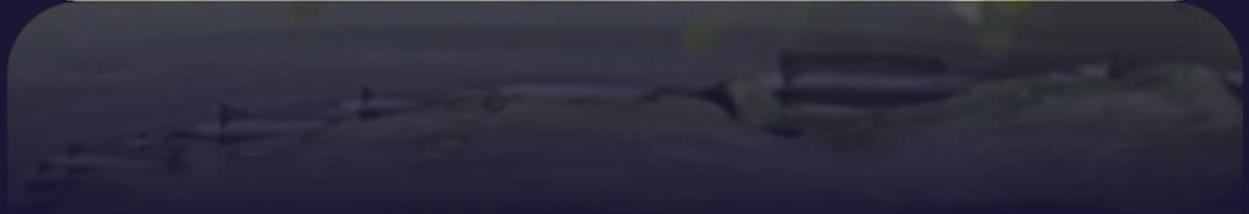
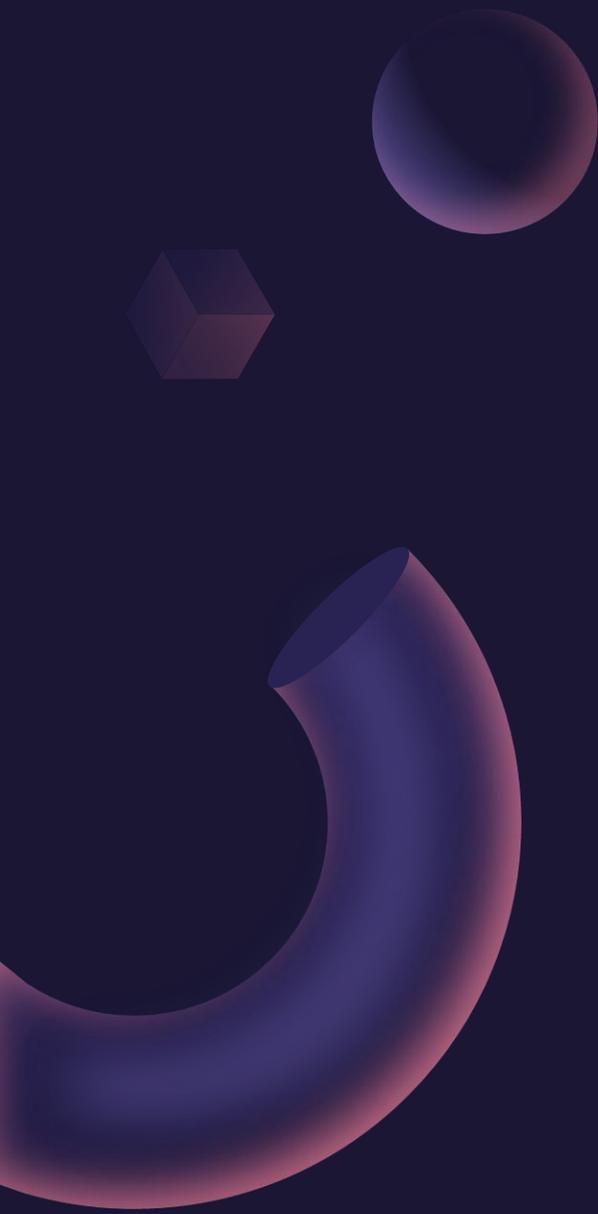
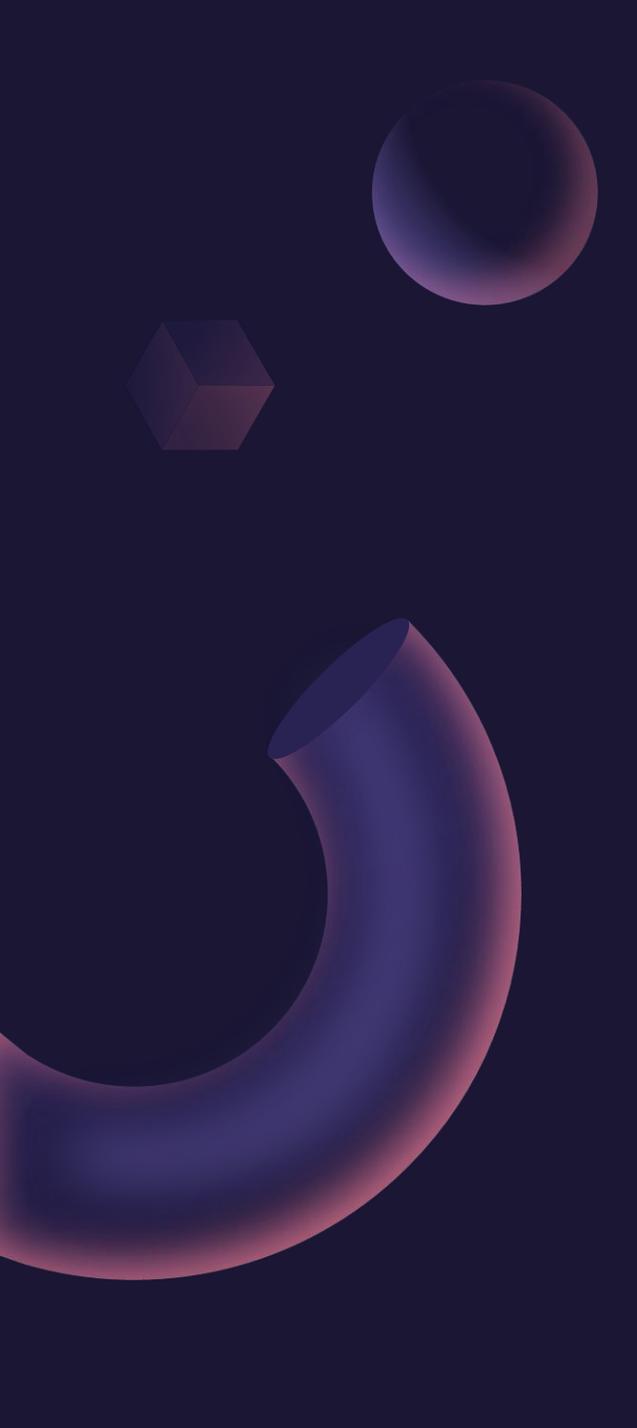


Perspectives

STAROS et le futur

Matthieu Le Lain
11/08/2023
OHP





Plan

- 1 - Python : perspectives offertes
- 2 - Bases de données spectrales
- 3 - L'initiative STAROS
- 4 - Applications du futur

```
mirror object to mirror...
mirror_mod.mirror_object

operation == "MIRROR_X":
    mirror_mod.use_x = True
    mirror_mod.use_y = False
    mirror_mod.use_z = False
operation == "MIRROR_Y":
    mirror_mod.use_x = False
    mirror_mod.use_y = True
    mirror_mod.use_z = False
operation == "MIRROR_Z":
    mirror_mod.use_x = False
    mirror_mod.use_y = False
    mirror_mod.use_z = True

selection at the end -add
mirror_ob.select= 1
modifier_ob.select=1
context.scene.objects.active
("Selected" + str(modifier_ob))
mirror_ob.select = 0
= bpy.context.selected_objects
data.objects[one.name].select

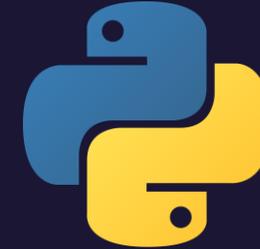
print("please select exactly

-- OPERATOR CLASSES -----

types.Operator):
    X mirror to the selected
    object.mirror_mirror_x"
    mirror X"
```

1 - Perspectives offertes par Python

PYTHON ?



1^{ère} version

- 20 février 1991 (Démarré à Noël 89) par Guido van Rossum³
- Principe fondateur : « **La beauté du code** » (lisibilité, simplicité, fluidité)

Accessible & simple

- **Pythonique**
- Code source facile à lire et à comprendre, sans architecture ou conception compliquée
- Gestion automatique de la mémoire

Interprété & haut niveau

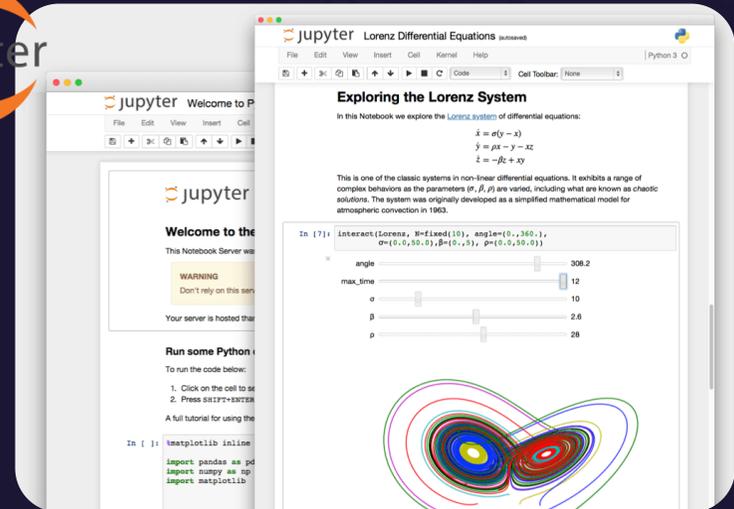
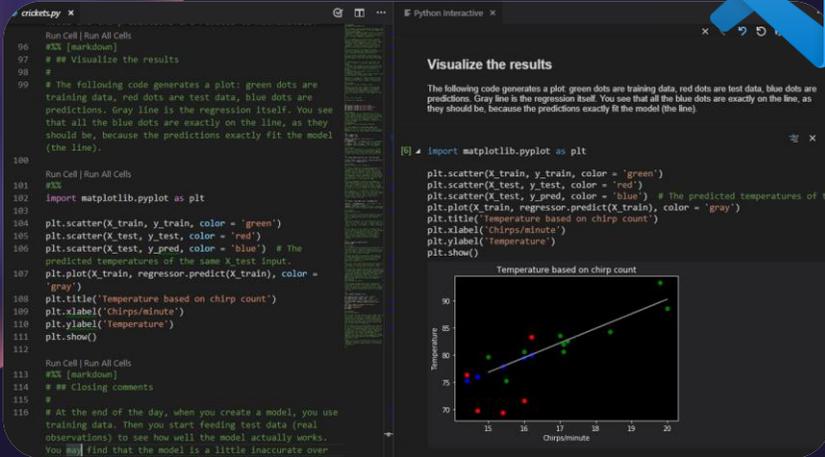
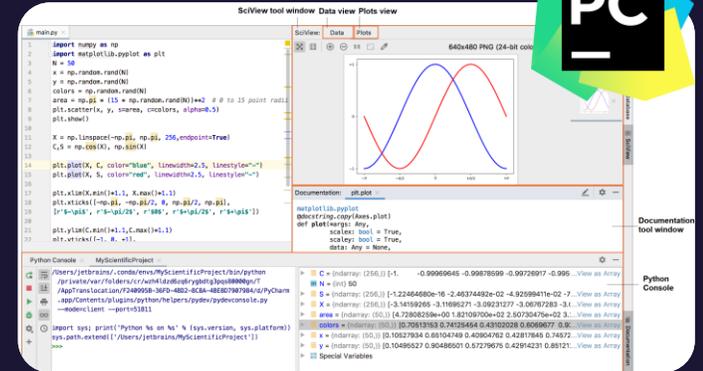
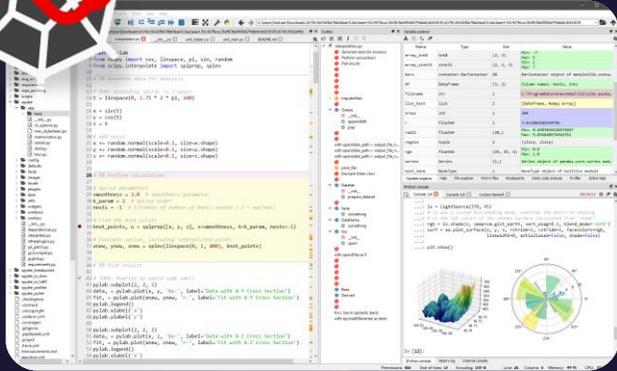
- **Interprété** : Fichier source appelé - Chaque ligne de code est interprétée et exécutée
- **Haut niveau** : Proche du langage naturel (se lit comme il s'applique)³.
- **Basé sur l'indentation**

| Date | Version |
|------|---------|
| 1.0 | 02/1991 |
| 1.5 | 04/1999 |
| 2.0 | 10/2000 |
| 3.8 | 10/2019 |
| 3.10 | 10/2021 |
| 3.11 | 10/2022 |

25% *
3x plus rapide

* Compilé avec GCC sur Ubuntu Linux, l'accélération peut aller de 10 à 60 %

Éditeurs & IDE



Pourquoi Python ?

Facilité d'utilisation, Polyvalence

Assimilable facilement par les dev. débutants

Nombreuses Bibliothèques

Open Source

Utilisé par « tous » et pour tout

Grande communauté

Spotify, Google, NASA, Instagram, Netflix, Uber...

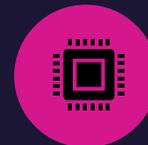
Appli. Desktop, Web, Scripting, Réseaux, Jeux vidéos, Datas...

Propulsé par les Data Sciences & IA

Calculs et modélisations scientifiques

Librairies pour analystes et scientifiques (numpy, Pandas, Scipy, Matplotlib,...) ²

De nombreux modules dans beaucoup de domaines d'applications



Astropy

Le Projet Astropy est un effort communautaire visant à développer un package de base pour l'astronomie en utilisant le langage de programmation Python...

Et d'en améliorer l'utilisation, l'interopérabilité et la collaboration entre les paquets Python pour l'astronomie.

Le paquet de base astropy contient des fonctionnalités destinées aux astronomes et astrophysiciens professionnels...

Mais peut être utile à toutes personnes développant un logiciel d'astronomie.



```
4.2 - 1D Spectrum Visualisation with SpectUtils and Matplotlib
#Show a unique spectrum
#Imports
from astropy import units as u #units
import astropy.wcs as fitswcs #wcs
from specutils import Spectrum1D, SpectralRegion #specutils

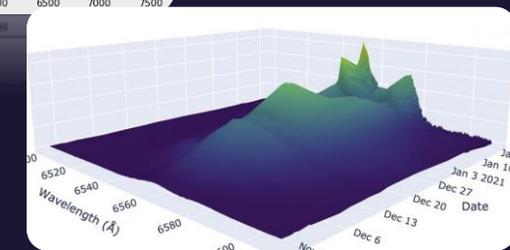
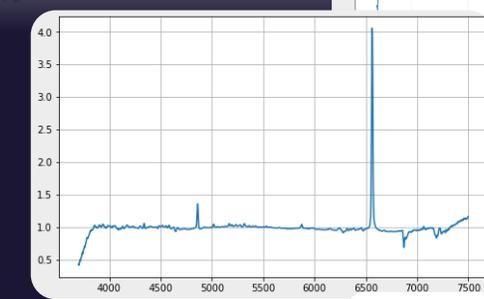
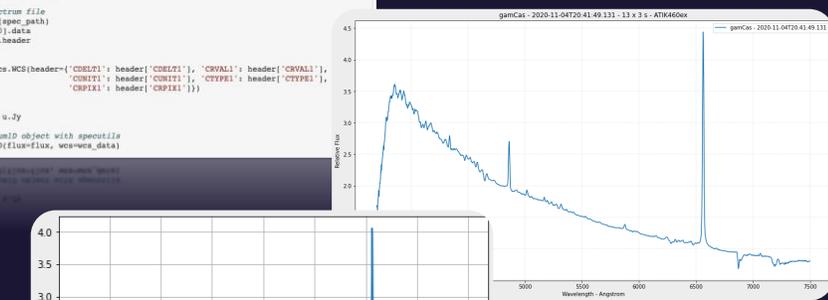
spec_path = "dataset/GemCas_20201104T20413.fits"

#Open & load spectrum file
file = fits.open(spec_path)
specdata = file[0].data
header = file[0].header

#Make WCS object
wcs_data = fitswcs.WCS(header={'CDELT1': header['CDELT1'], 'CRVAL1': header['CRVAL1'],
                              'CUNIT1': header['CUNIT1'], 'CTYPE1': header['CTYPE1'],
                              'CRPIX1': header['CRPIX1']})

#Get flux units
flux_specdata = u.Jy

#Create a Spectrum1D object with specutils
spec = Spectrum1D(flux=flux, wcs=wcs_data)
```



Specutils est un module Python utile pour afficher, manipuler et analyser des données spectroscopiques astronomiques.

Spectrum Visualisation with SpecUtils and Matplotlib

```
#imports if needed
from astropy.io import fits
import astropy.units as u
import astropy.wcs as fitswcs
from specutils import Spectrum1D
import matplotlib.pyplot as plt

spec_path = "dataset/GamCas_20201104T204413.fit"

#open & load spectrum file
file = fits.open(spec_path)
specdata = file[0].data
header = file[0].header

#make WCS object
wcs_data = fitswcs.WCS(header={'CDELTA1': header['CDELTA1'], 'CRVAL1': header['CRVAL1'],
                              'CUNIT1': header['CUNIT1'], 'CTYPE1': header['CTYPE1'],
                              'CRPIX1': header['CRPIX1']})

#set flux units
flux = specdata * u.Jy

#create a Spectrum1D object with specutils
spec = Spectrum1D(flux=flux, wcs=wcs_data)

#plot spectrum
fig, ax = plt.subplots(figsize=(16, 9))
ax.plot(spec.spectral_axis * u.AA, spec.flux)

#X axis label
ax.set_xlabel(header['CTYPE1'] + ' - ' + header['CUNIT1'])

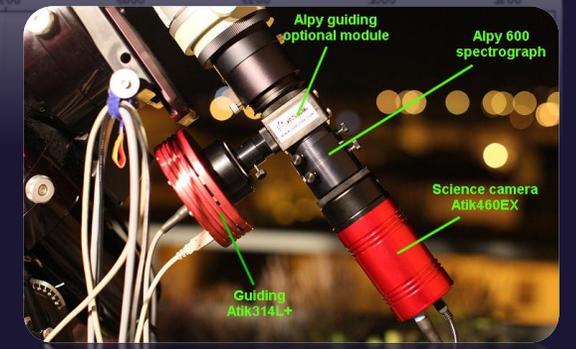
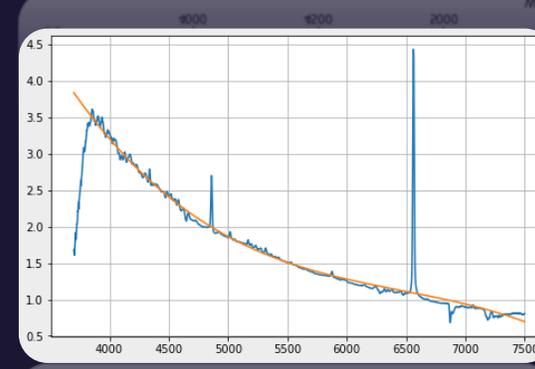
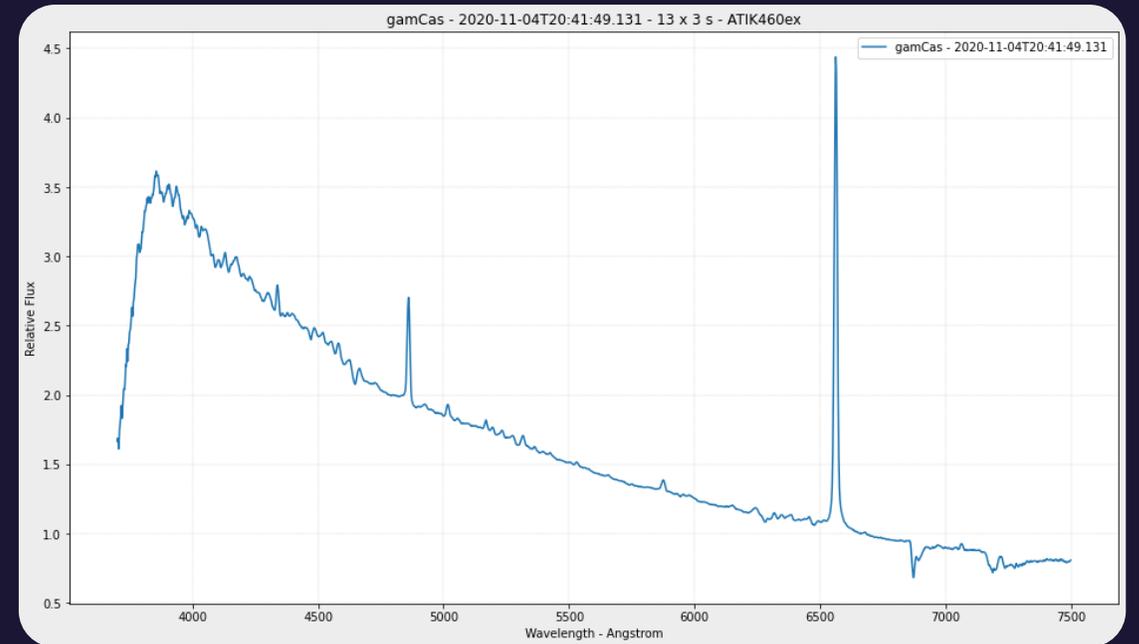
#Y axis label
ax.set_ylabel('Relative Flux')

#Grid configuration
ax.grid(color='grey', alpha=0.8, linestyle='--', linewidth=0.2, axis='both')

#legend configuraiton
legend_value = header['OBJNAME'] + ' - ' + header['DATE-OBS']
ax.legend([legend_value], loc='best')

#prepare and set plot title with header infos
spectrumTitle = header['OBJNAME'] + ' - ' + header['DATE-OBS'] + ' - ' + header['EXPTIME2'] +
- ' + str(header['DETNAME'])
ax.set_title(spectrumTitle, loc='center', fontsize=12, fontweight=0.5)

#Show Plot
plt.show()
```



Alpy600 - Image Shelyak Instruments

SUNPY

Physique Solaire

Python

Analyse de données

Visualisation de données

Open Source



SDO - NASA - Wikipedia ¹



AIA Instrument ³

Atmospheric Imaging Assembly

Produit une image haute définition du Soleil dans 10 longueurs d'ondes, toutes les 12 secondes ²



HMI Instrument ³

Helioseismic and Magnetic Imager

Instrument conçu pour étudier les oscillations et le champ magnétique à la surface du Soleil. ²



sunpy

A Community Python
Library for Solar Physics



Sol'Ex - Sun - Halpha
november 20, 2020
C. Buil.



```
# imports
import astropy.units as u
from sunpy.net import Fido
from sunpy.net import attrs as a
import sunpy.map
import matplotlib.pyplot as plt

# get data from AIA with FIDO
result = Fido.search(a.Time('2020/11/29 12:05', '2020/11/29 12:06'),
                    a.Instrument.aia,
                    a.Wavelength(171*u.angstrom))

# download files
downloaded_files = Fido.fetch(result)

# prepare plot
map = sunpy.map.Map(downloaded_files[0])
fig = plt.figure(figsize=(16,9))
map.plot()
plt.show()
```



Sun - AIA 171 & HMI
november 20, 2020
SDO

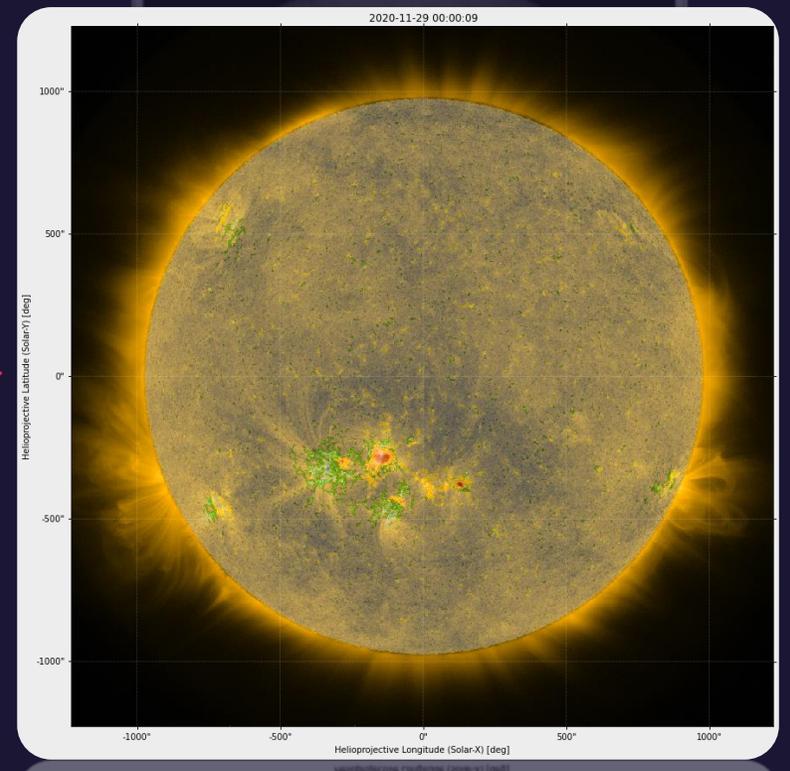
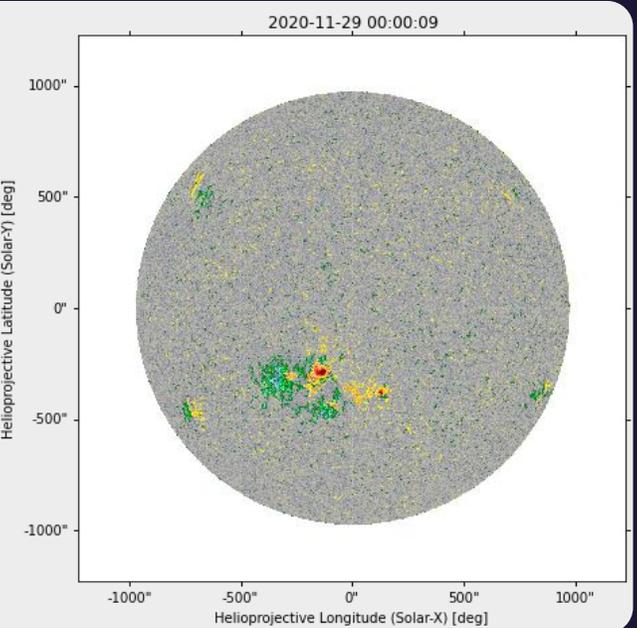
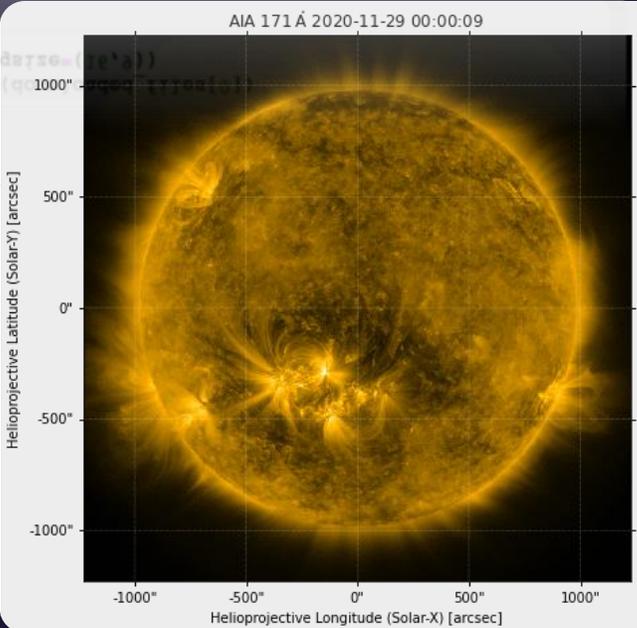
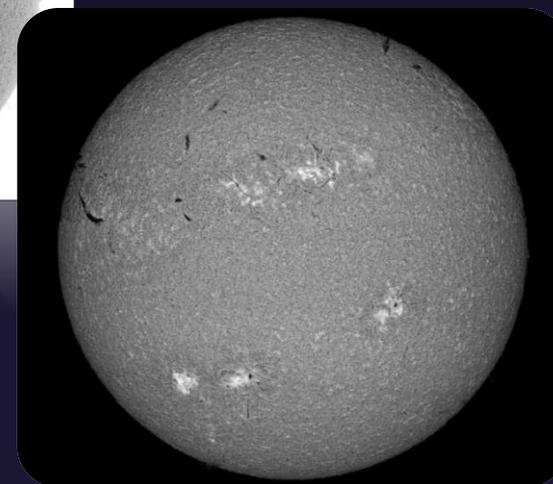
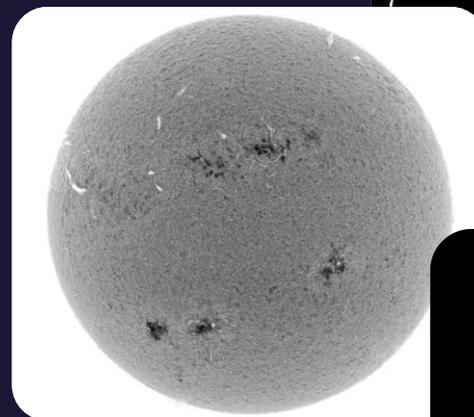
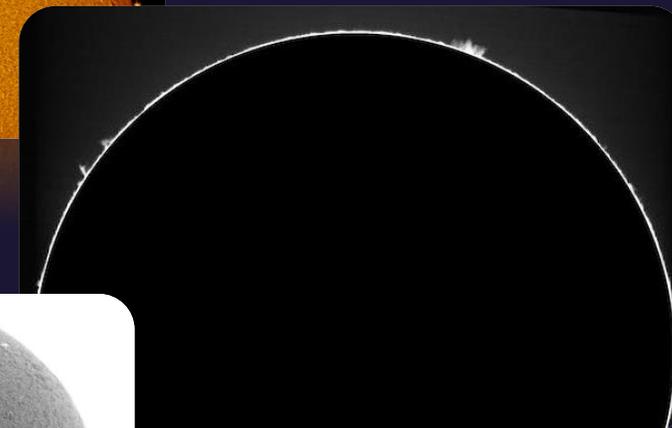
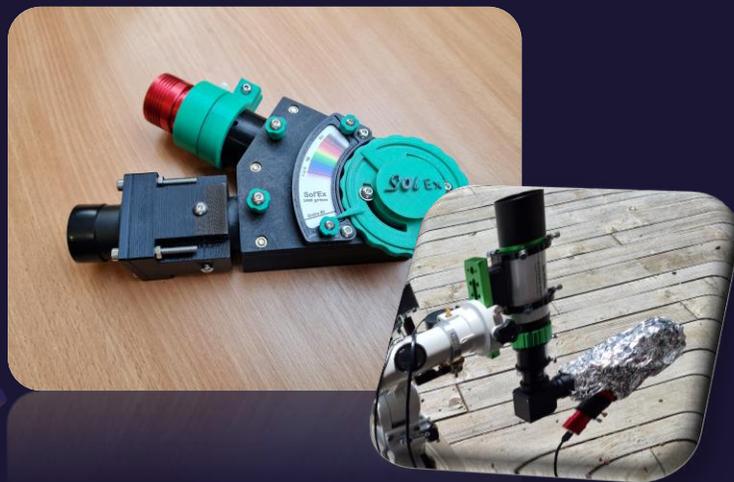


Image : <http://www.astrosurf.com/solex/>



FR HOME EN

CheckSun

CheckSun compares images generated by INTI with SDO images.

Specify the acquisition date (UTC)

22/10/2021 11:00

octobre 2021

| L | M | M | J | V | S | D | 06 | 00 |
|----|----|----|----|----|----|----|----|----|
| 27 | 28 | 29 | 30 | 1 | 2 | 3 | 07 | 01 |
| 4 | 5 | 6 | 7 | 8 | 9 | 10 | 08 | 02 |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 09 | 03 |
| 18 | 19 | 20 | 21 | 22 | 23 | 24 | 10 | 04 |
| 25 | 26 | 27 | 28 | 29 | 30 | 31 | 11 | 05 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 12 | 06 |

Effacer Aujourd'hui

Add your FITS or PNG file

.png .fits

Select a file

Compare with SDO

193A 304A

Launch

Comparer

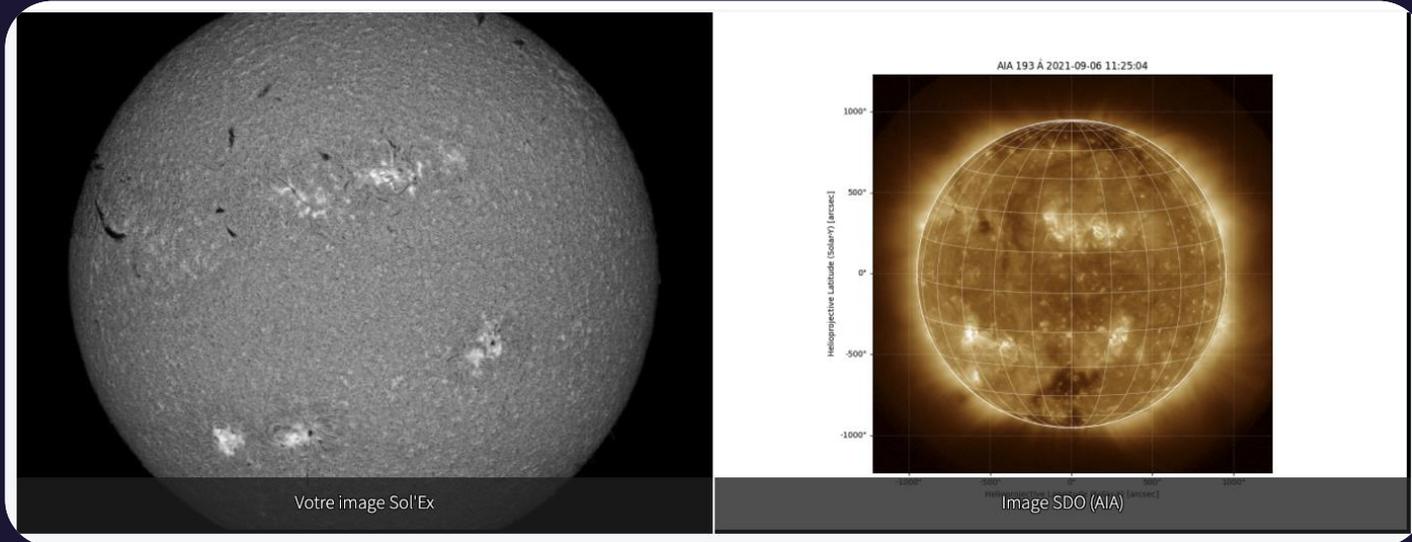
- Visualiser son image Sol'Ex
- Visualiser l'image SDO au même moment
- Différentes longueurs d'ondes

Adjuster

- Manipuler son image Sol'Ex Image pour avoir la position réelle
- Rotation, superposition...

Exporter

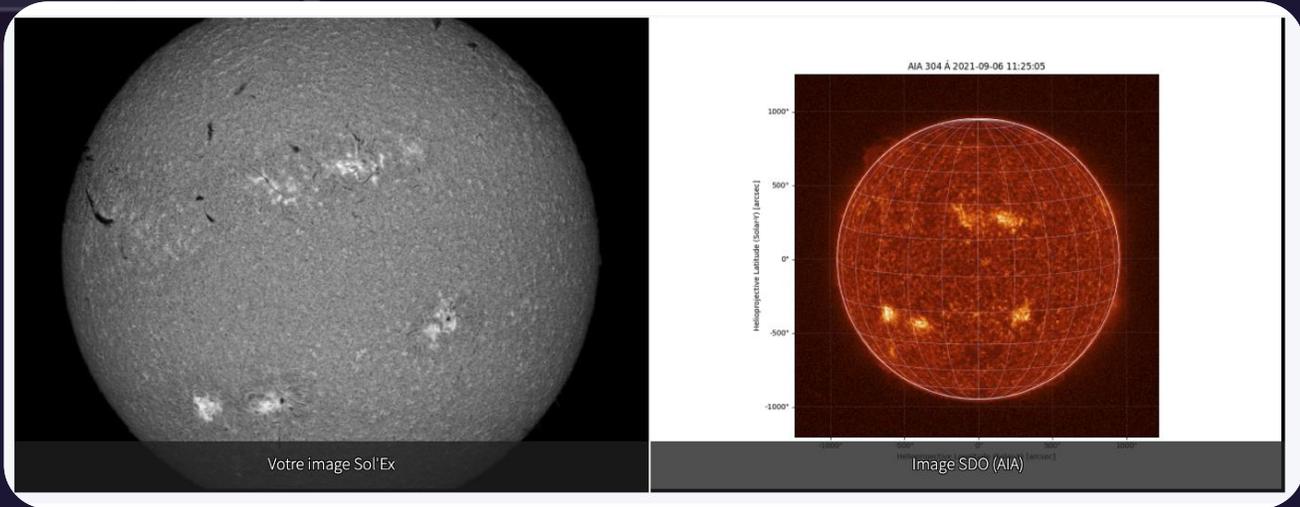
- Enregistrer son image en comparaison avec SDO
- Ajout d'une grille d'informations



Sun - AIA 193
september 6, 2021 - 11H20
SDO

Sun - AIA 304
September 6, 2020 - 11H20
SDO

<https://checksun.stellartrip.net>



2 - Base de données spectrales



BeSS



Etoiles Be



ARAS



Nova,
Symbiotiques,..



PSNT



Nébuleuses
planétaires



UVEX



UVEX, Mais pas
que !

Bass, AAVSO,..



Large,
générique

Objets



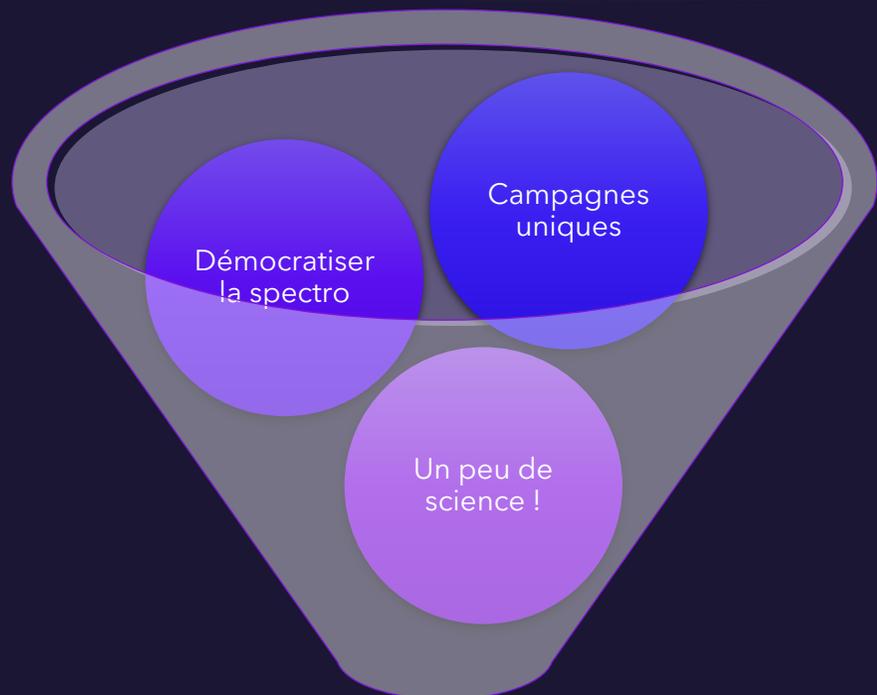
Objectifs



Générique

3 - L'initiative STAROS





Base de données
spectrale

Base de données spectrales

Accès aux données simple

Visualisation des spectres
simple

Upload de spectres simplifiés
et sécurisé

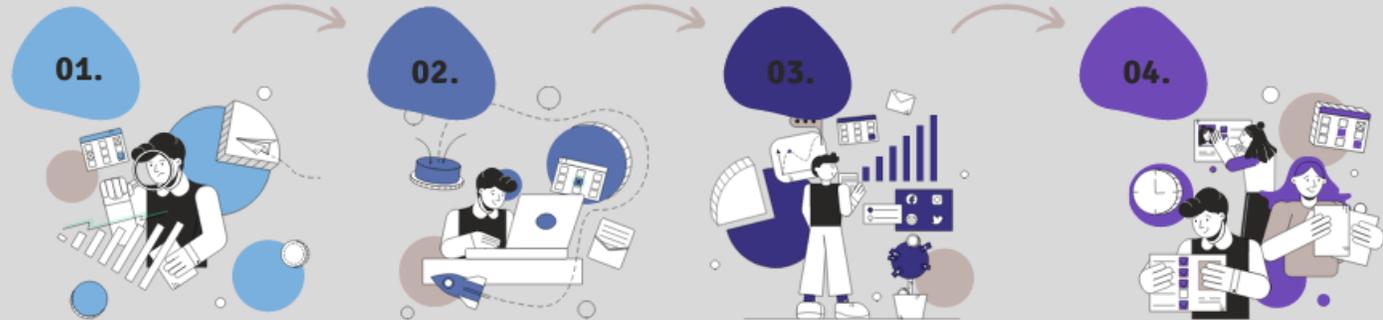
Gestion admin simplifiée

STAROS



STAROS Projects

Single Tracking Astronomical Repository
for Open Spectroscopy



01.

What is STAROS ?

STAROS is a spectral database of astronomical objects where everyone can freely record spectral data, consult them using interactive and multi-criteria tools.

02.

Open Database

STAROS is an open database where everyone can contribute without constraints, whether you are a beginner or an experienced observer. Registration requires minimal effort.

03.

Spectra access

One of the great values of STAROS is the ability to access the data set of all participants to compare their own observations with those of others. Professionals can also use this database for their work.

04.

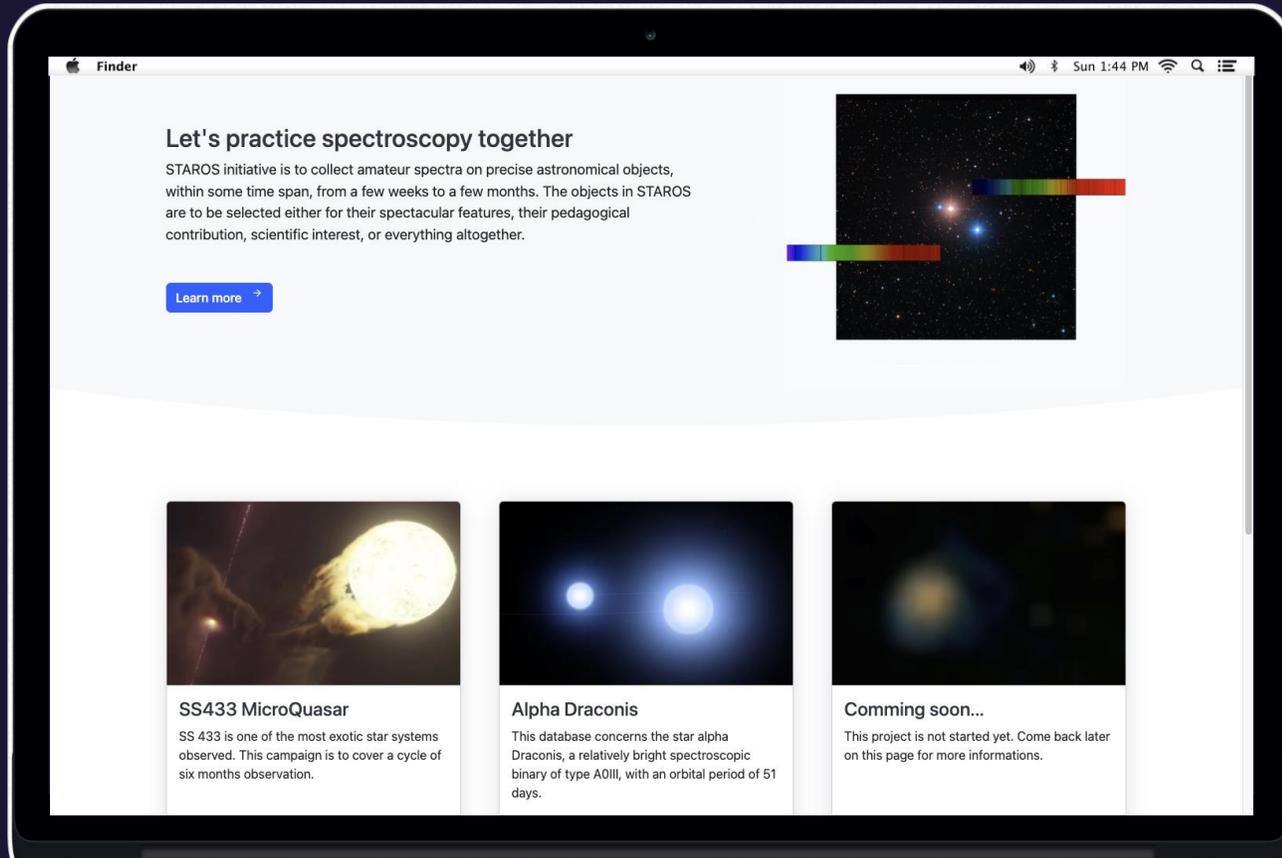
Discover Spectroscopy

Another objective of STAROS is to present the attraction of spectrography, the mother of astrophysics, its spectacular and exciting side because it reveals, much more than a simple image, its playful and exciting side.

Where to start ?

staros-projects.org

staros-projects.org



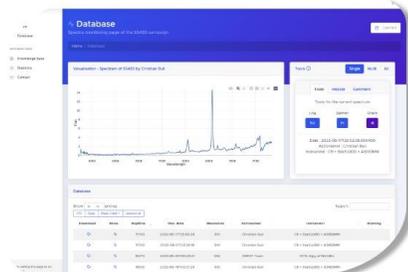
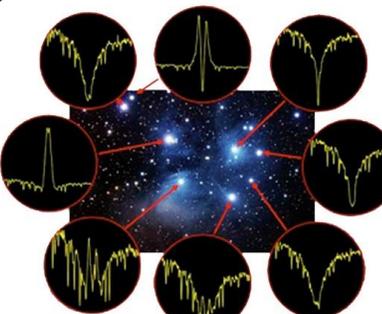
And what else ?

STAROS is a public database where everyone can contribute spectra free of constraints, as a beginner or a seasoned observer. Archiving data requires minimal effort.

STAROS is a public database where everyone can contribute spectra free of constraints, as a beginner or a seasoned observer. Archiving data requires minimal effort.

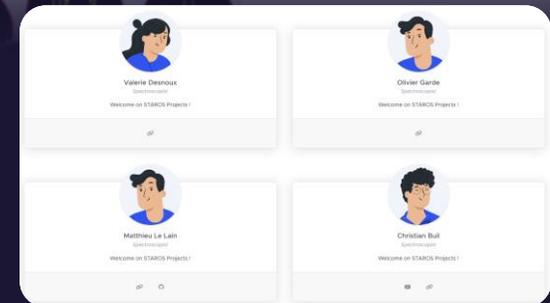
One of the greatest values of STAROS is the ability to retrieve and compare everybody's data. This enables the observers to gather advice on perfecting data retrieval and analysis, advancing on one's work, or dynamically following the evolution of astronomical phenomena. In spectrography, everything changes very quickly in the sky !

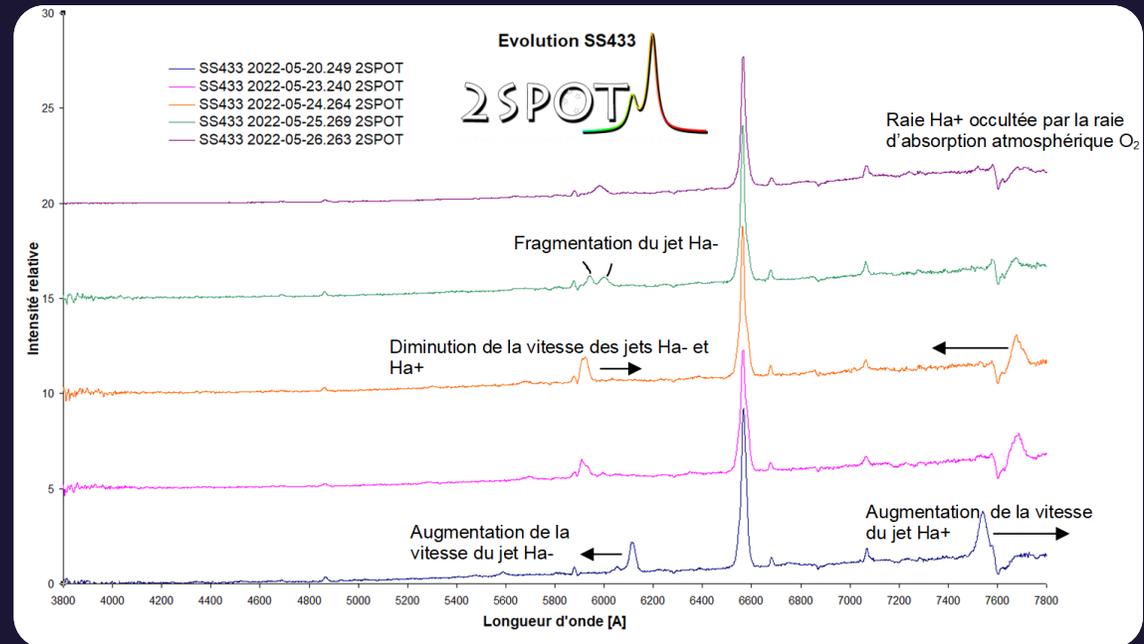
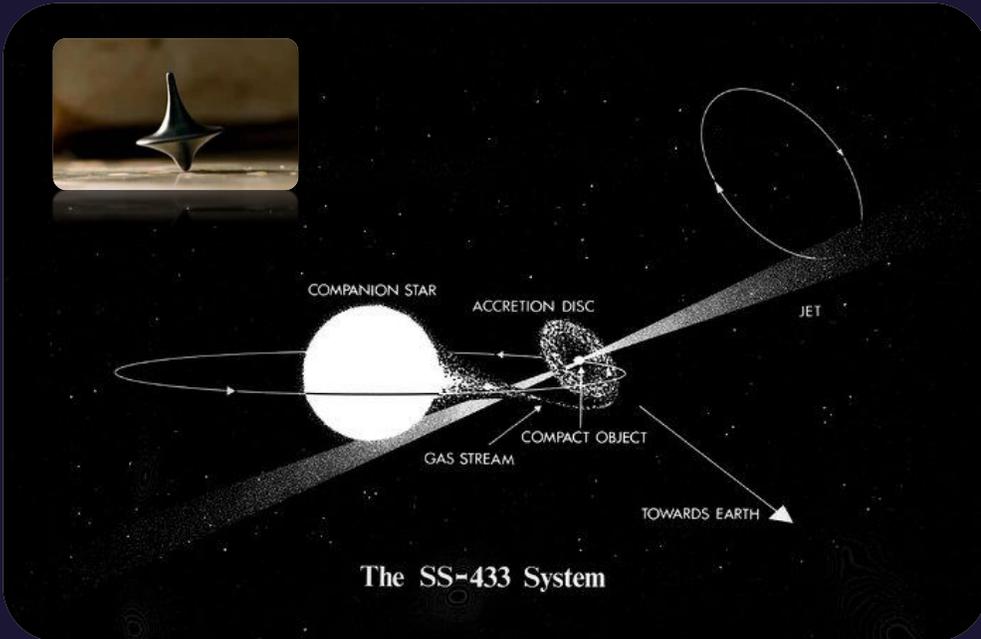
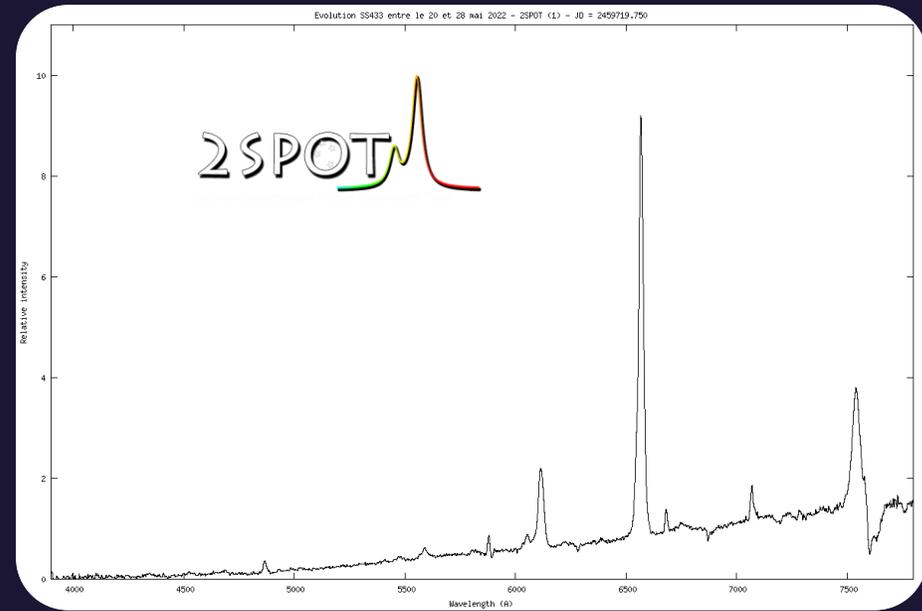
The STAROS initiative aims to encourage constructive exchange within lists of interests, forums, and other media. It is built over participatory astronomy, where everyone helps each one.

STAROS also aims to introduce spectrography, the mother of astrophysics, and its spectacular and exciting nature, to reveal in the astronomical objects much more than their images, but also their playful and exciting features, the surprises that punctuate spectroscopic observations, and the challenges to be met on still virgin lands.

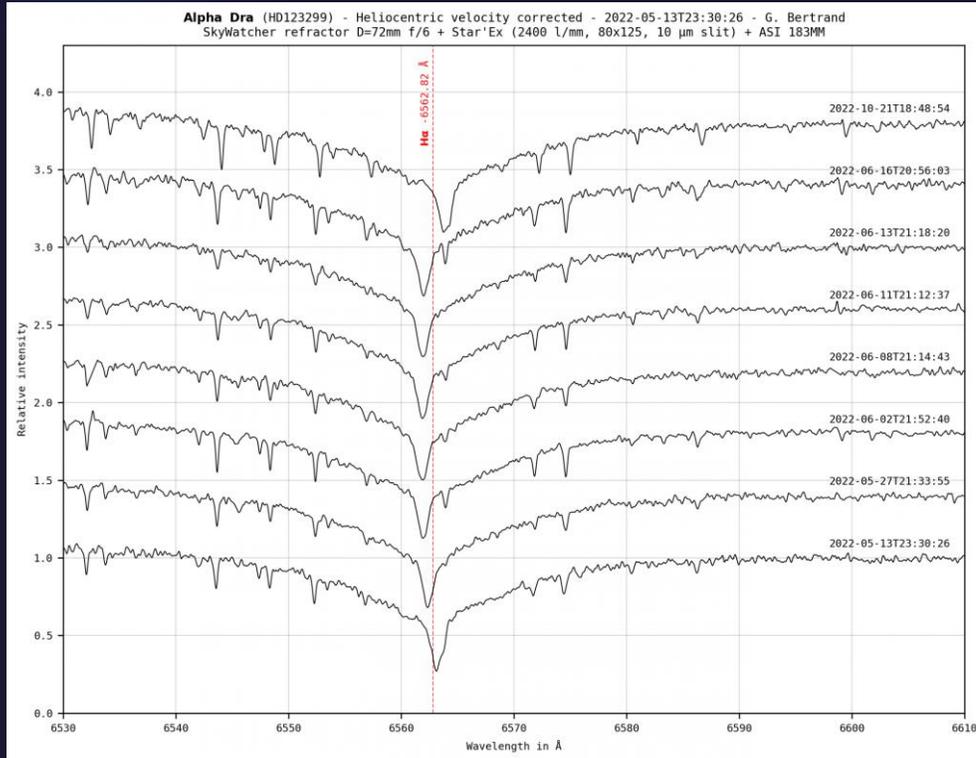
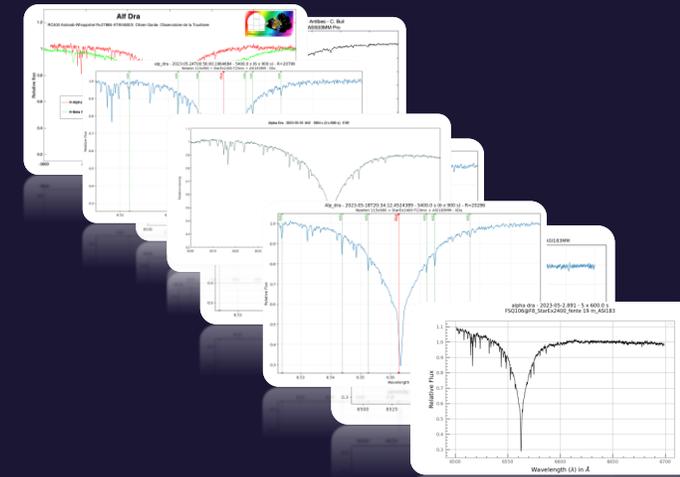
Spectrography deals with discoveries, sometimes scientific, but above all personal, for one's own culture.





Campagne alpha Draconis

Nouveau post le 4 avril 2023



Lancement de la
campagne STAROS
le 17 avril 2023 !

★ [Star'Ex] L'étoile double spectroscopique Alpha Draconis 1 2 3 4 6
Par Guillaume BERTRAND, 28 octobre 2022

147 réponses



ACCUEIL



PRÉSENTATION
DES OBJECTIFS



STATISTIQUES

STAROS alpha Draconis
You're not connected

DATAS

- Home
- Database

INFORMATIONS

- Campaign details
- Statistics
- Contact

alpha Draconis campaign

By Staros Projects

This STAROS campaign concerns a beautiful double star, alpha Draconis.

It consists in gathering a maximum of high-resolution spectra of this double star over a period of 2 months in order to model the system with an accuracy equivalent to that of professionals if we are numerous enough to observe and frequently.

Thanks to the confrontation of the results, this observation constitutes a very good test of your quality of reduction of the spectra at high spectral resolution, in particular with regard to the spectral calibration.

The radial velocity curve thus constructed, by pooling our data, is also a very good visiting card towards the professional community for high precision radial velocity measurements for future pro-am collaborations. It is also an opportunity to exchange between us on the tricks to reach a maximum accuracy and the techniques of exploitation of the data.

Let's start to observe **alpha Draconis** together.



[Sign in for upload](#)

[Create an account](#)

[Campaign details](#)

[Spectra Database](#)

Alpha Draconis system

SPACE: Alpha Draconis Star And Companion E...

À regarder ... Partager

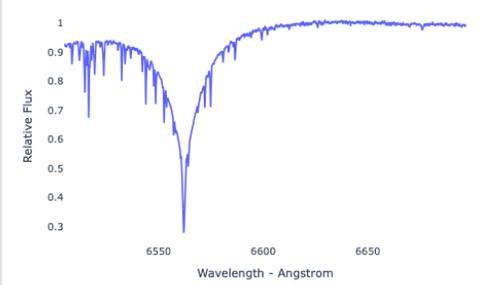


Regarder sur YouTube

Credit NASA's Goddard Space Flight Center/Chris Smith (USRA) & Space.com

Spectroscopic double stars are systems whose duplicity is revealed by the observation of the periodic motion of spectral lines. This displacement of the lines is the result of the Doppler-Fizeau effect, indicating that the two stars approach or move away from us during their orbital motion around a common center of gravity. With our spectra we measure the radial velocity of the system.

Last spectrum by X. DUPONT

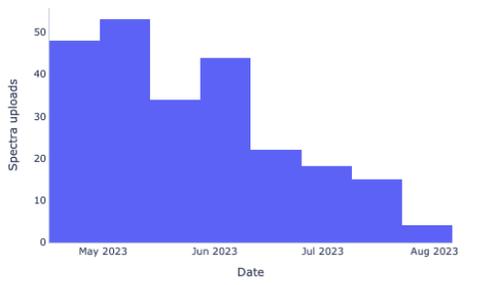


Relative Flux vs Wavelength - Angstrom

Recent activity

- 5 days ● New spectrum ! **Xavier DUPONT** add a new spectrum.
- 12 days ● New spectrum ! **Matthieu Le Lain** add a new spectrum.
- 12 days ● New spectrum ! **Matthieu Le Lain** add a new spectrum.
- 12 days ● New spectrum ! **Simon de Visscher** add a new spectrum.
- 13 days ● New spectrum ! **Xavier DUPONT** add a new spectrum.
- 16 days ● New spectrum ! **Erik Bryssinck** add a new spectrum.

Campaign progression



Spectra uploads vs Date

Spectra by 23 users

238

All your datas are precious !

Spectra reviewed

217

Check database to see details.

Uploads this week

1

Pretty good job !

Total exposure (hours)

253.84

Approx. 10.58 days.

STAROS Projects

UNIVERSITÉ PARIS-SACLAY INSTITUT NATIONAL D'ASTRONOMIE ET DE PHYSIQUE GÉOMÉTRIQUE

You are viewing this page as an offline user

23



Database



Afficher



Télécharger

STAROS - alphaDra

STAROS alpha Draconis

Database
Spectra monitoring page of the alpha Draconis campaign

Visualization - Spectrum of alphaDraconis by Xavier DUPONT

Tools: Single Multi All

Tools for the current spectrum

Log Balmer Share

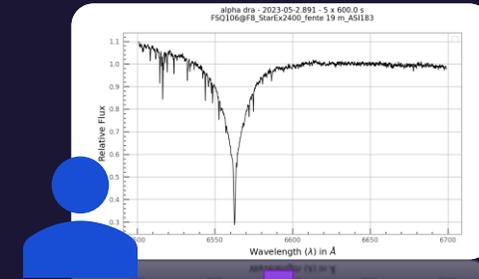
log(x) H

Date: 2023-07-21T20:29:19.1131764
Astronomer: Xavier DUPONT
Instrument: Dall-Kirkham 350@F5.5 + StarEx2400 + ASI183MM

Database (double click on lines for multi selection)

Show 10 entries

| Exptime | Obs. date | Resolution | Astronomer | Instrument | Status |
|---------|---------------------|------------|-------------------|---|------------|
| 3000 | 2023-07-29T20:22:51 | 23592 | Xavier DUPONT | Dall-Kirkham 350@F5.5 + StarEx2400 + ASI183MM | Unreviewed |
| 4200 | 2023-07-22T20:27:08 | 18684 | Simon de Visscher | AP130EDT + LHIRESIII + ASI533MM | Unreviewed |
| 4200 | 2023-07-22T00:30:02 | 17806 | Matthieu Le Lain | Mak127 + StarEx2400 + ASI183MM | Unreviewed |
| 4500 | 2023-07-21T21:10:11 | 18353 | Matthieu Le Lain | Mak127 + StarEx2400 + ASI183MM | Unreviewed |
| 3600 | 2023-07-21T20:29:19 | 23543 | Xavier DUPONT | Dall-Kirkham 350@F5.5 + StarEx2400 + ASI183MM | Reviewed |
| 2400 | 2023-07-15T21:05:31 | 22375 | Xavier DUPONT | Dall-Kirkham 350@F5.5 + StarEx2400 + ASI183MM | Reviewed |



| | | | | | |
|------|---------------------|-------|--------------------|--|------------|
| -26 | 2023-07-06T21:38:50 | 10157 | Massimo Di Lazzaro | Spectra2 | Unreviewed |
| 3600 | 2023-07-14T21:34:34 | 22360 | vincent Lecocq | FSQ106@F8_StarEx2400_fente 19 m_ASI183 | Reviewed |
| 1508 | 2023-05-02T20:52:34 | 14128 | Antonio Garrigós | CT1(F/10)-LHIRESIII_2400 ATIK460EX | Warning |



Filterer



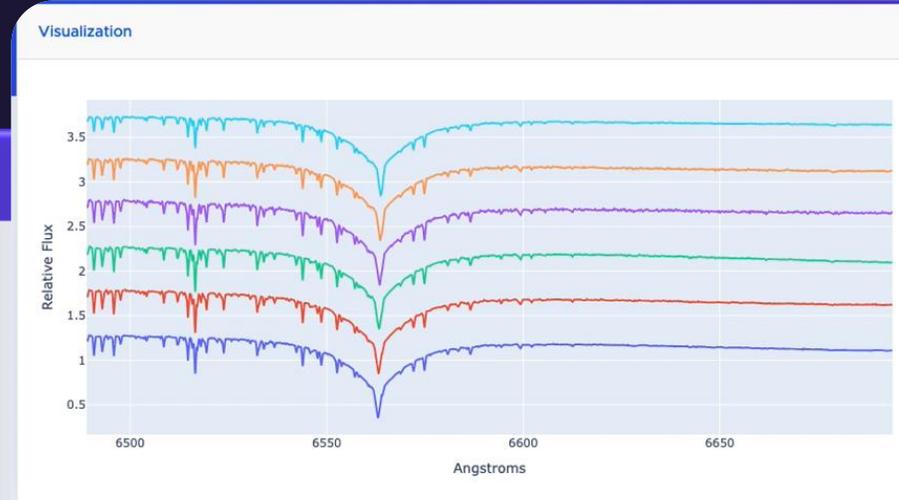
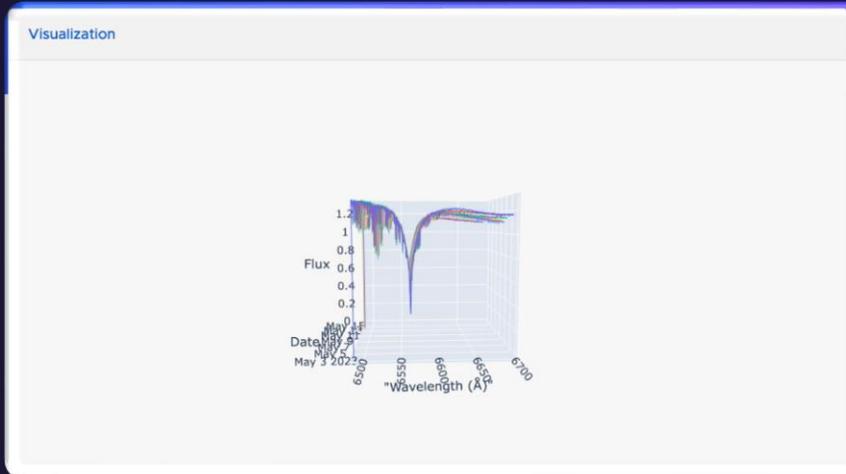
Conservator



Aider



Visualiser Comparer Manipuler



Tools ⓘ Single **Multi** All

Tools applicable on selected spectra

Choose an offset Offset 0.5

[Multi-Spectra](#)

Animation Download spectra

[Animation Plot](#) [Download](#)

Evolution in 3D Choose a design

[3D Plot](#) Default ▾

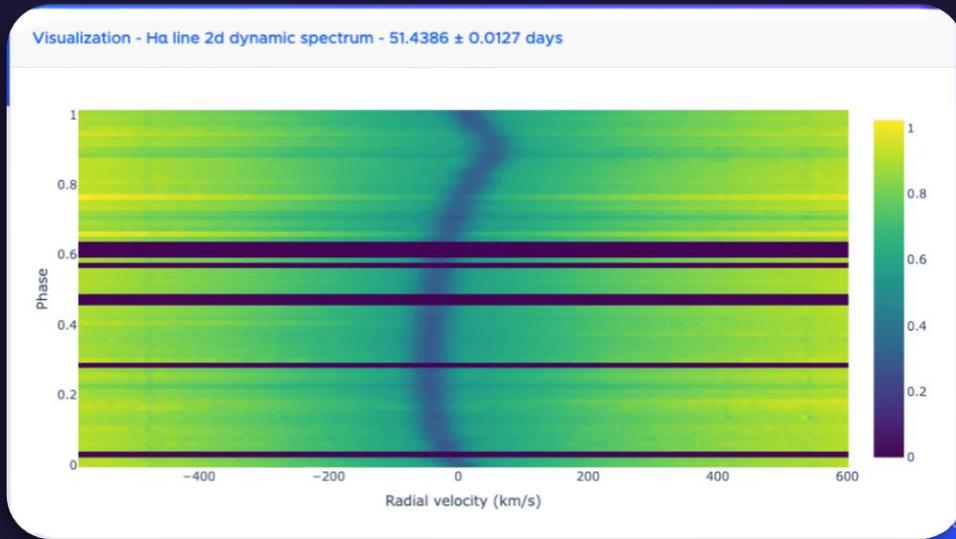
Database (double click on lines for multi selection)

Show 10 entries Search: bull

[CSV](#) [Copy](#) [Show / Hide](#) [Unselect all](#)

| Download | Show | Exptime | Obs. date | Resolution | Astronomer | Instrument | Status |
|----------|------|---------|---------------------|------------|----------------|-------------------------------|--------------------------|
| | | 5400 | 2023-05-11T22:53:43 | 18000 | Buil Christian | 100ED + StarEx2400 + ASI533MM | Reviewed |
| | | 7200 | 2023-05-10T19:33:19 | 18000 | Buil Christian | 100ED + StarEx2400 + ASI533MM | Reviewed |
| | | 6600 | 2023-05-09T23:35:27 | 17500 | Buil Christian | 100ED + StarEx2400 + ASI533MM | Reviewed |
| | | 6000 | 2023-05-08T20:51:43 | 17500 | Buil Christian | 100ED + StarEx2400 + ASI533MM | Reviewed |
| | | 6600 | 2023-05-07T19:34:45 | 17500 | Buil Christian | 100ED + StarEx2400 + ASI533MM | Reviewed |
| | | 7200 | 2023-05-06T19:30:13 | 17500 | Buil Christian | 100ED + StarEx2400 + ASI533MM | Reviewed |
| | | 7800 | 2023-05-05T19:22:46 | 17500 | Buil Christian | 100ED + StarEx2400 + ASI533MM | Reviewed |
| | | 8400 | 2023-05-04T19:23:58 | 17500 | Buil Christian | 100ED + StarEx2400 + ASI533MM | Reviewed |
| | | 6000 | 2023-05-03T23:04:44 | 17500 | Buil Christian | 100ED + StarEx2400 + ASI533MM | Reviewed |

Détermination de la période



Intégration du module
de G. Bertrand



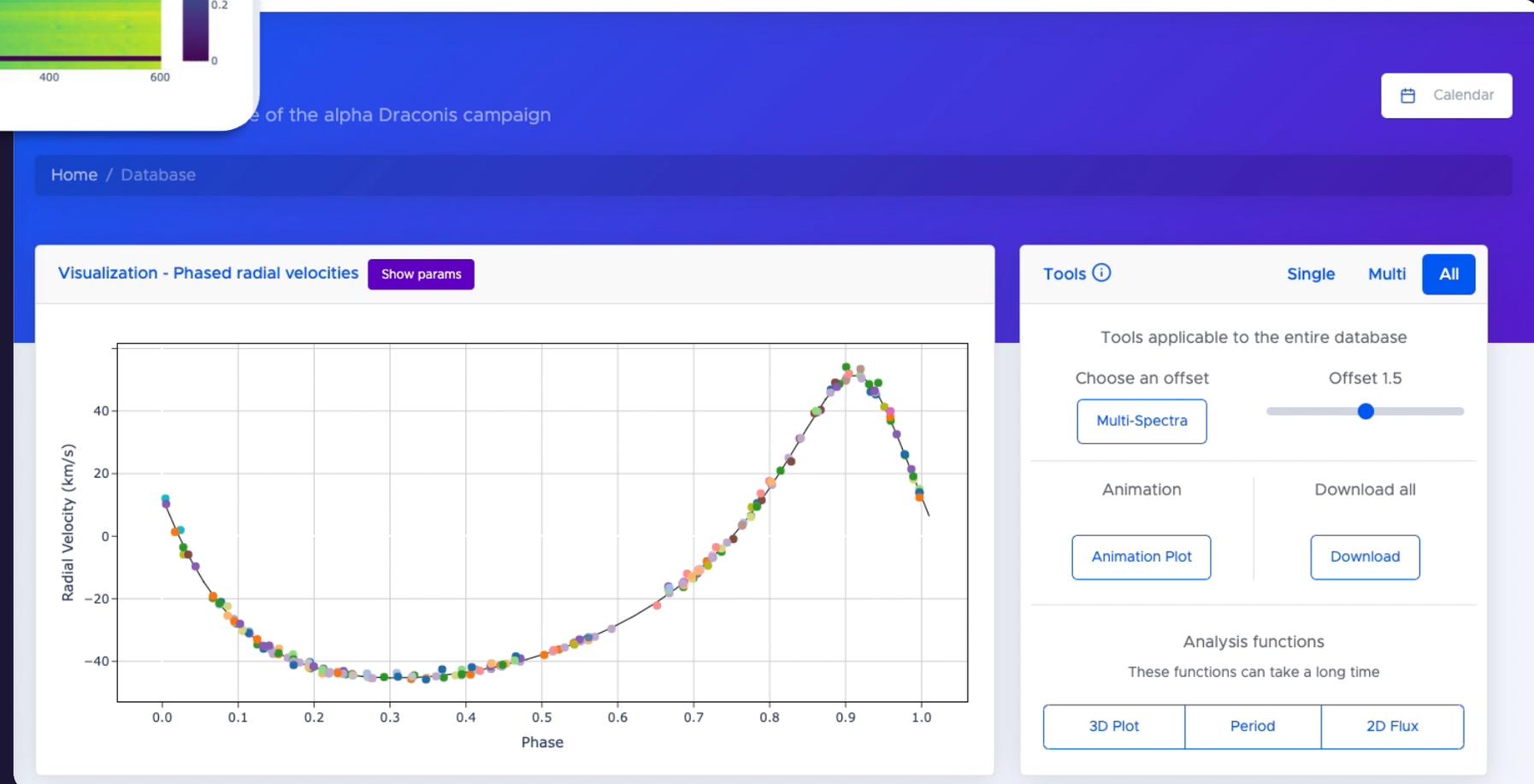
Calculs automatiques



Spectres Review



Analyser



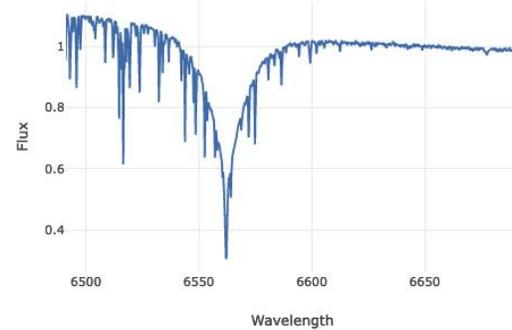
Compte et ajouts

1 - Upload a spectrum

Glisser & déposer pour charger un fichier
or choose a file

2 - Check the spectrum

alpha Dra - 7200.0s - 2023-06-01T23:44:44.824800 - cbuil



2 - Verify the data

FILENAME :
alphadra_20230601234444_bchristi
an.fits

OBJNAME : alpha Dra

EXPTIME2 : 12 x 600.0 s

DATE-OBS :
2023-06-01T23:44:44.824800

GEO_LONG : 00.0

GEO_LAT : 00.0

BSS_INST : T200 + StarEx2400 +
ASI533MM

OBSERVER : cbuil

JD-OBS : 2460097.4894



Is this the right position ? We
recommend to not publish your
personal location.

3 - Send your spectrum ?

Submit

Commented v

Cancel

Use comment button for add a comment on the quality of your spectrum (noise,
sky quality, calibration, ...).

Warning

Attention, this comment will be publicly visible on the database.

i just start spectroscopy last month, please be nice!



Compte
utilisateur



Upload



Statistiques

Spectra uploads evolution by time



Updated just now

Uploaders podium

- Bull Christian (39)
- Xavier DUPONT (36)
- Guillaume Bertrand (20)
- Arthur Leduc (19)
- Erik Bryssinck (16)
- vincent Lecocq (16)
- Antonio Garrigos (11)

Updated just now

Resolution repartition

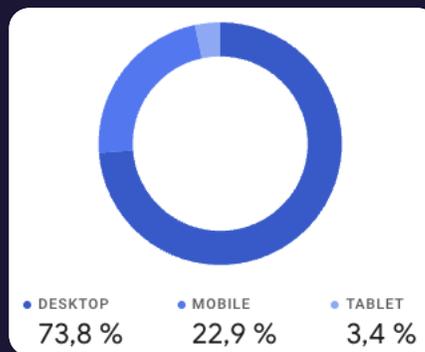
Resolution lower or equals 15 000 Resolution upper 15 000



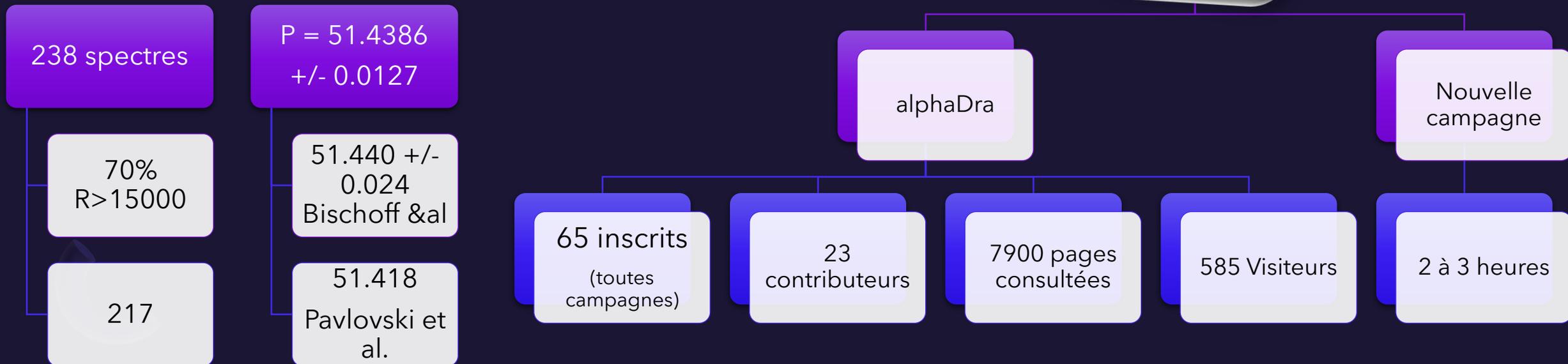
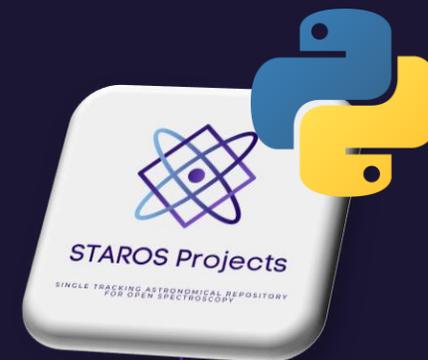
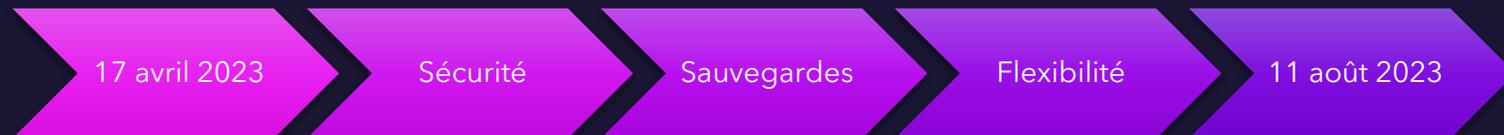
Updated just now

General statistics





C'est vous !



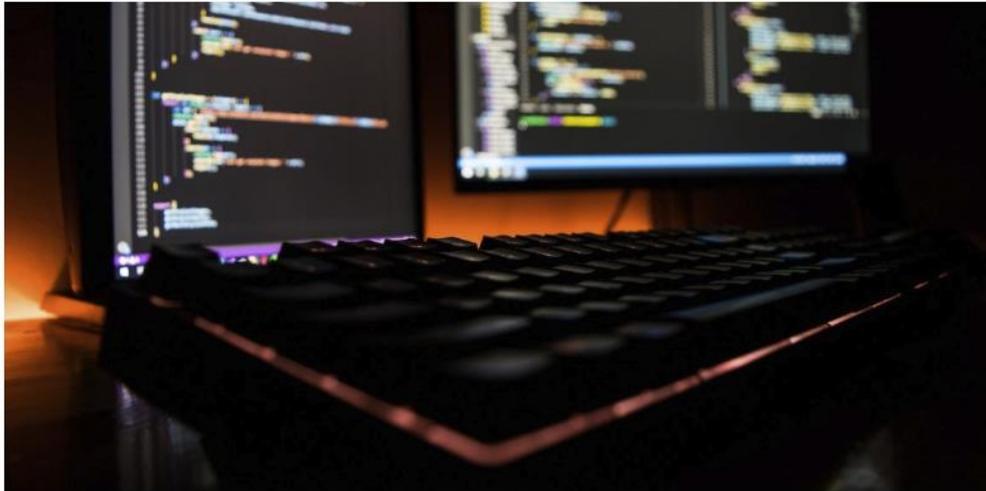
4 - Applications du futur



Staros notebook

Python pour l'astronomie et la spectroscopie : Analyse rapide d'un spectre

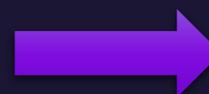
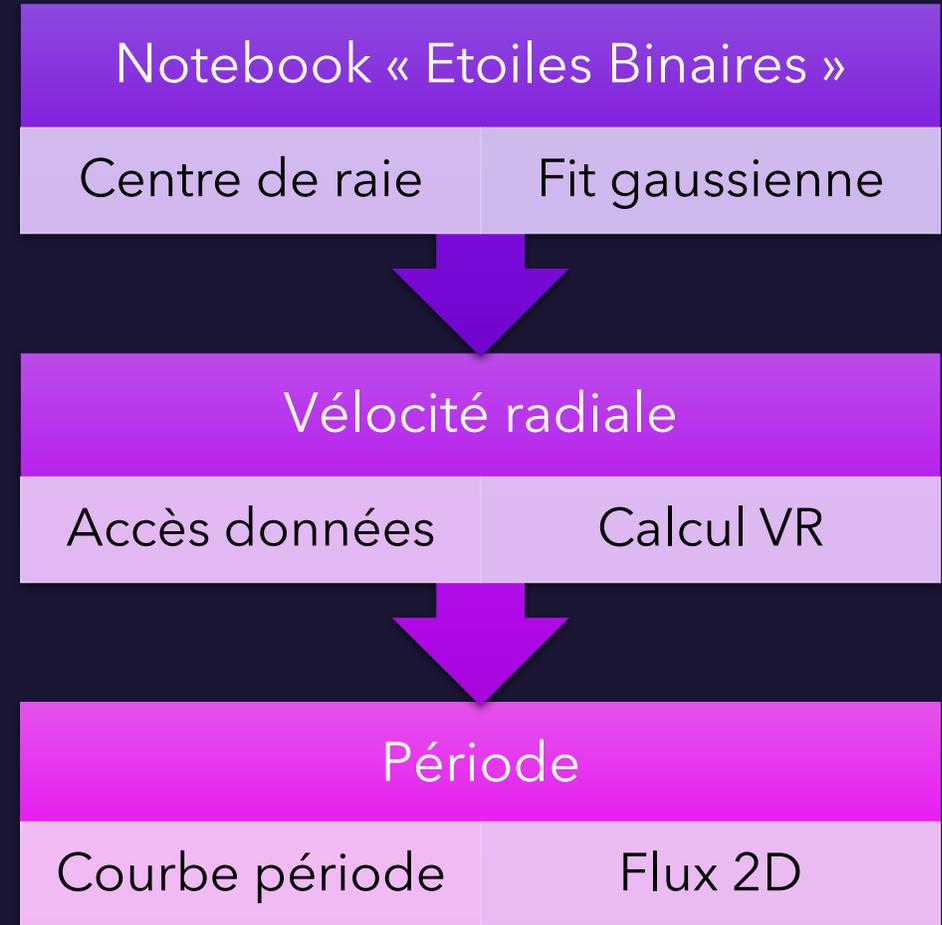
8 DÉCEMBRE 2020 / M.



Cet article expose une introduction sur l'utilisation du langage Python pour l'astronomie et la spectroscopie, en vue d'effectuer l'analyse rapide d'un spectre de l'étoile gam Cas.

Afin de pouvoir utiliser Python pour afficher un spectre d'étoile généré par ISIS¹, Demetra², VSpec³, (...), il est nécessaire de connaître quelques bases de la programmation. Je ne détaillerai pas dans cet article les rudiments du développement logiciel afin de se concentrer uniquement sur une utilisation du langage orienté vers l'astronomie, en restant sur une introduction et une présentation des outils, à partir de leurs documentations officielles. Toutefois, il existe de nombreuses ressources qui vous permettront de démarrer et d'intégrer les bases de la programmation, en Python. Des ouvrages, liens et vidéos sont listés à la fin de cet article en tant que ressources.

stellartrip.net



staros-projects.org

Alpha Draconis Tracking Database 0.1.0 OAS3

/openapi.json

Alpha Draconis Tracking Database API. 🚀

You will be able to:

- Get all spectrums
- Get unique spectrum by id

STAROS Projects - Website
Send email to STAROS Projects

api

GET /api/spectrums Get All Spectrums

GET /api/spectrums/{id} Get Spectrum By Id

/docs

- Documentation de l'API

/api/spectrums

- Liste des spectres (métadonnées)

/api/spectrums/id

- Spectre (flux, wv, header)

4 - Récupérer des données STAROS

Grâce aux API de la plateforme STAROS, il est possible de récupérer les données des spectres de la base de données STAROS en passant par l'interface graphique.

La documentation de l'API pour la campagne alphaDra est disponible ici : <https://alphadra.staros-projects.org/api/spectrums>

Ainsi, pour récupérer la liste de tous les spectres de la base, il faut utiliser cette adresse : <https://alphadra.staros-projects.org/api/spectrums>, en utilisant la méthode GET de la librairie requests. Cette dernière nous retourne les données au format JSON, que nous pouvons enregistrer dans un dataframe pandas pour une manipulation et un affichage.

```
Entrée [53]: # imports
import requests
import pandas as pd

# Appel de l'API avec la librairie requests
url = 'https://alphadra.staros-projects.org/api/spectrums'
r = requests.get(url)
specs = r.json()

# Enregistrement des données dans un dataframe et affichage
df = pd.DataFrame(specs)
df.head()
```

Out[53]:

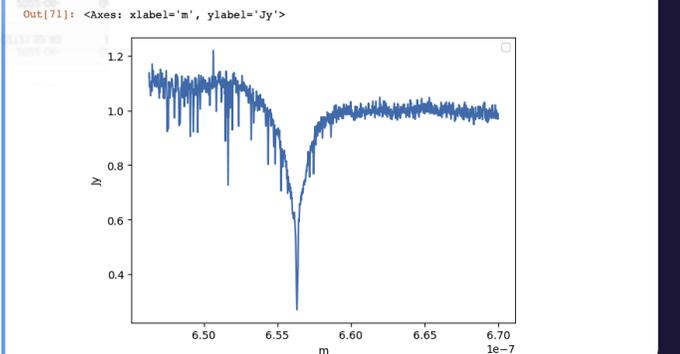
| | id | spec_filename | spec_exptime | spec_dateobs | spec_dateobs |
|---|--------------------------|--|--------------|---------------------|---------------------|
| 0 | 643d366004872d103bc72091 | alphadra_20220513233026_gbertrand.fits | 2000 | 2022-05-13T23:30:26 | 2022-05-13T23:30:26 |
| 1 | 643d366c6428dda6e2323c63 | alphadra_20220527213355_gbertrand.fits | 2400 | 2022-05-27T21:33:55 | 2022-05-27T21:33:55 |
| 2 | 643d36796428dda6e2323c65 | alphadra_20220602215240_gbertrand.fits | 2400 | 2022-06-02T21:52:40 | 2022-06-02T21:52:40 |
| 3 | 643d368541f3e6bc2c116fc | alphadra_20220608211443_gbertrand.fits | 2000 | 2022-06-08T21:14:43 | 2022-06-08T21:14:43 |
| 4 | 643d36906428dda6e2323c67 | alphadra_2022061121237_gbertrand.fits | 1800 | 2022-06-11T21:12:37 | 2022-06-11T21:12:37 |

Préparons notre url pour télécharger le fichier et téléchargeons-le, Get affichons-le avec nos fonctions précédentes

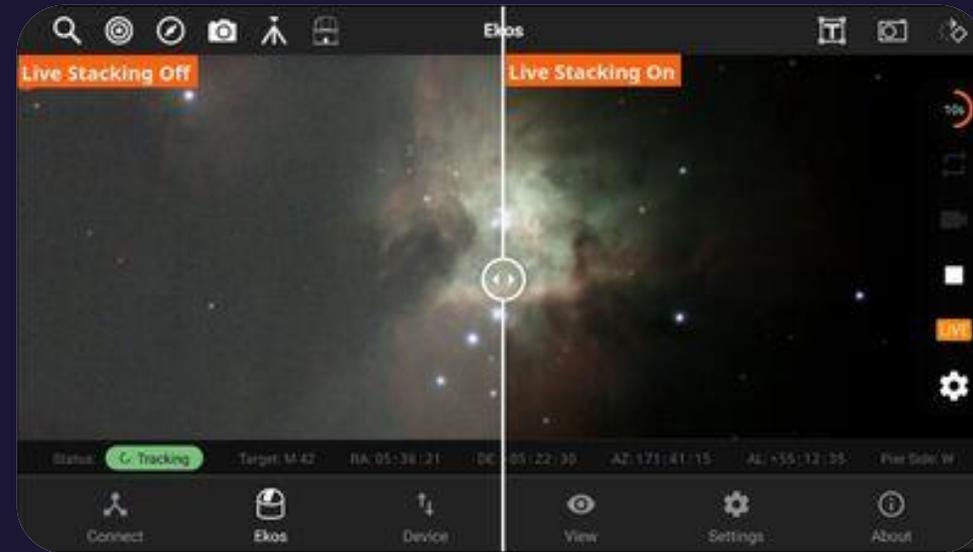
```
l_1_fits = 'https://alphadra.staros-projects.org/database/spectrum/download/' + spec_id + '.fits'
url_fits = l_1_fits
# On télécharge le fichier
s_file = wget.download(url_fits)
print('Filename : ', s_file)
```

```
# On affiche le spectre
s, _ = open_spectrum(s_file)
plot_spectrum(s)
```

https://alphadra.staros-projects.org/database/spectrum/download/643d366004872d103bc72091_alphadra_20220513233026_gbertrand (8).fits



Stellarmate ...



StellarMate Plus

Affordable & Versatile



StellarMate X

Powerful & Expandable

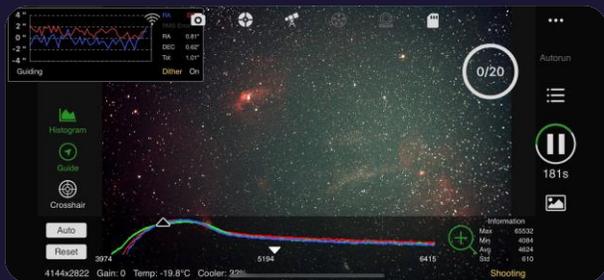


StellarMate Pro

Ultimate Controller



Spectro ?

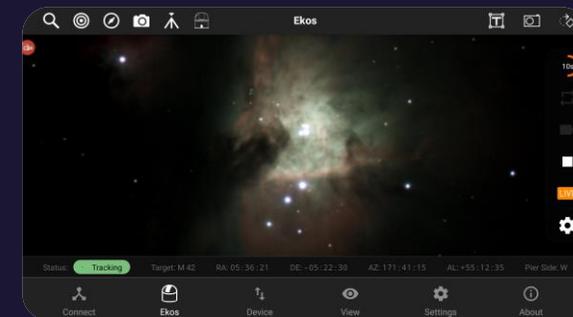


ASI Air

Stellarmate

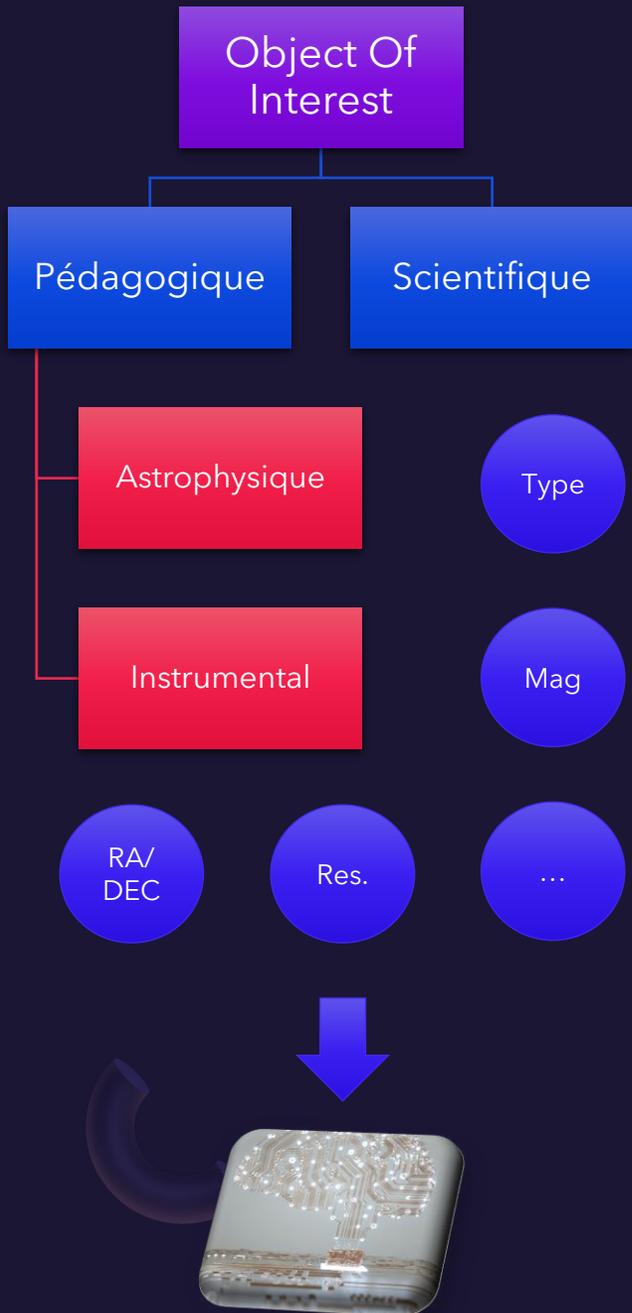
Réduction

Réduction



OHP
2024

Qu'est ce que j'observe ?



STAROS Search Engine

You're not connected

DATAS

- Home
- Usage details
- Statistics
- Contact

Staros Search Engine

Multi-campaign and observations opportunity search engine

Welcome on board Staros user. Here you can make some search...

Objects of Interest

We introduce here the concept of Object of Interest for search which kind of object is relevant to observe when you start spectroscopy. As a Staros user, you can propose some object of interest.

STAROS Datas

The Staros system allows to consult all the spectral databases of this project. If you are connected, you can also consult all your Staros uploads. But not only !

```
Search > What is this tools ?
Staros Search is a natural language search prompt to help users learn about spectroscopy

Search > Show me stars with pedagogical inter
```

STAROS Projects

SINGLE TRACKING ASTROPHYSICAL REPOSITORY FOR ALL SPECTROSCOPY

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Proposer des objets d'intérêts

Add an Object Of Interest

Propose easily a new object for spectroscopy, just follow the wizard.

- 1 Search**
Consult Simbad Database
- 2 Interests**
Precise why is interesting
- 3 Sources**
Add some sources and comments
- 4 Review & Submit**
Review and submit object

Step 1

Search an object by name or HD catalog name

Object name

Simbad object name

HD name

Informations links
[Simbad object infos](#) [NASA ADS papers](#) [Why data is not editable ?](#)

General type

Object type

RA

DEC

Visual Magnitude

Spectral type



- 1 Search**
Consult Simbad Database
- 2 Interests**
Precise why is interesting
- 3 Sources**
Add some sources and comments
- 4 Review & Submit**
Review and submit object

Step 2

Why is this object interesting ?

You can precise here why did you think this object is interesting. If object can be study in differents resolution or for differents objectives, precise all here once.

Spectro Resolution
 High Resolution
 Low Resolution
 Very Low Resolution

Resolution details
High resolution is more than 10 000 A
High resolution is between 600 and 5000 A
High resolution is less than 600 A

Study objective
 Research
 Pedagogic

Study informations
The search criterion concerns objects of interest to a current or ongoing scientific campaign (e.g. Be stars, Novae, comets)
For educational purposes, these are objects whose characteristics will enable you to familiarize yourself with spectroscopy and its astrophysical or instrumental applications

Pedagogic objective
 Astrophysic
 Instrumental

Pedagogic informations
Astrophysical objectives involve objects with interesting spectroscopic characteristics, to familiarize ourselves with astrophysical analyses (e.g. redshift of galaxies, temperature of planetary nebulae, etc.)
Instrumental objectives involve manipulations to further knowledge of spectroscopes and associated elements (instrumental response, calibration, etc.).



Step 3

Please precise references link about scientific or pedagogical interest

Scientific interest references

Link 1

Link 2

Link 3

Pedagogical interest in Astrophysic references

Link 1

Link 2

Pedagogical interest about Intrumental references

Link 1

Is this object already in a scientific campaign ?

Et mes données STAROS ?

STAROS Search Engine

You're not connected

DATAS

- Home
- Usage details
- Statistics
- Contact

Staros Search Engine

Multi-campaign and observations opportunity search engine

Ask me for something... to observe

Welcome on board Staros user. Here you can make some search...

Objects of Interest

We introduce here the concept of Object of Interest for search which kind of object is relevant to observe when you start spectroscopy. As a Staros user, you can propose some object of interest.

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Search > Show me stars with pedagogical
```

STAROS Projects

SINGLE TRACKING ASTROPHYSICAL REPOSITORY FOR OPEN SPECTROSCOPY

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Multi-campagnes

Dynamique

Campagnes archivées

Spectres personnels

Récap... et perspectives

« Quel est le meilleur snr dans la campagne alphadra »



Accès aux données même campagne archivées et coupées



Moteur de recherche sémantique basé sur du NLP (IA Langage)



Couplage du moteur de recherche aux données STAROS utilisateurs



Possibilités larges grâce aux comptes utilisateurs (géoloc., préférences, reco. vocale...)

Staros Search Engine
Multi-campaign and observations opportunity search engine

what is the best snr in alphadra staros campaign

Results - Best SNR : 479

| Object name | Exptime | Date obs | Resolution | Instrument | Astronomer | Status |
|-------------|---------|---------------------|------------|----------------------------------|---------------|----------|
| alphadra | 7800 | 2023-04-19T19:11:18 | 17000 | FSG106ED + StarEx2400 + ASI533MM | Chronos Astro | Reviewed |

Showing 1 to 1 of 1 entries (from 68 total entries)

« Qu'est-ce que je peux observer **ce soir** comme étoiles qui est **visible de chez moi** en haute résolution, de magnitude inférieure à 8 qui a un intérêt scientifique. »



Conclusion



Retour.. vers le futur

(évidemment !)

Python

Boîte à outils

Coût d'entrée,
qui en vaut la
peine

STAROS

Apprendre

Echanger

Futur

Réduire la
friction

Accompagner



staros-projects.org

Merci !

SCIENCE



MATTERS

