A remotely-operated amateur spectroscopic observatory located in Chile

2SPOT

Southern Spectroscopic Project Observatory Team

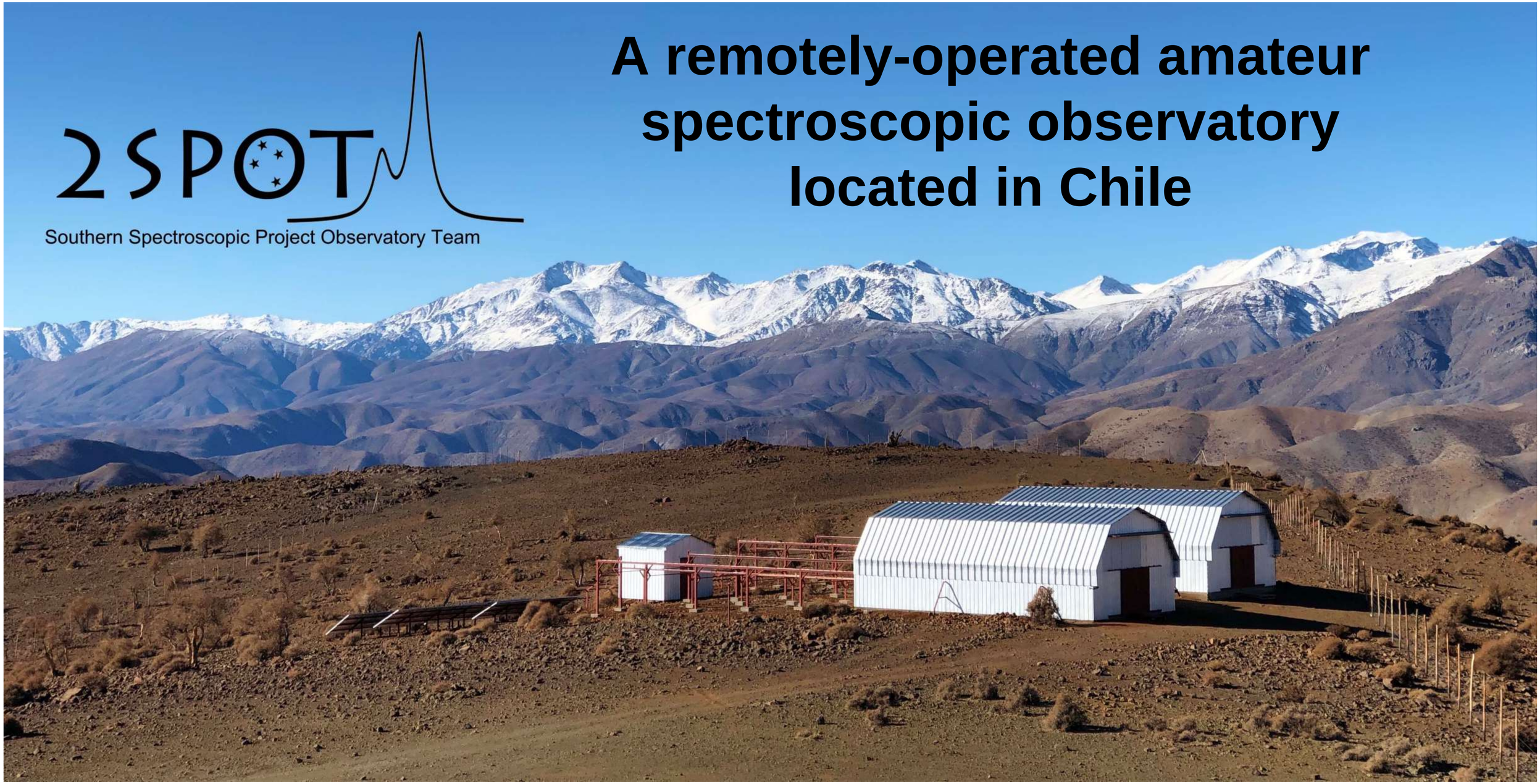

Photo : © Deep Sky Chili

Symbiotic stars, weird novae, and related embarrassing binaries, Prague june 7 2024

by Olivier GARDE 2SPOT

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Southern Spectroscopic Project Observatory Team

Who are we?

- A team of 5 French amateur astronomers
- We created an association in September 2019
- Our structure is recognized as being of general scientific interest.
- We have the support of several French and foreign companies and research institutes.
- We participate in Pro/Am collaboration projects in spectroscopy with professionals from all over the world.

Our support

(financial and material support)

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- Several companies, research institutes, scientific journals, universities and engineering schools.
- Agreements with various professional observatories
- Resellers and manufacturers of astronomical equipment
- Individuals and amateur astronomers

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Our team

Thomas Petit

Stéphane Charbonnel

Pascal Le Dû

Olivier Garde

Birth of the project at OHP in 2019

Lionel Mulato

Choosing a location in Chile

(for a different, complementary sky than in Europe)

DeepSkyChile

RENT CHILEAN SKY

- 300 clear-sky nights per year
- 1700 m altitude
- No light pollution
- Black sky background at mag. V=21-22
- Seeing very often less than < 1’’

www.deepskychile.com

Lat : 30° 31’ S

Lon : 70° 51’ W

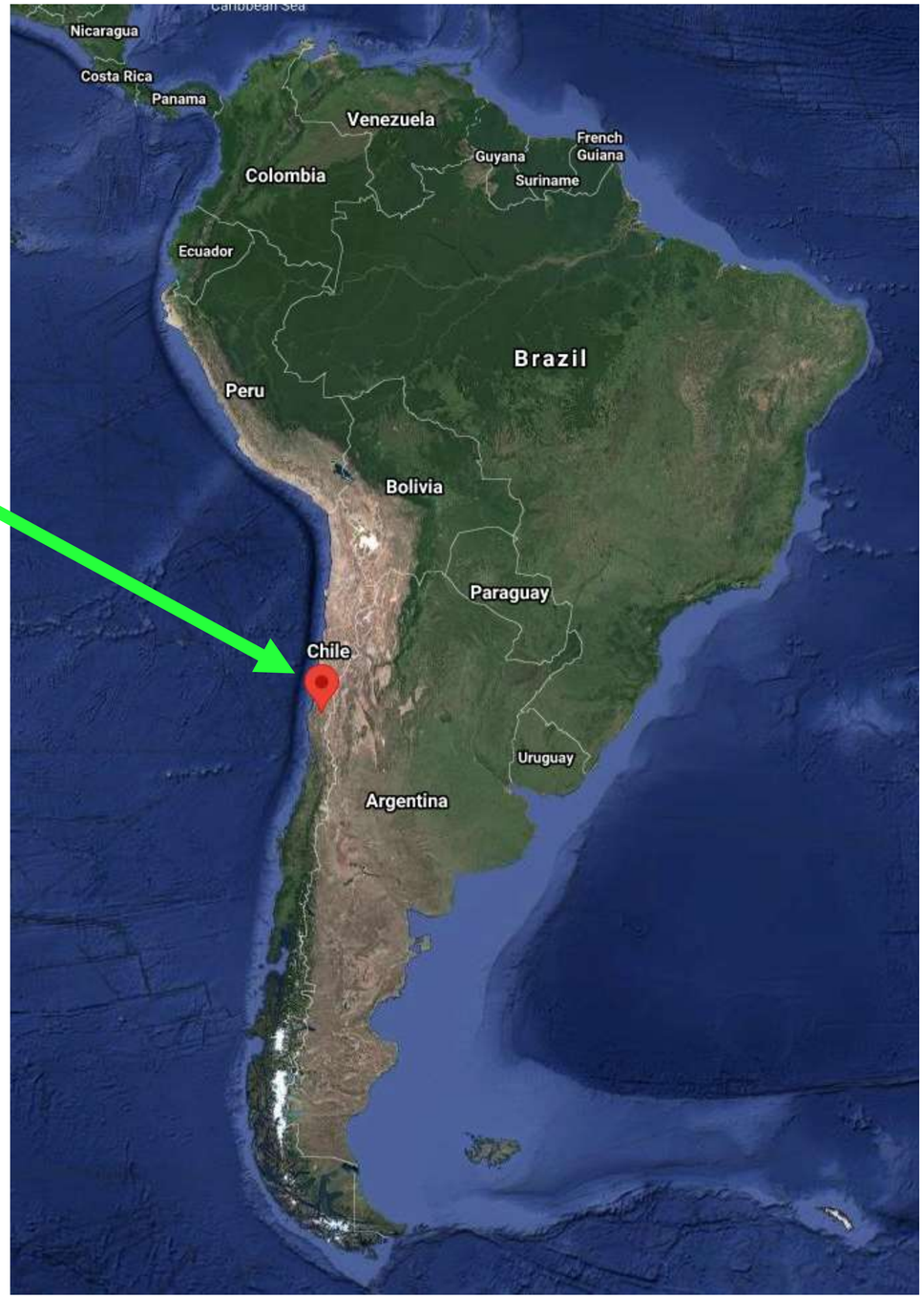


Photo : © Google Map

Our neighbors in Chile

Cerro Tololo

Cerro Pachon

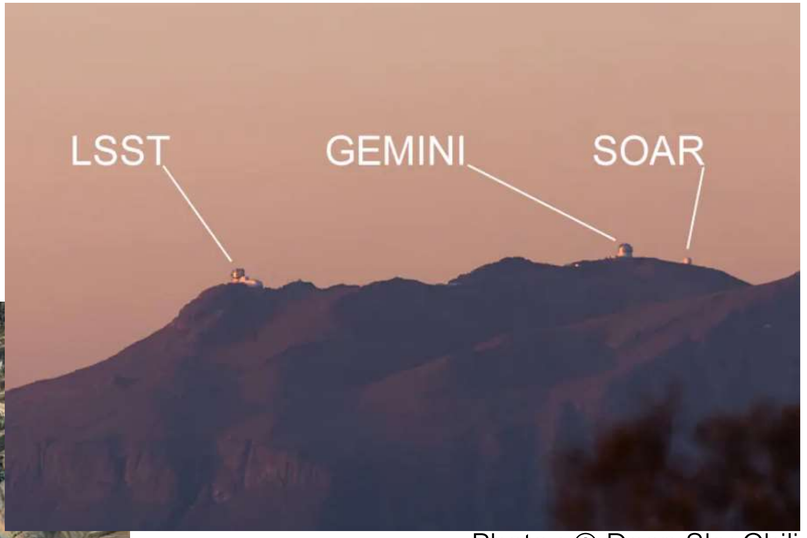


Photo : © Deep Sky Chili

Cerro Tololo Inter-American Observatory

Photo : © Google Map

Large Synoptic Survey Telescope

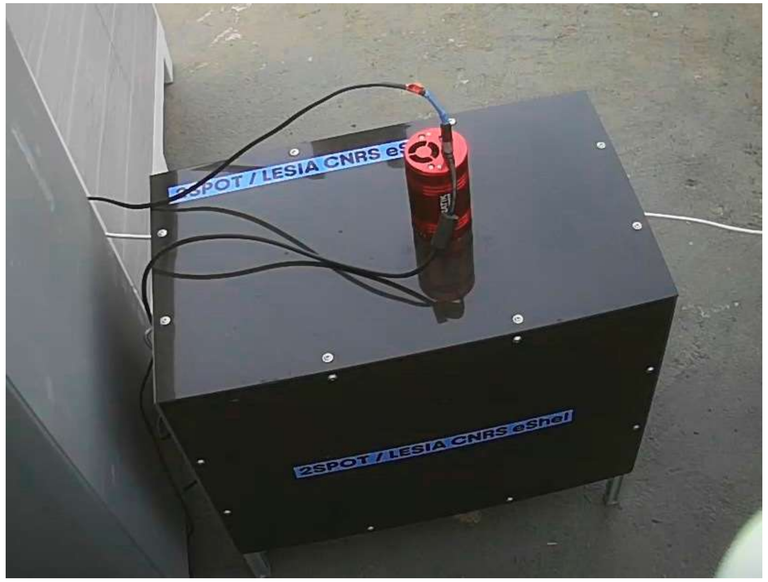
Southern Astrophysical Research Telescope

Gemini South

Our 2 setups Spectro in Chile

- 305mm Newton telescope for low-resolution spectroscopy with an Alpy 600
  spectral range from 370 to 750 nm - R=600

- RC 305mm Ritchey-Chrétien telescope
  for medium-resolution spectroscopy with an eShel
  spectral range from 390 to 730 nm - R=11000



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Our spectroscopy observation programs

- Follow-up of Be and B[e] stars
- Confirmation of PN candidates
- Follow-up of Symbiotic and cataclysmic stars
- Confirmation of symbiotic stars
- Flickering in WR stars and P Cyg type stars
- Novae
- Supernovae
- Comets
- TNS and gaia alerts

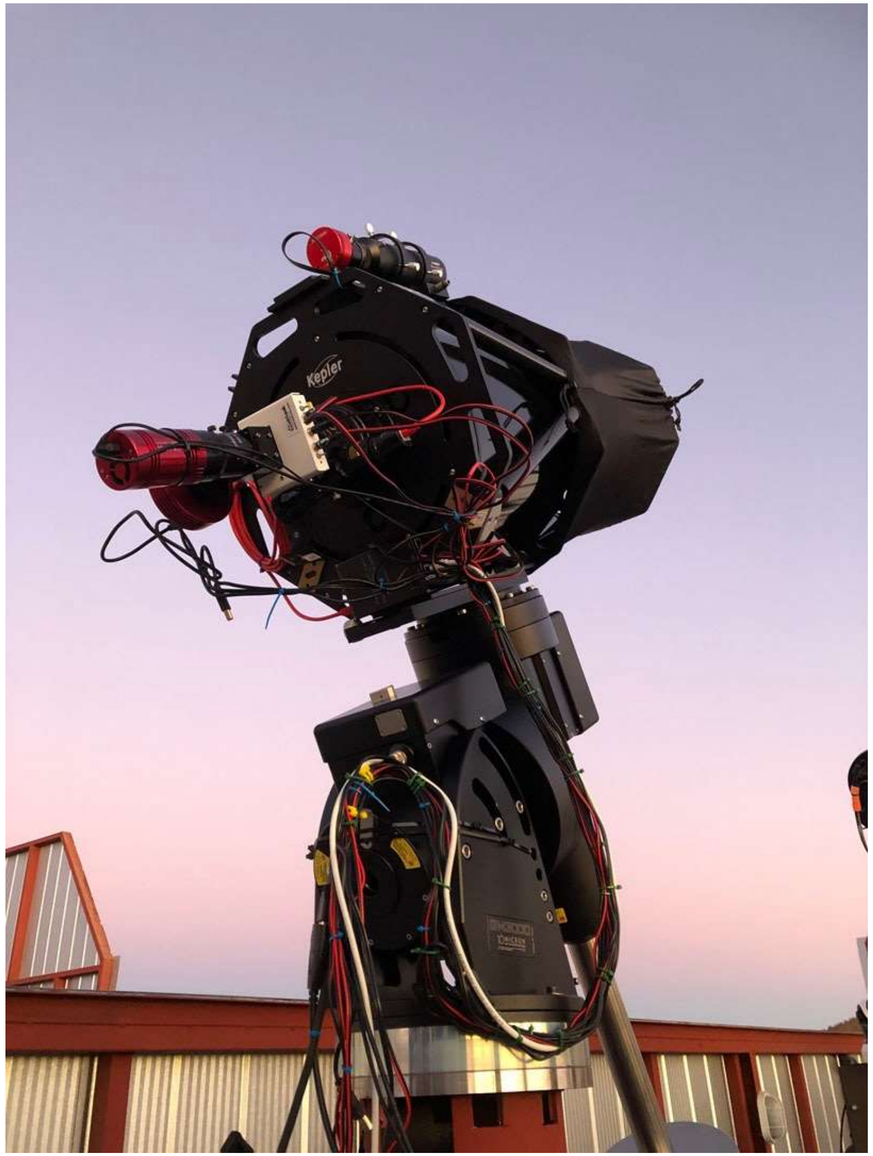
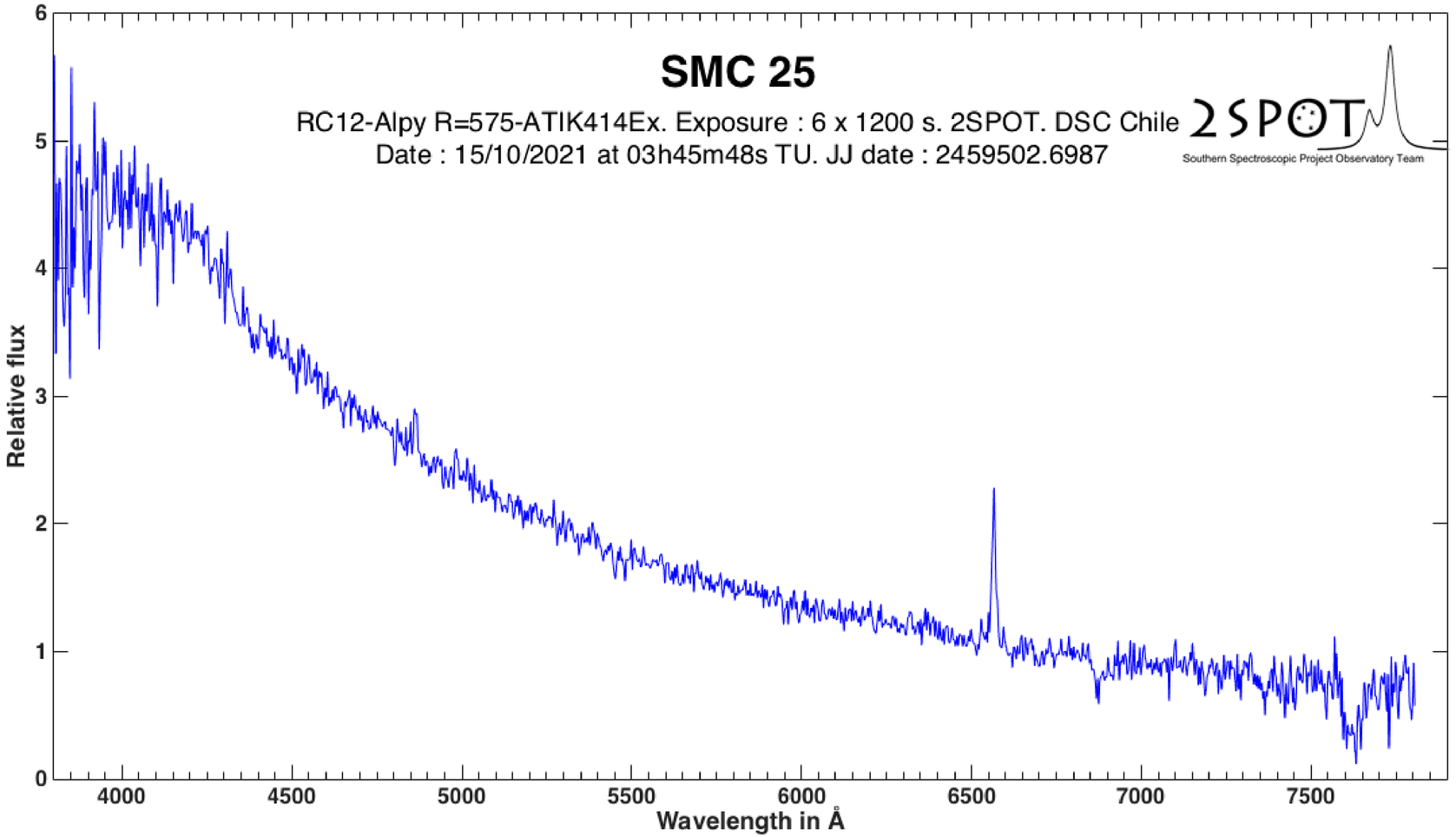
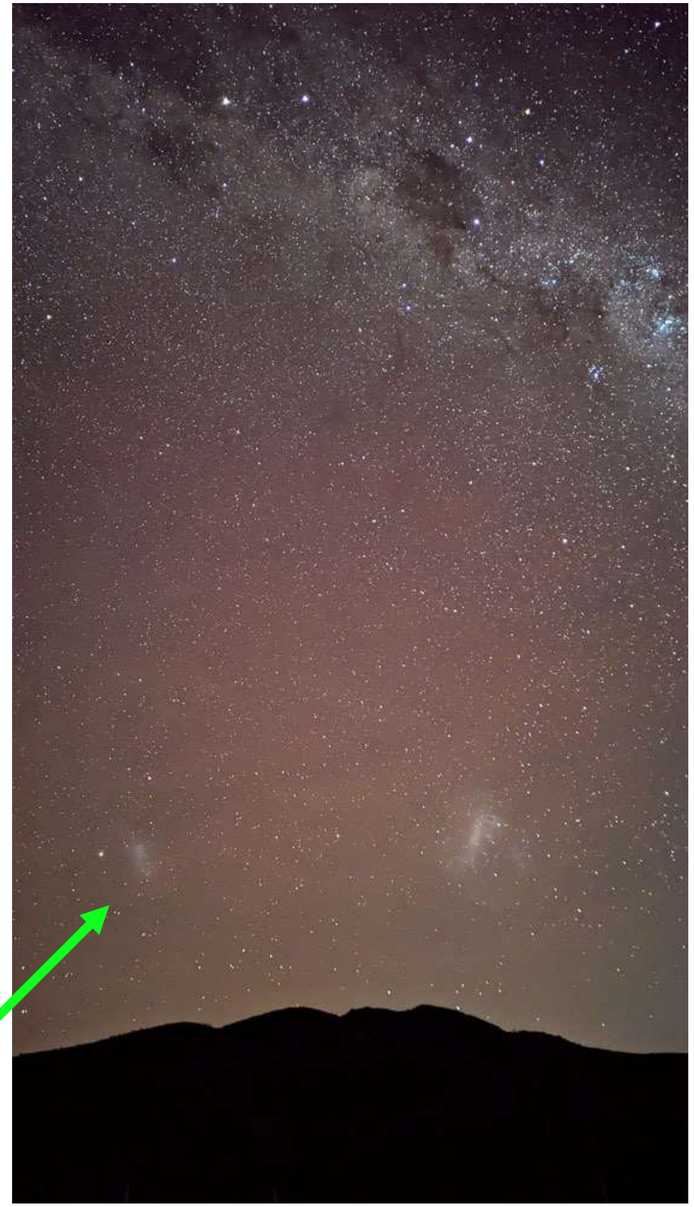


Photo : © Deep Sky Chile

Low-resolution example with an extragalactic Be star





SMC 25 : In the Small Magellanic Cloud (Mag. V=14,45)

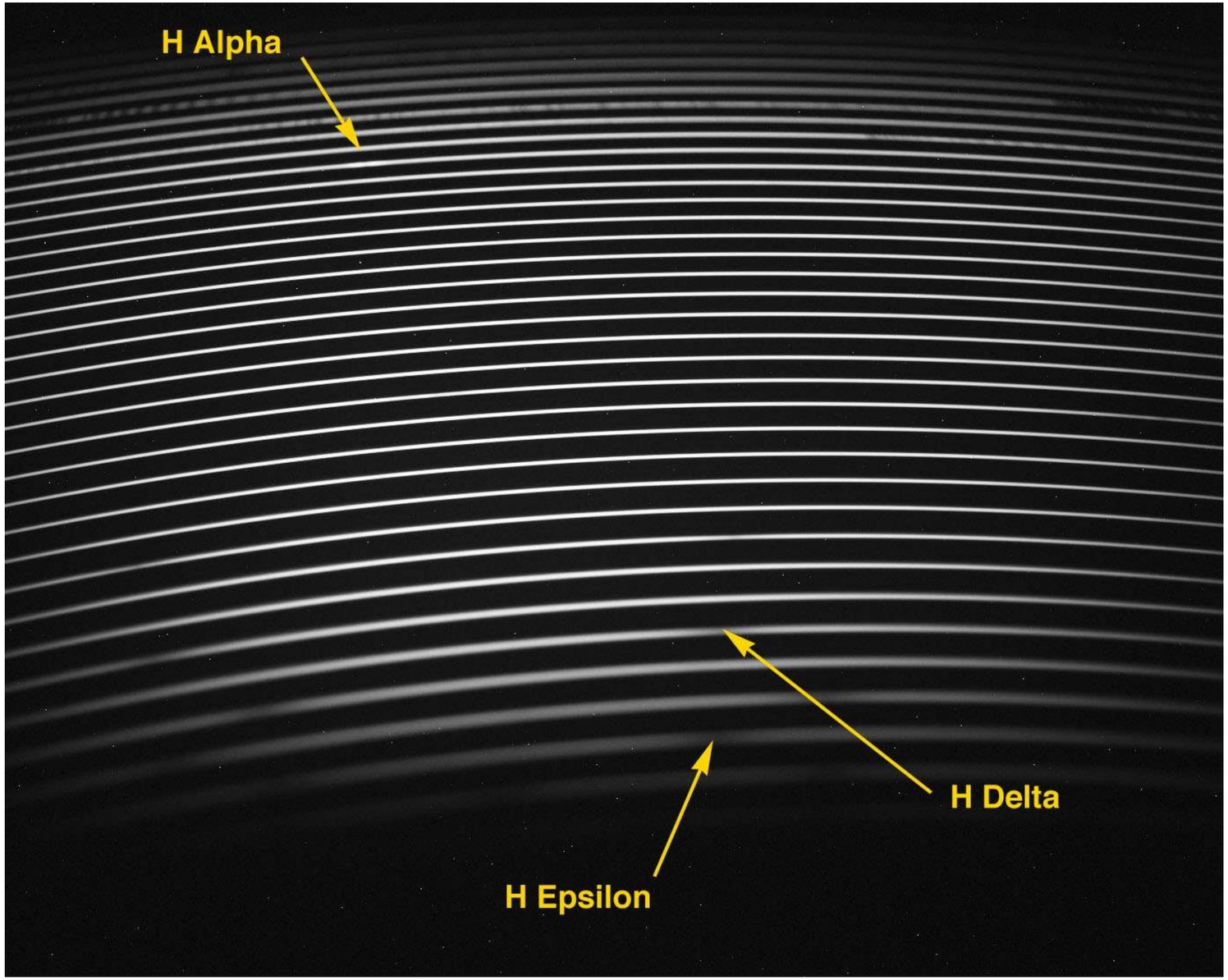
we have also recently completed PN spectra of the LMC

First eShel spectrum from Chile

Southern Spectroscopic Project Observatory Team

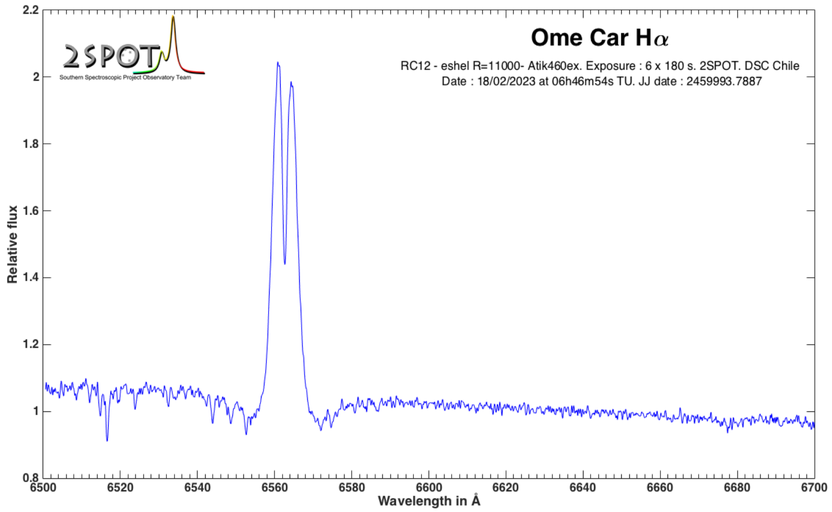
Ome Car

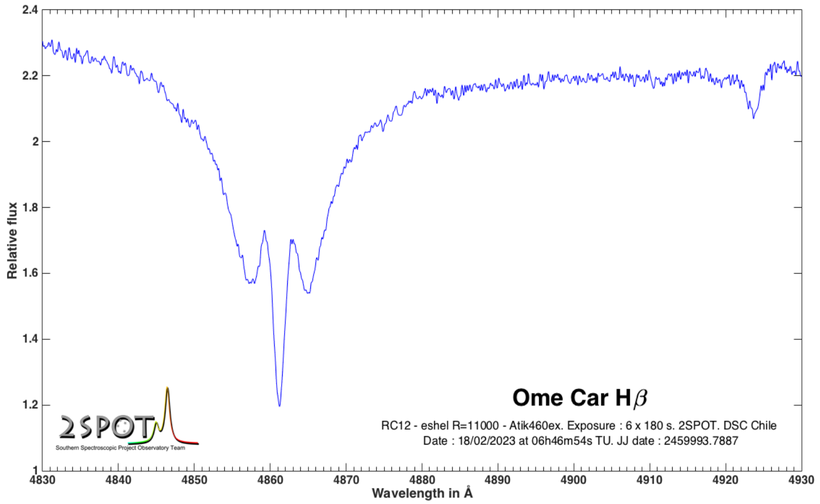
A Be Star from the south

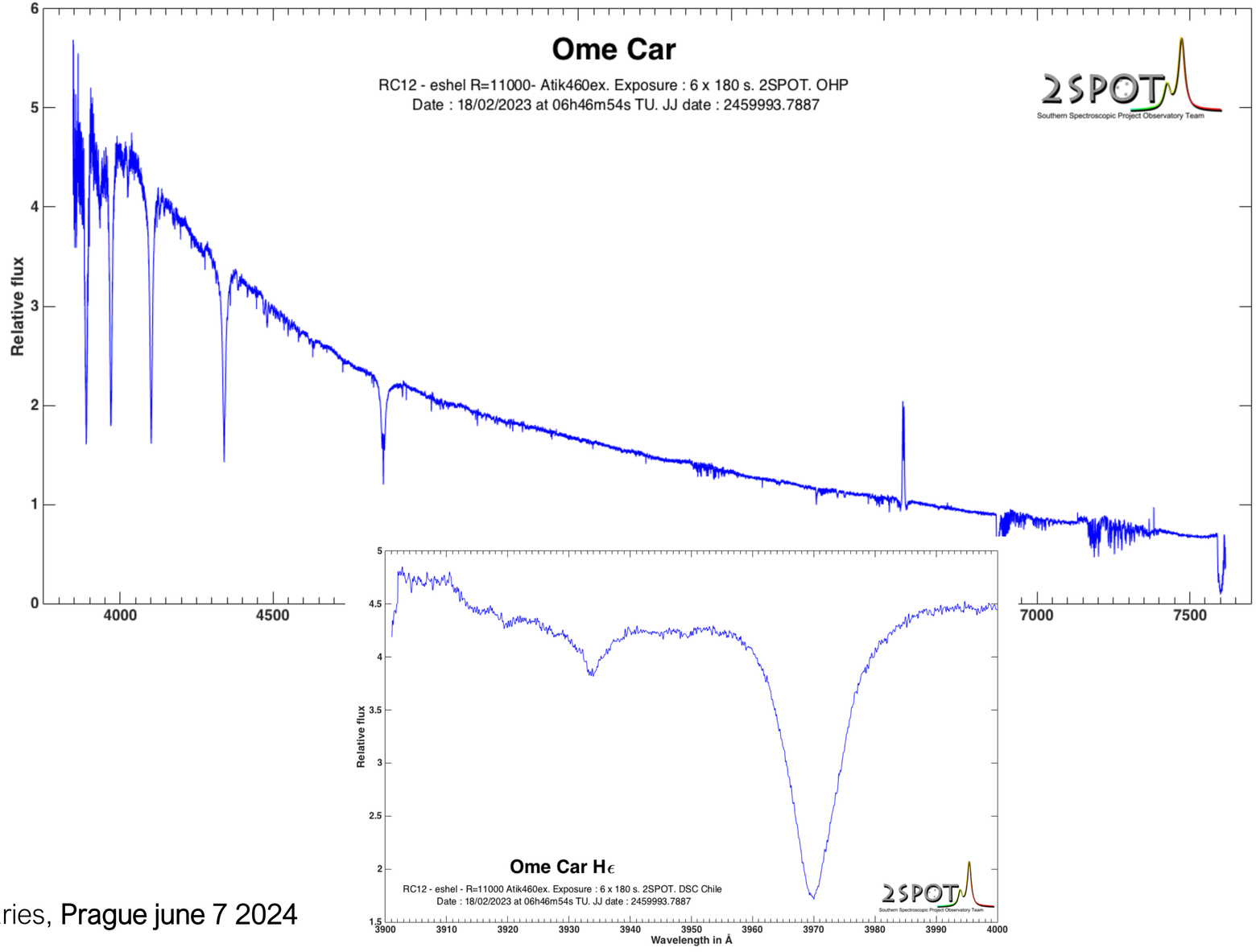


Example of an eShel medium-resolution spectrum

We have performed over 800 spectra in the Bess database







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100% automatic and remote observations

Text file of
various targets

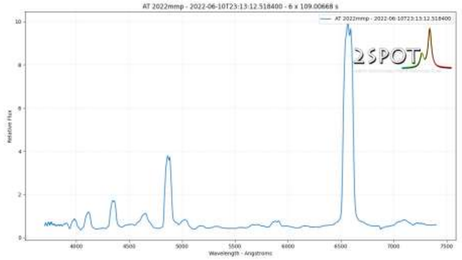
Objects.txt

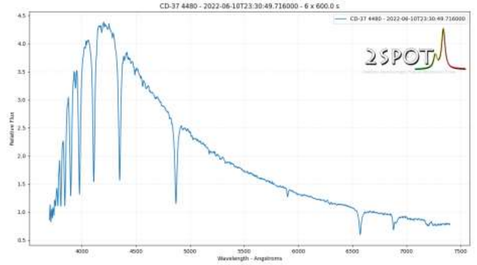
```
AT_2022mnp 13 24 31.3000 -72 10 30.300 9.0 NONE NONE GUIDE NO_FOCUS Nova
CD-37__4480 08 16 12.0675 -37 47 04.222 10.89 NONE NONE GUIDE NO_FOCUS Be
U_Sco 16 22 30.7791 -17 52 43.166 10.0 NONE NONE GUIDE NO_FOCUS Nova
V644_Cen 11 43 06.5274 -60 44 04.490 10.427 NONE NONE GUIDE NO_FOCUS Be
CSI-62-12087 12 11 18.5515 -62 29 43.613 11.35 NONE NONE GUIDE NO_FOCUS Be
WRAY_15-1119 13 33 46.0353 -63 32 04.680 12.0 NONE NONE GUIDE NO_FOCUS Be
SS433 19 11 49.5647 +04 58 57.827 13.0 1200 6 GUIDE NO_FOCUS Symbiotic
HD141689 15 53 45.8361 -61 39 50.261 10.05 NONE NONE GUIDE NO_FOCUS Be
HBHA_703-05 19 12 26.9353 +06 37 44.213 11.174 NONE NONE GUIDE NO_FOCUS Be
HD_355402 20 19 21.4416 +14 54 51.455 10.87 NONE NONE GUIDE NO_FOCUS Be
```

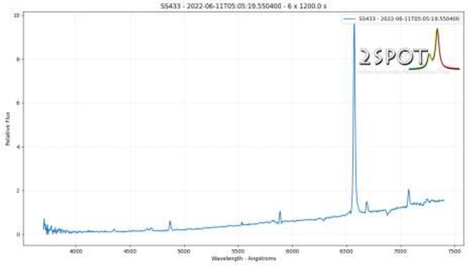
Prism script for acquisitions, programmed by **Stéphane Charbonnel**

Process ARP (by **Matthieu Le Lain** with Spec INTI (by **Christian Buil)** or ISIS.

Results available
1 to 2 hours after
the end of the night







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Our strengths

- **Reactivity** of observations: we can produce a spectrum a few hours after a discovery (we program the target into our pipeline).

- **100% automated** processing, enabling us to have the result a few hours after the end of the night.
- A **versatile spectroscopy setup** with **2** complementary spectrographs.
- A low-resolution spectrograph that allows us to realise very low magnitude targets (**> mag. V=17**).

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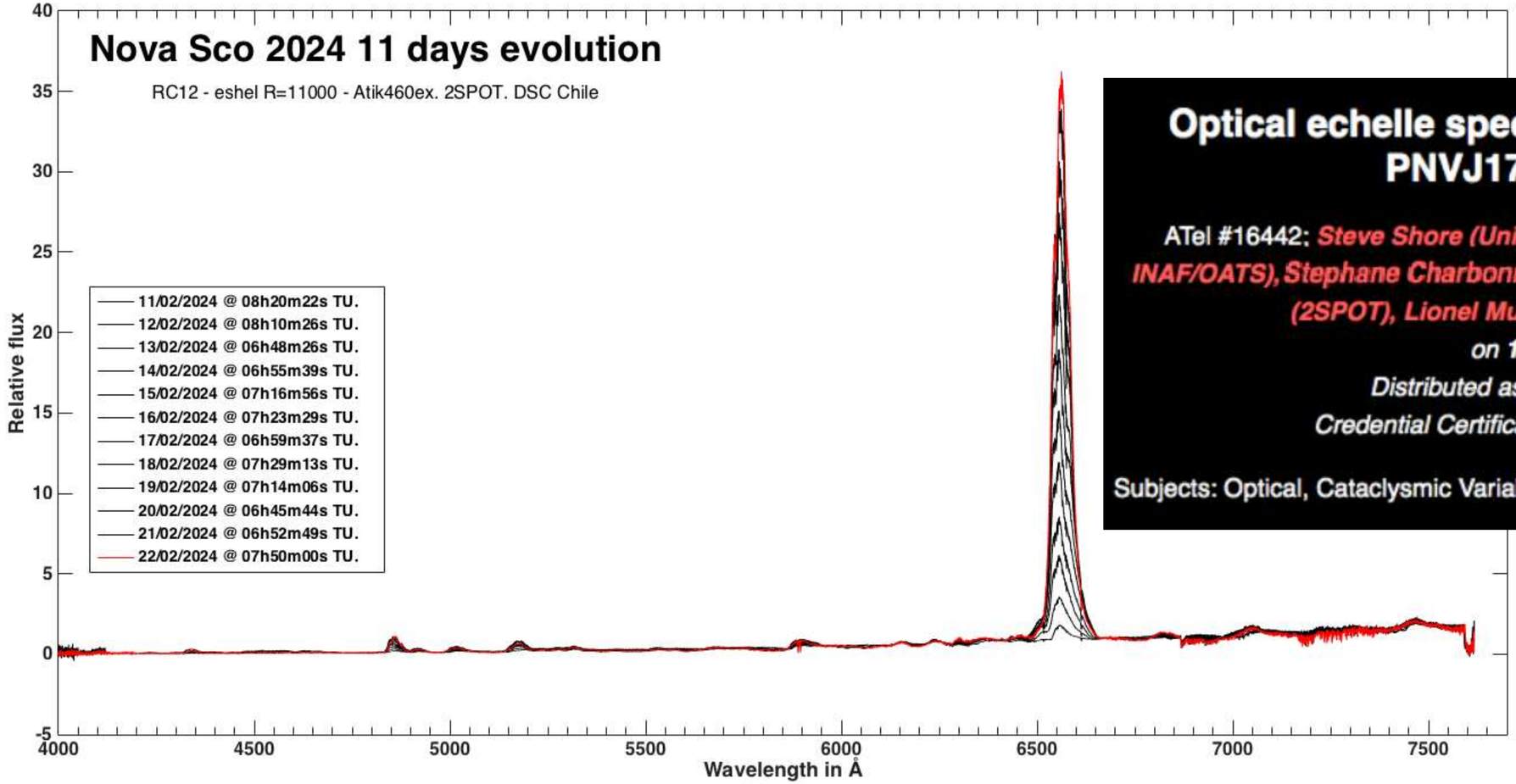
Nova V1723 Sco (Nova Sco 2024)

24 spectra between February 11 and March 11, 2024



Optical echelle spectroscopy of the classical nova PNVJ17261813-133809354

ATel #16442: *Steve Shore (Univ. Pisa, INAF/OATS),Steve Shore (Univ. of Pisa, INAF/OATS),Stephane Charbonnel, (2SPOT), Olivier Garde (2SPOT), Pascal Le Du (2SPOT), Lionel Mulato (2SPOT), Thomas Petit (2SPOT)*

*on **13 Feb 2024; 17:24 UT***

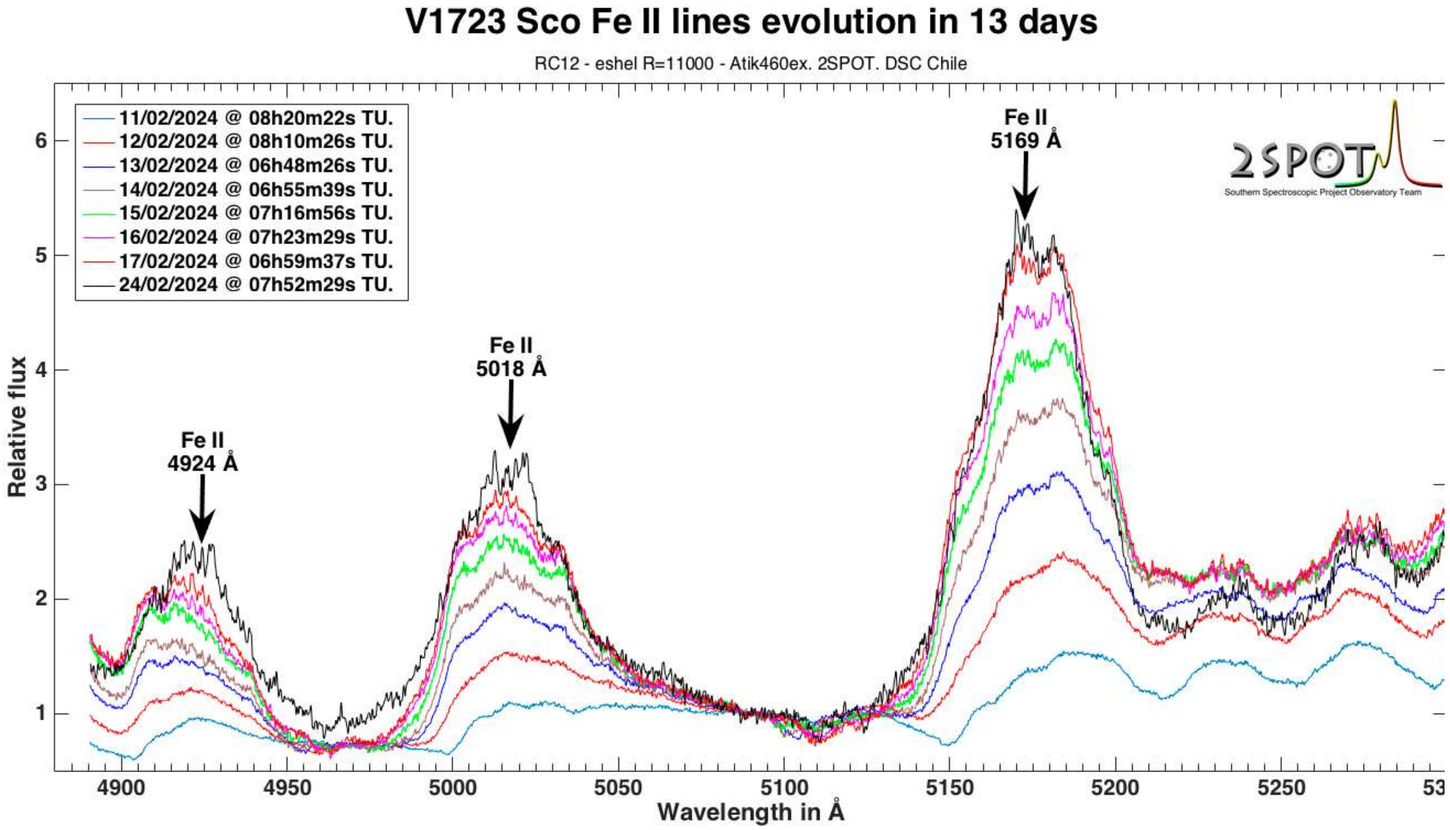
Distributed as an Instant Email Notice Novae

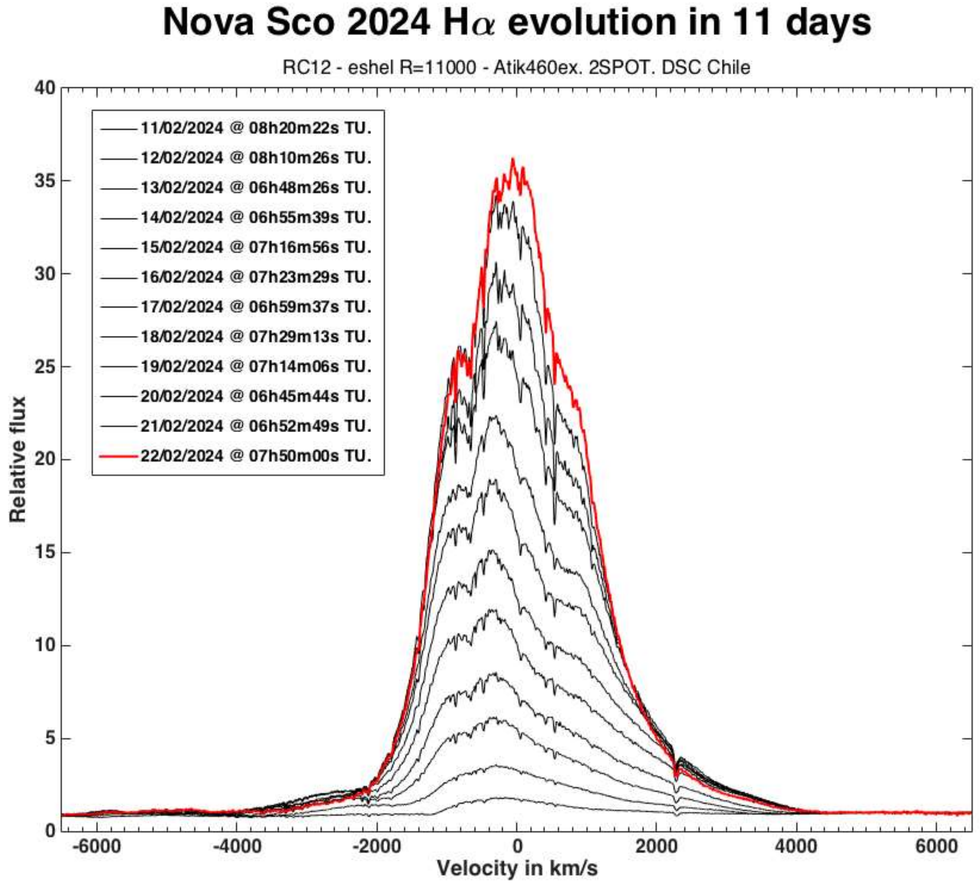
Credential Certification: S. N. Shore (shore@df.unipi.it)

Subjects: Optical, Cataclysmic Variable, Nova, Transient

Nova V1723 Sco (Nova Sco 2024)

H alpha and iron lines evolution





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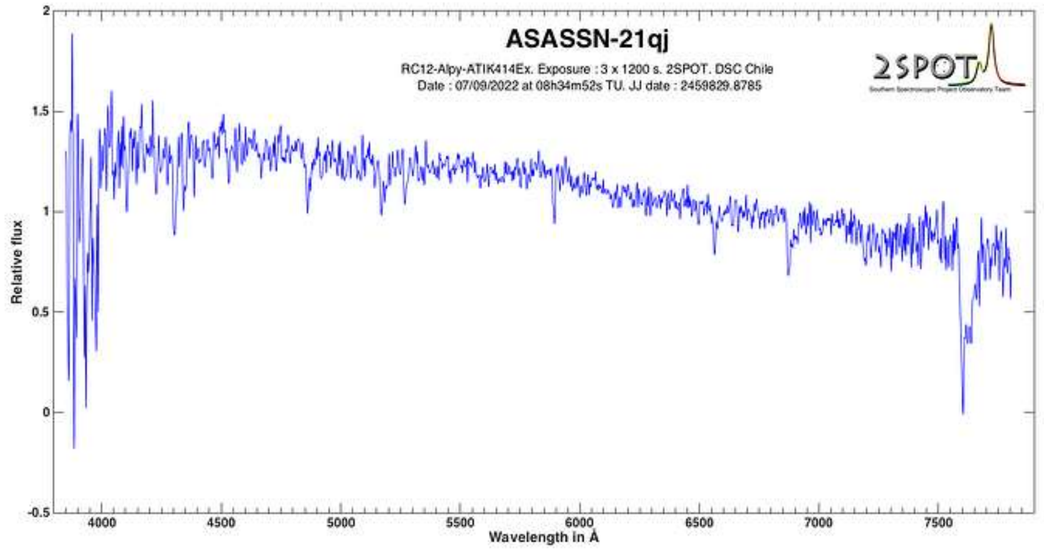
Reactivity

ASASSN-21qj spectrum produced a few hours after receiving the information, where it was necessary to produce a spectrum very quickly in order to have the spectral signature at that precise moment.
This spectrum was useful for writing this publication. (one piece of this very large puzzle)




nature

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Article | Published: 11 October 2023

A planetary collision afterglow and transit of the resultant debris cloud

Matthew Kenworthy, Simon Lock, Grant Kennedy, Richelle van Capelleveen, Eric Mamajek, Ludmila Carone, Franz-Josef Hambsch, Joseph Masiero, Amy Mainzer, J. Davy Kirkpatrick, Edward Gomez, Zoë Leinhardt, Jingyao Dou, Pavan Tanna, Arttu Sainio, Hamish Barker, Stéphane Charbonnel, Olivier Garde, Pascal Le Dû, Lionel Mulato, Thomas Petit & Michael Rizzo Smith

Nature **622**, 251–254 (2023) | Cite this article

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Southern Spectroscopic Project Observatory Team

Press release

extensive international communication on this publication

NASA - THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

08/12/2023 | Press release | Distributed by Public on 08/12/2023 17:27

Amateur Astronomers Help Discover Cosmic Crash

More contributions from amateurs helped determine the nature of the star. Amateur spectroscopist Hamish Barker tried to capture a spectrum of Asassn-21qj in late July, 2022. A spectrum spreads out the colors of the starlight, revealing the star's temperature. However, the star turned out to be too dim, so Hamish asked Olivier Garde from a French amateur astronomy team if they could add ASASSN-21q to their target list. The team, called the Southern Spectroscopic project Observatory Team (or "2SPOT"), succeeded in collecting the needed spectrum in early September, 2022 and forwarded it Kenworthy. The 2SPOT team members are Stéphane Charbonnel, Pascal Le Dû, Olivier Garde, Lionel Mulato and Thomas Petit.

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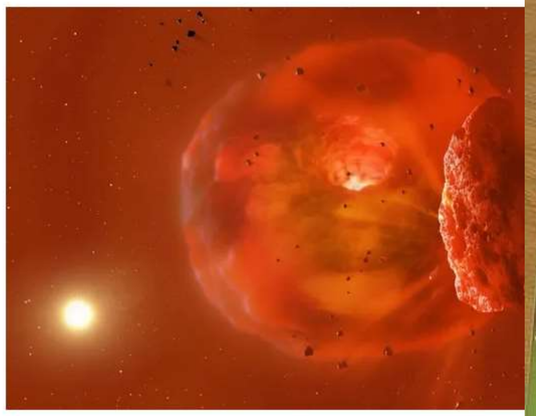
Massive planet collision identified from bizarre space 'afterglow'

The mysterious phenomenon was spotted by an astronomy-enthusiast on social media.



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Our publications
(since May 2021)

- 15 ATel (Astronomical telegrams)
- RNAAS research note, march 2022 : Low resolution spectroscopy of THA15-31
- **Astronomy & Astrophysics** April 6th 2022 : Amateur PN discoveries and their spectra
- The Astrophysical Journal Letters du 10 juin 2022 : A Speed Bump with SN 2021aefx
- MNRAS du 17 octobre 2022 : WHTZ 1: A high excitation Planetary Nebula
- CBET #5245 april 24th 2023 : Nova Sco 2023 = V1716 Sco
- MNRAS may 8th 2023 : V618 Sgr Galactic eclipsing symbiotic nova detected
- L'Astronomie N°173 July/August 2023 : New star in Scorpius
- **CBET** #5278 July, 17th 2023 : TCP J17525020-2024150 = V6598 Sgr
- NATURE october 11th 2023 : A planetary collision afterglow
- CBET #5346 du 12 février 2024 : Nova Sco2024 = V1723 Sco
- Astronomische Nachrichten du 19 mars 2024 : Gaia23ckh : symbiotic outburst of V390 Sco17 juillet 2023
- L'Astronomie N°177 : Exoplanetary collision

[Previous | Next | ADS]

Spectroscopic classification of ASASSN-24by (AT 2024epj) as a classical nova in the LMC

ATel #16545; *J. Merc (Charles University), T. Love, P. Velez, H. Barker (ARAS Group), S. Charbonnel, O. Garde, P. Le Du, L. Mulato, T. Petit (2SPOT Team)*
on 21 Mar 2024; 08:31 UT
Credential Certification: Jaroslav Merc (jaroslav.merc@mff.cuni.cz)

Subjects: Optical, Nova, Transient

Received January 11, 2024; | Revised March 18, 2024; | Accepted March 19, 2024
DOI: xxx/xxxx

ORIGINAL ARTICLE

Gaia23ckh: Symbiotic outburst of the assumed Mira variable V390 Sco

Jaroslav Merc[1] | Peter Velez[2] | Stéphane Charbonnel[3] | Olivier Garde[3] | Pascal Le Dû[3] | Lionel Mulato[3] | Thomas Petit[3] | Jan Skowron[4]

Symbiotic stars, weird novae, and related embarrassing binaries, Prague june 7 2024

Early spectroscopy of the classical LMC nova AT2 024fjh

ATel #16575; *Steven N. Shore (Univ. Pisa; INAF/OATS),Stephane Charbonnel, Olivier Garde, Pascal Le Du, Lionel Mulato, Thomas Petit (2SPOT, ARAS Group),Hamish Barker, Peter Velez (ARAS Group)*
on 6 Apr 2024; 02:26 UT
Credential Certification: S. N. Shore (shore@df.unipi.it)

Subjects: Nova, Transient

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Thank you for your attention
Any questions?

www.2spot.org