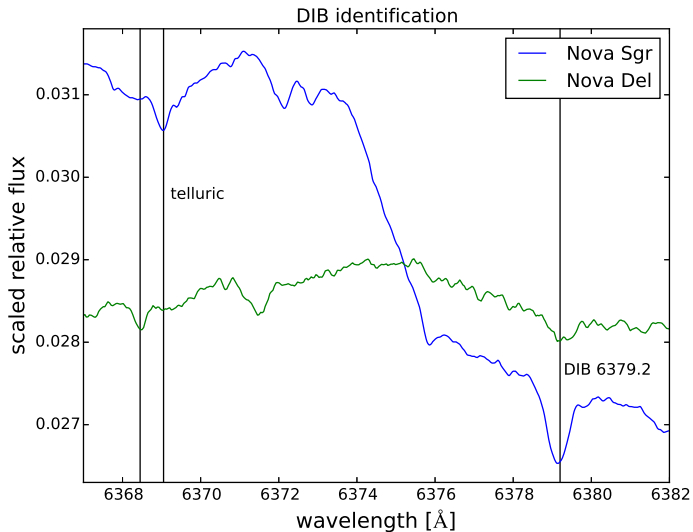




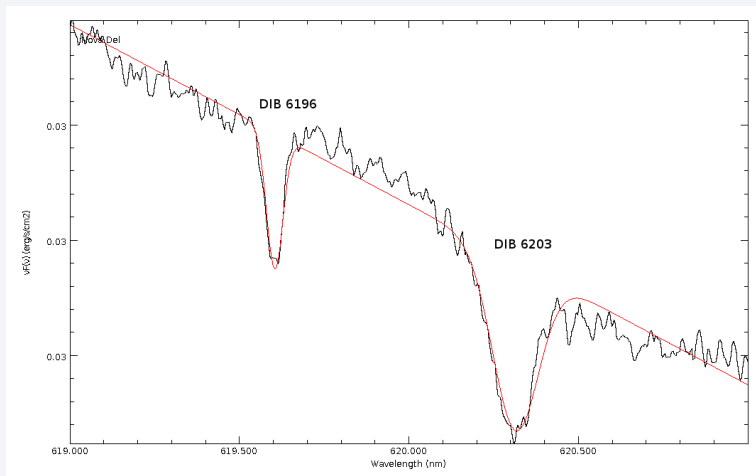
IS absorption features

- Both novae show interstellar absorption features of Na I and Ca II
- Nova V399 Del spectra show two absorption components, a strong one at 3 km/s and a weaker one at 26 km/s.
- Nova V5668 Sgr spectra show three absorption components, a stronger one at -6 km/s, and two weaker ones at -23 km/s and -64 km/s
- Nova V5668 Sgr spectra also show IS absorption of K I
- In Nova V339 Del they lie exactly in telluric lines





Diffuse Interstellar Bands in Nova V339 Del





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Conclusions

- We continued to obtain a time series of high resolution spectra of Nova V5668 Sgr and have now a total of 88 days of observations.
- A new method for telluric line removal from high resolution supernova spectra was presented.
- Novae V5668 Sgr and V339 Del show IS absorption features of Ca II and Na I
- The Ca II IS line in Nova V339 Del shows two absorption components, in Nova V5668 Sgr it has three
- Several DIBs have been found in the spectra of both novae