

The Virtual Observatory. A way to facilitate the synergies between Gaia and the ground-based facilities

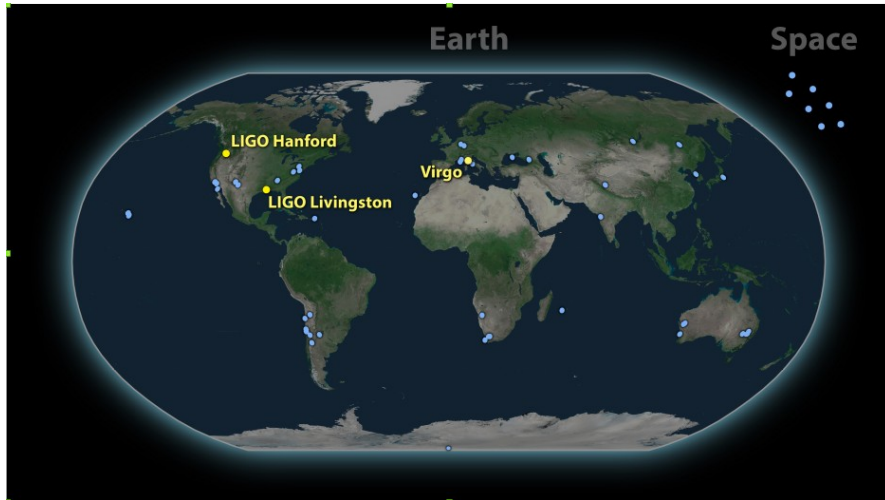
Enrique Solano



CENTRO DE ASTROBIOLOGÍA



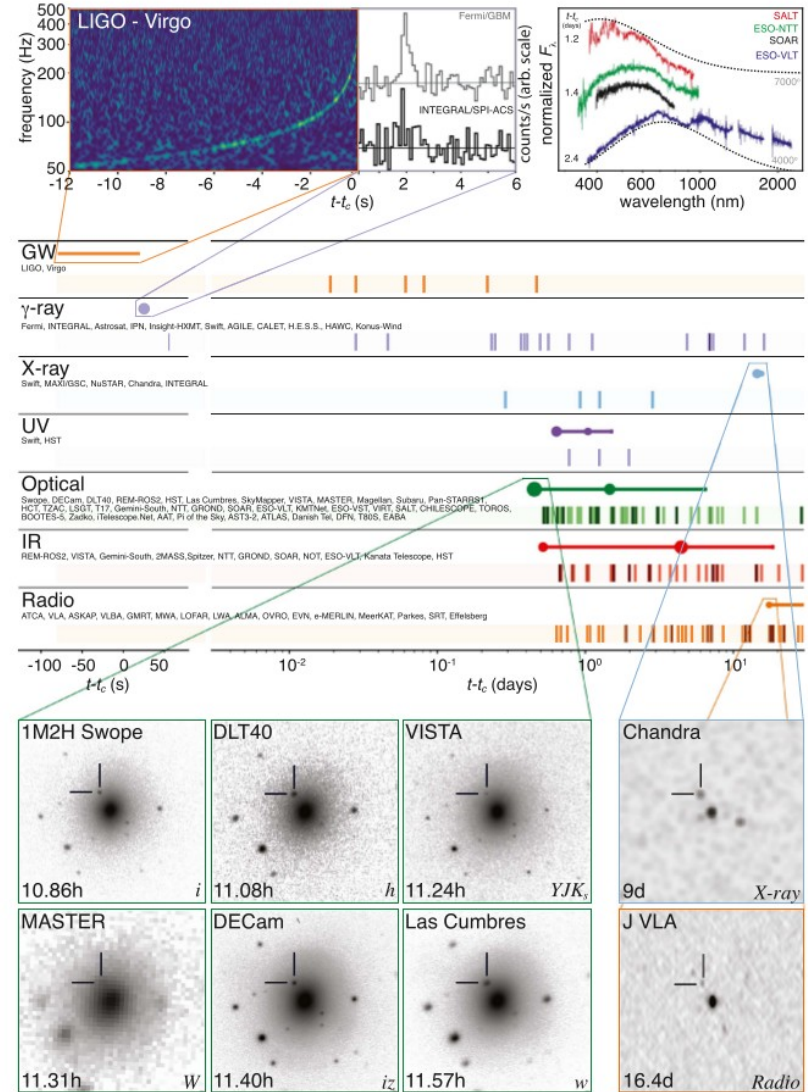
Multi- λ Astronomy



GW170817

THE ASTROPHYSICAL JOURNAL LETTERS, 848:L12 (59pp), 2017 October 20

Abbott et al.



Multi- λ Astronomy

THE ASTROPHYSICAL JOURNAL, 644: L75–L78, 2006 June 10

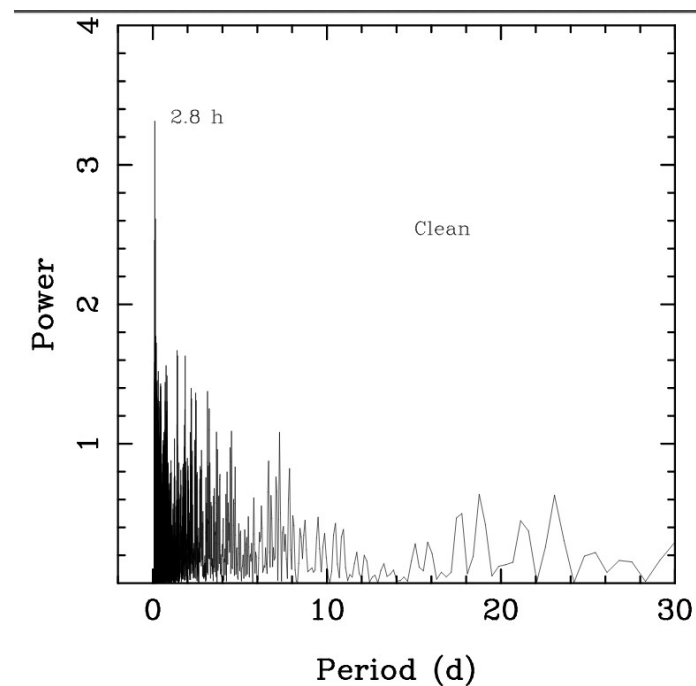
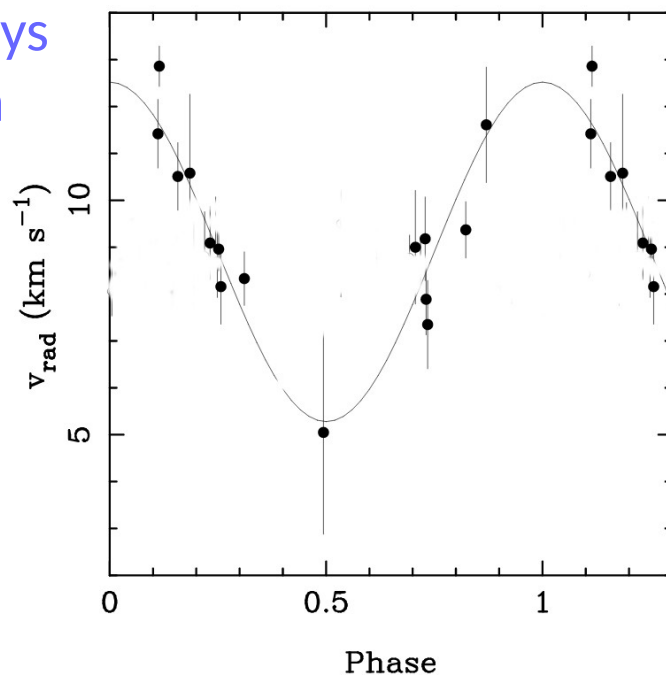
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A MULTIWAVELENGTH RADIAL VELOCITY SEARCH FOR PLANETS AROUND THE BROWN DWARF LP 944-20

E. L. MARTÍN,^{1,2} E. GUENTHER,³ M. R. ZAPATERO OSORIO,⁴ H. BOUY,¹ AND R. WAINSCOAT⁵

Received 2006 April 10; accepted 2006 April 25; published 2006 May 26

- VLT/UVES
- 14 nights / 841 days
- Period: 2.5 – 3.7 h



Multi- λ Astronomy

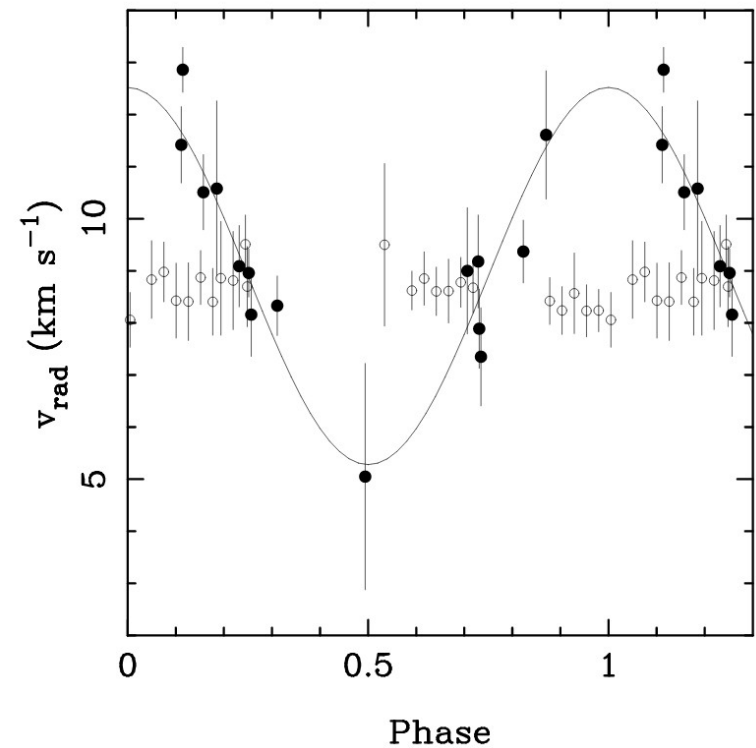
THE ASTROPHYSICAL JOURNAL, 644: L75–L78, 2006 June 10
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- IR data rules out the planetary hypothesis.



The multi- λ nightmare

- **Data discovery**
 - How can I find archives that contain the data I am looking for?
 - Once identified, how to select only those fulfilling certain conditions (spectral resolution, wavelength range, spatial resolution,...).
- **Data access:** Access protocols of very diverse nature.
- **Data analysis:** How to put all the pieces of the puzzle together?
 - **For images:**
 - Different pixel scales, orientations,...
 - **For spectra:**
 - Different unit both in flux and wavelength.
 - **For photometry:**
 - Where to find the filter / filter + detector / filter+detector+telescope / filter+detector+telescope+atmosphere curves?
 - And the zero-points?
 - **For catalogues:**
 - Different labels for the same magnitude (V, Vmag, Johnson V,...)



The Virtual Observatory



<http://svo.cab.inta-csic.es>



●●●●●●●● (Admin)

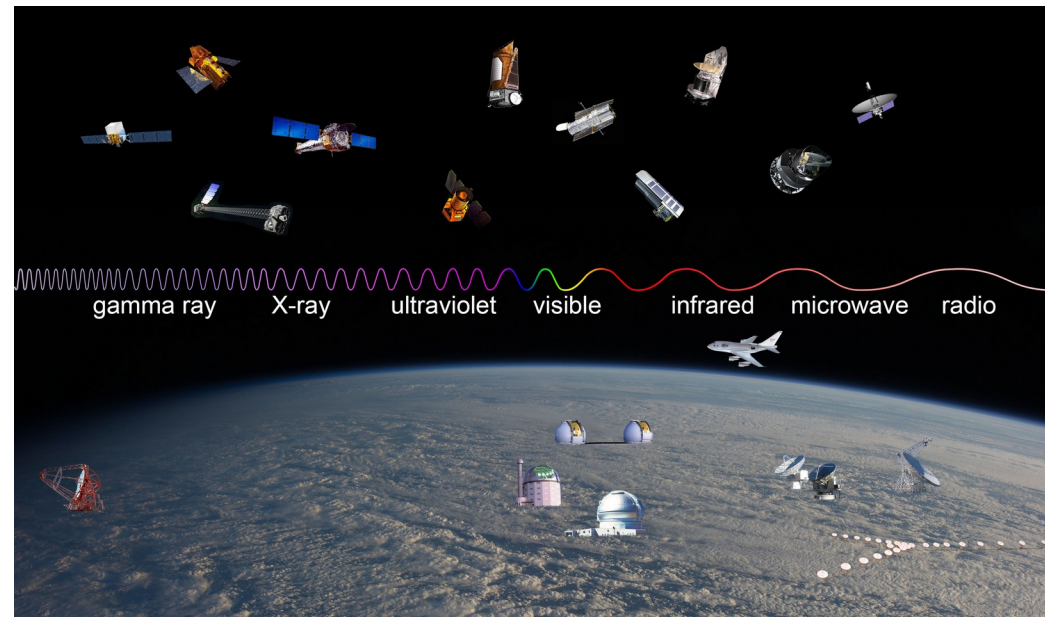
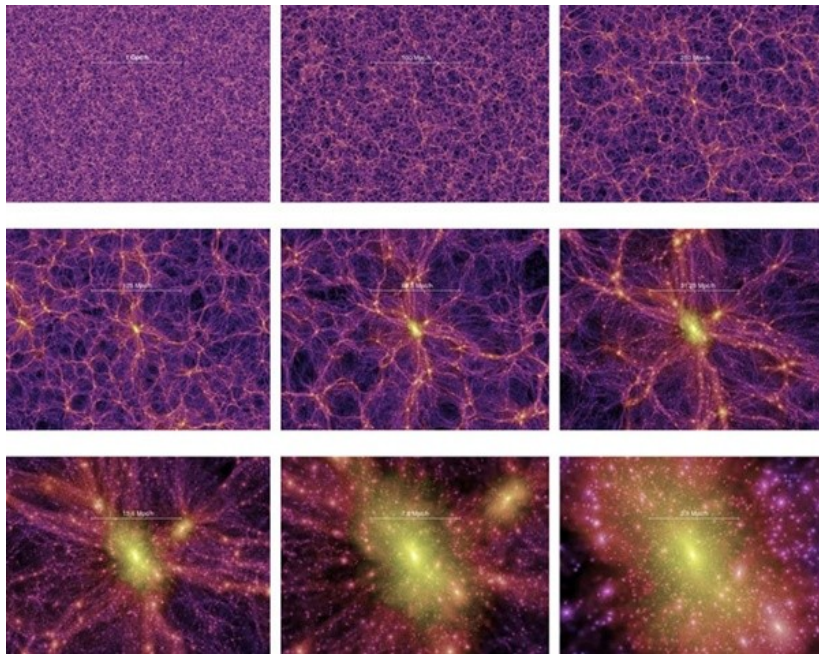
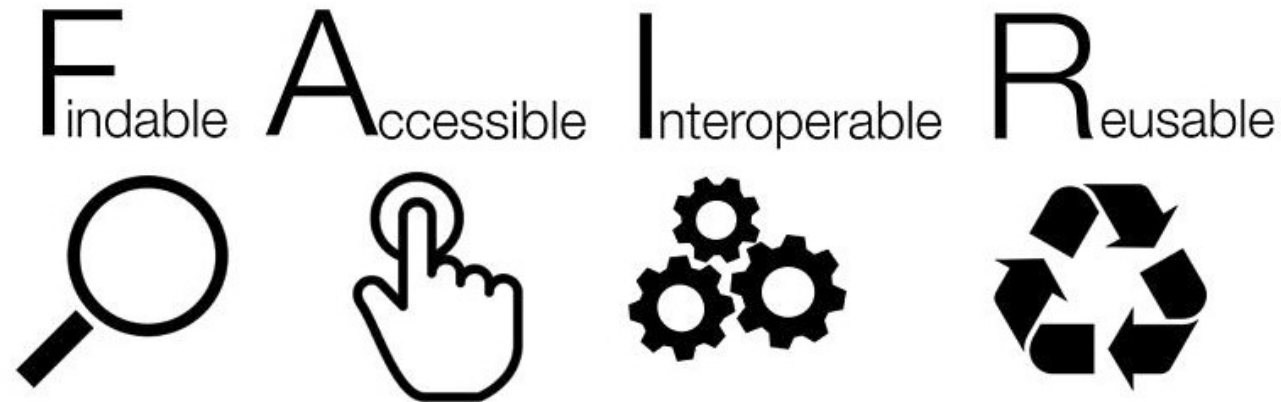
Tweets by @ObsVirEsp

ObsVirEsp
@ObsVirEsp
@ObsVirEsp estará presente en el IX Ciclo de Conferencias "Jornadas de Astronomía" de @astrocuencia

Embed

View on Twitter

FAIR: The magic word



FAIR. The power of VO

The screenshot displays the Aladin v10.0 interface. The main window shows a star field with a central bright star and a red crosshair. The interface includes a menu bar (File, Edit, Image, Catalog, Overlay, Coverage, Tool, View, Interop, Help), a toolbar, and a command line. The left panel shows a 'Data discovery tree' with a list of collections, including 'CDS/P/DSS2/color'. The right panel shows a 'Data discovery tree' with a list of collections and a 'select' field. The bottom status bar shows '0 sel / 0 src 34fps / 299MB'.

Annotations in the image:

- Arrow pointing to the 'Available data' header: **Discovery of 1000s of archives / services**
- Arrow pointing to the 'CDS/P/DSS2/color' collection: **Data available in the FoV → Green**

FAIR. The power of VO

TOPCAT

File Views Graphics Joins Windows VO Interop Help

Table List
4: TAP_4_gaiadr1.tgas_soi

Current Table Properties
Label: TAP_4_gaiadr1.tgas_source,gaiadr1.tmass_best_nei...
Location: TAP_4_gaiadr1.tgas_source,gaiadr1.tmass_best_neighbour,gaiadr1.tmass_best_neighbour,gaiadr1.tmass_best_neighbour
Name: sync
Rows: 10,000
Columns: 3
Sort Order:
Row Subset: All
Action: (no action) Broadcast Row

SAMP
Messages: Clients:

330 / 3547 M

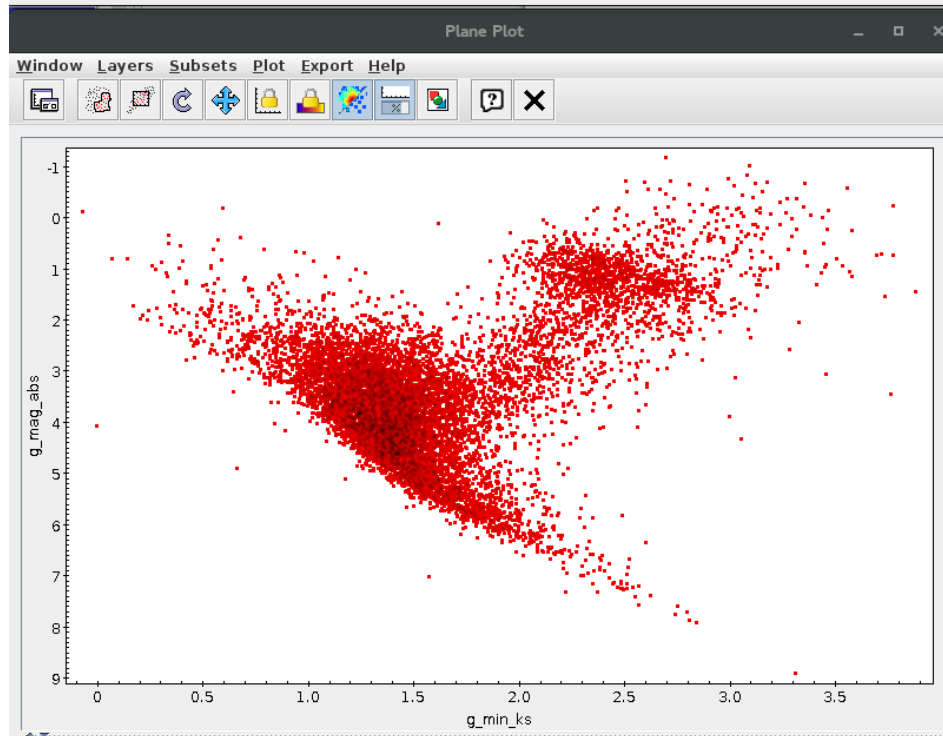


Table Access Protocol (TAP) Query

Window TAP Registry Edit Interop Help

Select Service Use Service Resume Job Running Jobs

Metadata

Find:

Name	Descr	Or	Service	Schema	Table	Columns	FKeys	Hints
gaidr2.dr1_nei								
gaidr2.gaiadr1.tgas_soi								
gaidr2.gsc23_b								
gaidr2.gsc23_n								
gaidr2.hipparc								
gaidr2.hipparc								
gaidr2.panstar								
gaidr2.panstar								
gaidr2.panstar								
gaidr2.ppmxl_b								
gaidr2.ppmxl_n								
gaidr2.ravedr5								
gaidr2.ravedr5								
gaidr2.ruwe								
gaidr2.sdssdr9								
gaidr2.sdssdr9								
gaidr2.cso_abc								

Service Capabilities
Query Language: ADQL-2.0 Max Rows: 3000000 (default) Uploads: 100Mb

ADQL Text
Mode: Synchronous

```
1  
SELECT TOP 10000 gaia.source_id,  
gaia.phot_g_mean_mag + 5 * log10(gaia.parallax) - 10 AS g_mag_abs ,  
gaia.phot_g_mean_mag - tmass.ks_m AS g_min_ks  
FROM gaiadr1.tgas_source AS gaia  
INNER JOIN gaiadr1.tmass_best_neighbour AS xmatch  
ON gaia.source_id = xmatch.source_id  
INNER JOIN gaiadr1.tmass_original_valid AS tmass  
ON tmass.tmass_oid = xmatch.tmass_oid  
WHERE gaia.parallax/gaia.parallax_error >= 5 AND  
ph_qual = 'AAA' AND  
sqrt(power(2.5 / log(10) * gaia.phot_g_mean_flux_error  
/ gaia.phot_g_mean_flux, 2)) <= 0.05 AND  
sqrt(power(2.5/log(10)*gaia.phot_g_mean_flux_error  
/ gaia.phot_g_mean_flux, 2)  
+ power(tmass.ks_msigcom, 2)) <= 0.05
```

Complex queries.

Run Query

How can VO make your life easier?

Managing data collections

A high spectroscopic resolution study of massive supergiant stars in Per OB1
de Burgos, Abel; Simón-Díaz, Sergio; Patrick, Lee (IAC+)

- 70 FIES/NOT, HERMES/MERCATOR high-res spectra.

Primitive Asteroids Spectroscopic Survey (PRIMASS): supporting Gaia mission

Julia de Leon, Noemi Pinilla-Alonso, Javier Licandro, Humberto Campins, David Morate, Vania Lorenzi, Mario De Pra, Eri Tatsumi (IAC+)

- > 600 spectra.

Propiedades de las estrellas centrales de nebulosas planetarias con distancias en Gaia DR2

I. González-Santamaría, M. Manteiga, A. Manchado, A. Ulla y C. Dafonte (Univ. Coruña +)

- Catalogue of central stars of planetary nebulae.

Ground-based observations of asteroids to support Gaia data exploitation

Toni Santana (Universitat d'Alacant, ICCUB)

- TJO, LT, CAHA.

Managing data collections

The SVO archive of double and multiple star systems from Gaia-DR2



Home Data retrieval News Documentation Coverage Map Credits Help-desk

: : Search Reset
 default verb. (Maximum Search Radius allowed: 180 degrees)

Don't use coordinates as search criterion

[Hide additional search fields](#)

Magnitude ranges (?)		Color ranges (?)	
---	:	---	:
---	:	---	:
---	:	---	:

GroupSize (?)	---	Sep. Ang (?)	:
Sep. Sky (?)	:	Parallax (?)	:
RUWE (?)	:	Teff (?)	:
Mass (?)	:	U (?)	:
ECAC (?)	:		
Obj.Name: (?)	:		

First 50 results shown (11550 found)

RA (J2000) (deg)	DEC (J2000) (deg)	RA (J2000) (hh:mm:ss)	DEC (J2000) (hh:mm:ss)	RA (Gaia-DR2) (?) (deg)	DEC (Gaia-DR2) (?) (deg)	Gaia-DR2 (?)	Tycho2 (?)	Simbad (?)	GroupID (?)
258.1358	62.8743	17:12:32.58	62:52:27.59	258.1359	62.8745	1631010158460327168	4202-1457-1	HD 156295	
257.7838	62.9523	17:11:08.12	62:57:08.39	257.7840	62.9525	1631025482903503744	4202-885-1	TYC 4202-885-1	
66.3542	22.2000	04:25:25.02	22:12:00.01	66.3548	22.1998	145484629809228544	1277-1627-1	* kap02 Tau	
66.5769	22.8136	04:26:18.46	22:48:48.90	66.5774	22.8134	145727729254950912	1816-1893-1	* ups Tau	

Managing data collections

The screenshot displays the Aladin v10.0 software interface. At the top, the title bar reads "Aladin v10.0" and the menu bar includes "File", "Edit", "Image", "Catalog", "Overlay", "Coverage", "Tool", "View", "Interop", and "Help". The main window shows a star field plot with a green grid. The plot is titled "CDS/P/DSS2/color" and shows a dense field of stars, primarily yellow and orange, with some blue stars. The plot is overlaid with a green grid. The x-axis is labeled with right ascension values from 24:00 to 00:00, and the y-axis is labeled with declination values from +75:00 to -90:00. The plot is titled "CDS/P/DSS2/color".

On the left side, the "Available data" panel shows a list of collections. The collection "The SVO archive of double and multiple" is highlighted with a red circle. Other collections include "The SVO archive of White Dwarfs from", "The SVO archive of white dwarfs from C", "The SVO archive of white dwarfs from C", "SVO hot subdwarf archive", "Spectrum (bv SSA) -> 1 / 128", "svo_cab -> 1 / 50", and "SVO EXPORT HERBIG AeBe SSAP".

At the bottom left, the "select" panel shows "SVO" entered in the search field, also highlighted with a red circle. The "from" dropdown is set to "collections".

On the right side, the "Projection" panel shows "Cartesian" selected. Below it, a "Welcome to Aladin" message is displayed, along with a list of features and instructions. The "The SVO archive of double and multiple" collection is selected in the "collections" list. Below the list, there are sliders for "epoch", "size", "dens.", "opac.", and "zoom". At the bottom right, a small globe icon shows the current view of the sky, with coordinates "12:20:39.91440 +02:08:29.8" and "338.5° x 180°".

Managing data collections

The screenshot displays the Aladin v10.0 software interface. The main window shows a star field plot titled "CDS/P/DSS2/color". The plot features a grid of stars, with a prominent yellow highlighted region in the center. The axes are labeled with Right Ascension (RA) and Declination (Dec) values. The RA axis ranges from 24.00 to 00.00, and the Dec axis ranges from +75.00 to -90.00. The plot is overlaid with a green grid. The interface includes a menu bar (File, Edit, Image, Catalog, Overlay, Coverage, Tool, View, Interop, Help), a toolbar with various icons, and a sidebar on the left showing a tree view of data collections. The sidebar lists several collections, including "UltraVista" and "VISTA". The bottom status bar indicates the plot size as "338.5° x 180°" and shows "10 superimposed objects - click on them to get details".

Aladin v10.0

File Edit Image Catalog Overlay Coverage Tool View Interop Help

Available data → 32 / 24297

Command [x] Frame ICRS Projection Cartesian

DSS SDSS 2MASS Simbad NED +

CDS/P/DSS2/color

338.5° x 180°

10 superimposed objects - click on them to get details

select: VISTA
from: all collections --

coll. view scan filter

grid study mark north hot multiview match

select pan dist phot draw tag spec filter cross xxy rgb assoc crop cont panel prop del

Welcome to Aladin,
your professional sky atlas.

- Discover all astronomical data available over the net!
- Compare them with your own data.
- Prepare your observation missions.

To start, type any object name, such as M1, and press ENTER...
Or easier, clic in the main frame and enjoy the sky...

CDS/II/348/rw2
CDS/P/DSS2/color

J2000 size dens. opac. zoom

181.16681 -04.00658 ICRS

12:04:40.03 -04:00:23.7
338.5° x 180°

Managing data collections

Galactic massive stars as seen by IACOB, Gaia and TESS

S. Simón-Díaz (IAC)



Search form

The IACOB project is an ambitious long-term project which is contributing to the modern era of investigation of massive stars by concentrating in Galactic OB stars. In particular, the project aims at building a large database of high-resolution, multi-epoch spectra of Galactic OB stars (the IACOB spectroscopic database), and the scientific exploitation of the database using state-of-the-art models and techniques.

More details about the project can be found in Simon-Díaz et al. (2011a, 2011b, 2015) and the [project webpage](#).

This is the interface to have access to the IACOB spectra. The different data releases (DRx) will be conveniently announced; in the meanwhile people interested in specific (samples of) spectra can contact the PI of the project by email: [ssimon \[at\] iac.es](mailto:ssimon[at]iac.es)

The IACOB spectroscopic database is based on observations made with the [Nordic Optical Telescope](#) operated by Nordic Optical Telescope Scientific Association, and the [Mercator Telescope](#), operated by the Flemish Community, both at the Observatorio de El Roque de los Muchachos (La Palma, Spain) of the [Instituto de Astrofísica de Canarias](#)

Search by Obj ID/Coordinates:

ObjID/
Coordinates:

Examples:

245.10 -15.67 - Coordinates in decimal degrees
16 20 24.5 -15 40 12.0 - Coordinates in sexagesimal degrees

Search radius:

(decimal degrees)

Search by TARGET:

TARGET:

Search by DATA_RELEASE:

DATA_RELEASE:

DR1: FIES observations between 2008 and 2009

Search by INSTR:

INSTR:

FIES or HERMES

Number of Results per Page:

Page to show:

Submit

VO services. Spectral stellar libraries

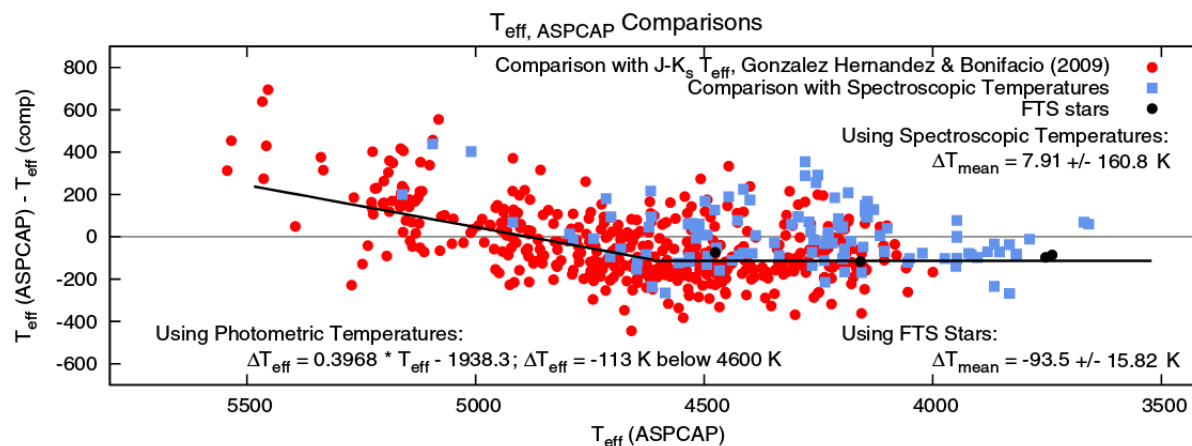
StePar/SteParSyn: two automatic codes to infer stellar atmospheric parameters

H. M. Taberner (Instituto de Astrofísica e Ciências do Espaço)

- ASCAP: APOGEE Stellar Parameters and Abundances Pipeline
- Assumptions:
 - Models: Synthetic spectra (Kurucz)
 - Opacities and atomic parameters (e.g. loggf).
 - Fixed microturbulence: 2.0 km/s
 - List of atomic and molecular species.
 - Solar abundance ratios.
 - Fitting procedure: FERRE (Allende et al. 2006).

THE ASTRONOMICAL JOURNAL, 146:133 (19pp), 2013 November

MÉSZÁROS ET AL.



VO services. Spectral stellar libraries

The screenshot shows the IAU website with a dark blue header. The IAU logo is on the left, and the text 'INTERNATIONAL ASTRONOMICAL UNION' is to its right. A navigation bar contains links: Home | About IAU | Member Directory | Site Map | Contact Us | Login. Below this is a menu with categories: News, Science, Publications, Administration, Education, IAU for the Public, and Astronomy for Development. The main content area is titled 'Commission G5 WG Stellar Spectral Libraries' and includes a 'Description' section. The description explains that stellar spectral libraries (SSL) are used for analysis of large spectroscopic surveys and are fundamental ingredients of stellar population models. It lists the goals of the Working Group (WG) and mentions that a report will be prepared before the next IAU General Assembly in 2018. On the right side, there is a search bar for the website, a search bar for scientific bodies, and social media links for Facebook and Twitter. At the bottom right, there is a graphic for the IAU General Assembly 2018 featuring a star and a spectral line plot.

IAU INTERNATIONAL ASTRONOMICAL UNION

Home | About IAU | Member Directory | Site Map | Contact Us | Login

News Science Publications Administration Education IAU for the Public Astronomy for Development

Home / Science / Scientific Bodies / Working Groups » Commission G5 WG Stellar Spectral Libraries

Commission G5 WG Stellar Spectral Libraries

Description

Libraries of stellar spectra (SSL) are at the crossroad of different fields of astrophysics. In particular, they serve as reference for the analysis of large spectroscopic surveys, and they are fundamental ingredients of the models of stellar populations used to study galaxies. These libraries may either consist of observed or theoretical spectra, and they vary by their spectral coverage/domain and resolution.

The goals of the WG are to identify the scientific and technical issues linked with SSL, in particular:

- The coverage in wavelength and parameter space of the current and scheduled libraries
- The dissemination of the libraries and their accurate description
- The characterization of the stars

A particular concern is that despite continuous progress on all aspects of SSL, considerable disagreements on the atmospheric parameters and chemical abundances of stars, and on the ages, metallicities of masses of galaxies, persist for decades. Whereas the internal precision these parameters is of the order of 0.02 or 0.03 dex, the actual accuracy is not better than 0.2 dex.

A number of projects faced these issues whose origins are complex, like for example the GAIA Benchmark Stars, a small library of primary calibrators, and the GAIA-ESO Survey. Even for the best studied stars, different approaches do not agree. These uncertainties on the stellar parameters further propagates to the stellar population models, adding up with our limited knowledge of the stellar evolution, contribution of binary stars, and other interpolation of tricky mathematical questions.

The WG will carry-on an inventory of the different attempts made to explain the discrepancies, and will summarize recommendations for actions that would improve the situation.

A report will be prepared before the next IAU GA in 2018.

Search www.iau.org

Search Scientific Bodies

Search...

Search

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IAU General Assembly 2018

VO services. Spectral stellar libraries

Available Resources Stellar Libraries at SVO Theoretical Libraries at SVO **Explore parameters** Crossmatch libraries Tutorial: TOPCAT Help-Desk



Explore parameter space for VO Stellar Libraries

These are the available parameters for each library. Please, select which ones you want to compare and then click 'Plot'.

Observational Libraries

	x	y
<input checked="" type="checkbox"/> GBS	teff	logg
<input type="checkbox"/> CaT	teff	logg
<input type="checkbox"/> MILES	teff	logg
<input type="checkbox"/> UVES	teff	logg
<input type="checkbox"/> STELIB	teff	logg
<input type="checkbox"/> XSL	---	---
<input checked="" type="checkbox"/> Yee2017	teff	logg
<input type="checkbox"/> ELODIE	teff	logg
<input type="checkbox"/> IACOB	---	---
<input type="checkbox"/> NGSL	teff	logg

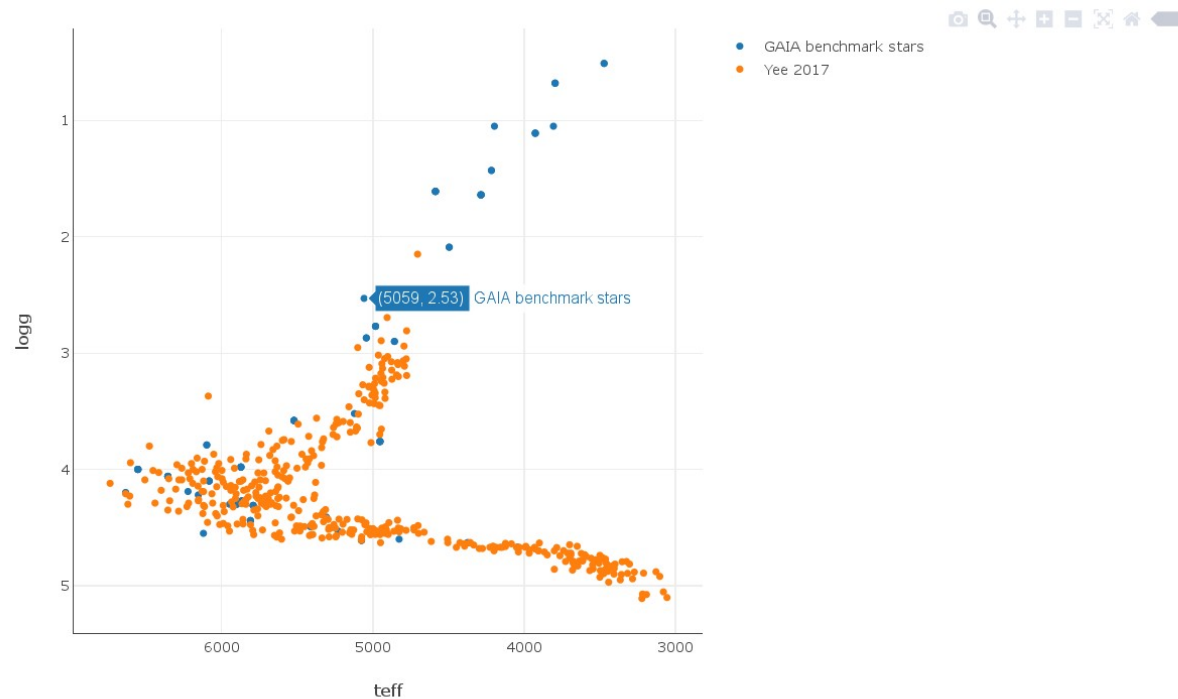
Theoretical Libraries

	x	y
<input type="checkbox"/> Kurucz	---	---
<input type="checkbox"/> Coelho	---	---

Plot Options

x : Flip Log
y : Flip Log
 Plot density map

Plot



Download this data as: [CSV](#) [ASCII](#) [VOTable](#)

You can also preselect what parameters

VO services. Spectral stellar libraries

Available Resources Stellar Libraries at SVO Theoretical Libraries at SVO Explore parameters **Crossmatch libraries** Tutorial: TOPCAT Help-Desk

Crossmatch VO Stellar Libraries

These are the available libraries. Please, select which ones you want to compare and then click 'Compare'.

Libraries

- GBS
- CaT
- MILES
- LIVES
- STELIB
- X-Shooter
- Yee2017
- ELODIE

Options

You can decide what to show for each type of data in the results table.

	Min	Max	Ave	Err	Libs
RA	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
DEC	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
name					<input checked="" type="checkbox"/>
teff	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
logg	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
feh	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
vmag	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

[Compare](#)

Instead, you can make a plot of two params

x: Flip Log

y: Flip Log

[Plot](#)

Download these data as: [CSV](#) [ASCII](#) [VOTable](#)

[Send table to VO Apps](#)

21 objects are present in both libraries

RA		DEC		name		teff					
ave	err	ave	err	GBS	MILES	min	max	ave	err	GBS	MILES
350.086	0.000167586	5.38131	2.90049e-6	HD220009	HD220009	4217	4418	4317.5	142.128	4217	4418
26.0171	6.07458e-5	-15.9375	1.44887e-5	tauCet	HD010700	5264	5414	5339	106.066	5414	5264
317.996	2.22433e-5	17.7277	3.33769e-5	HD201891	HD201891	5854	5948	5901	66.468	5948	5854
45.4068	8.51391e-5	-28.0916	3.21291e-5	epsFor	HD018907	5009	5123	5066	80.6102	5123	5009
53.2326	0.000132472	-9.45825	6.1274e-6	epsEri	HD022049	5052	5076	5064	16.9706	5076	5052
55.092	0.000114342	-3.21697	6.50538e-6	HD22879	HD022879	5814	5868	5841	38.1838	5868	5814
316.725	0.000139953	38.7494	2.85545e-5	61CygA	HD201091	4342	4374	4358	22.6274	4374	4342
55.8121	9.1969e-6	-9.76339	8.5963e-7	delEri	HD023249	4884	4954	4919	49.4975	4954	4884
17.0683	7.96475e-6	54.9203	2.87371e-5	muCas	HD006582	5249	5308	5278.5	41.7193	5308	5249
68.9801	0.000115107	16.5093	1.71926e-6	alfTau	HD029139	3922	3927	3924.5	3.53553	3927	3922
281.777	0.000112905	74.7254	2.33602e-6	HD175305	HD175305	4899	5059	4979	113.137	5059	4899
102.708	0.000262335	-0.540886	4.24263e-6	HD49933	HD049933	6550	6635	6592.5	60.1041	6635	6550
235.763	6.75966e-5	-10.9335	6.95104e-7	HD140283	HD140283	5522	5687	5604.5	116.673	5522	5687
148.191	6.90871e-5	26.0069	3.76882e-5	muLeo	HD085503	4472	4474	4473	1.41421	4474	4472
213.915	0.000212393	19.1824	6.48569e-6	Arcturus	HD124897	4286	4361	4323.5	53.033	4286	4361
178.245	9.04333e-5	37.7187	1.68317e-5	Gmb1830	HD103095	4827	5025	4926	140.007	4827	5025
147.234	0.000182628	13.7443	3.07099e-5	HD84937	HD084937	6228	6356	6292	90.5097	6356	6228
208.671	0.000114695	18.3977	1.46584e-5	etaBoo	HD121370	5978	6099	6038.5	85.5599	6099	5978
210.633	0.000219602	9.68809	1.17734e-5	HD122563	HD122563	4566	4587	4576.5	14.8492	4587	4566
183.006	0.000209774	13.2613	1.18083e-5	HD106038	HD106038	5940	6121	6030.5	127.986	6121	5940
177.674	0.000122991	1.76472	1.90828e-7	betVir	HD102870	6083	6109	6096	18.3848	6083	6109

VO services. Spectral stellar libraries

Stellar libraries: SVOCat

Stellar Spectral Libraries

CaT. Empirical Calibration of the Near-IR Ca II Triplet

The project is dedicated to the empirical calibration of the Ca II triplet and stellar population synthesis modelling. For this purpose, we make use of a new stellar library of 706 stars in the near-IR spectral range (from 8348 Å to 9020 Å with a FWHM of 1.5 Å) which spans a wide range of updated atmospheric parameters.

(More info)

L and T dwarfs (Chiu et al. 2006)

L and T dwarf data archive from Chiu et al. 2006, Golimowski et al. 2004 and Knapp et al. 2004.

(More info)

STELIB.

The objective of the STELIB Stellar Library is to build an homogeneous library of stellar spectra in the visible range (3200 to 9500Å), including stars of all spectral types, luminosity classes and metallicity that can be observed from the ground with the current instrumentation.

(More info)

X-Shooter Spectral Library

The X-Shooter Spectral Library is a collection of 3000–25000 Å all stellar spectra observed at a resolving power of $R = \lambda/\Delta\lambda \sim 10\,000$ with the medium-resolution spectrograph X-Shooter at the Very Large Telescope (VLT).

(More info)

FGKM stellar Library, Yee et al. 2017

Precision Stellar Characterization of FGKM Stars using an Empirical Spectral Library.

(More info)

MILES stellar library

The MILES stellar library consist of ~1000 stars spanning a large range in atmospheric parameters. The spectra were obtained at the 2.5m INT telescope and cover the range 3525-7500Å at 2.50Å (FWHM) spectral resolution.

(More info)

The NIRSPEC Brown Dwarf Spectroscopic Survey. Low-Resolution Data.

The Brown Dwarf Spectroscopic Survey (BDSS) is designed to study near-infrared moderate-to-high resolution spectra for a large sample of low-mass stars and sub-stellar mass objects in the M and newly defined L and T dwarf classes.

(More info)

Gaia FGK Benchmark Stars

The Gaia FGK Benchmark Stars are a common set of calibration stars, covering different regions of the HR diagram and spanning a wide range in metallicity. It is a homogeneous library in the visual range (480-680 nm) of high resolution and signal to noise ratio (S/N) spectra corresponding to the 34 Benchmark Stars and 5 metal-poor candidates.

(More info)

SpeX Prism Library

This site is build as a basis to provide Virtual Observatory access to the published spectra in the SpeX Prism Library.

(More info)

UVES/VLT M subdwarfs

This library presents UVES/VLT high resolution spectra of three late-K subdwarfs and 18 M subdwarfs. Our atlas covers the optical region from 6400Å up to the near infrared at 8900Å. We show spectral details of cool atmospheres at very high resolution ($R \sim 40000$).

(More info)

If you use this service in your research, please include the following acknowledgement in any resulting publications:

"Based on data from the Spectral Stellar Libraries services developed by the Spanish Virtual Observatory in the framework of the IAU Comission G5 Working Group : Spectral Stellar Libraries".

VO services. Spectral stellar libraries

Stellar libraries: SVOCat



The Gaia FGK Benchmark Stars

Library of high resolution and high signal to noise ratio stellar spectra.



Home Data retrieval News Documentation Coverage Map Credits Help-desk

RA (?)
 DEC (?)
 Radius (?)
 Search

 (Maximum Search Radius allowed: 180 degrees)

Don't use coordinates as search criterion

Group (?)	---
Teff (?)	-
logg (?)	-
[Fe/H] (?)	-

105 data found.

RA (deg)	DEC (deg)	RA (hh:mm:ss)	DEC (hh:mm:ss)	Star (?)	Spectra (?)	ID (?)
243.905289	-8.369441	16:15:37.27	-8:22:09.99	18Sco	ESPaDOnS	ESPaDOnS_18S
243.905289	-8.369441	16:15:37.27	-8:22:09.99	18Sco	HARPS	HARPS.Archive_1
243.905289	-8.369441	16:15:37.27	-8:22:09.99	18Sco	NARVAL	NARVAL_1
316.724802	38.749440	21:06:53.95	38:44:57.99	61CygA	ESPaDOnS	ESPaDOnS_61C
316.724802	38.749440	21:06:53.95	38:44:57.99	61CygA	NARVAL	NARVAL_61
316.730266	38.742056	21:06:55.26	38:44:31.40	61CygB	NARVAL	NARVAL_61
316.730266	38.742056	21:06:55.26	38:44:31.40	61CygB	ESPaDOnS	ESPaDOnS_61C
219.902058	-60.833993	14:39:36.49	-60:50:02.37	alfCenA	UVES	UVES_alfCe
219.902058	-60.833993	14:39:36.49	-60:50:02.37	alfCenA	HARPS	HARPS.Archive_alf
219.902058	-60.833993	14:39:36.49	-60:50:02.37	alfCenA	HARPS	HARPS.Archive_alfCe
219.896096	-60.837528	14:39:35.06	-60:50:15.10	alfCenB	HARPS	HARPS.Archive_alfCe
45.569888	4.089739	03:02:16.77	04:05:23.06	alfCet	UVES	UVES_alfC
45.569888	4.089739	03:02:16.77	04:05:23.06	alfCet	NARVAL	NARVAL_4
45.569888	4.089739	03:02:16.77	04:05:23.06	alfCet	HARPS	HARPS.GBOG_4
68.980163	16.509302	04:35:55.24	16:30:33.49	alfTau	UVES	UVES_8
68.980163	16.509302	04:35:55.24	16:30:33.49	alfTau	NARVAL	NARVAL_8
68.980163	16.509302	04:35:55.24	16:30:33.49	alfTau	HARPS	HARPS.GBOG_8
213.915300	19.182409	14:15:39.67	19:10:56.67	Arcturus	UVES	UVES_Arctu
213.915300	19.182409	14:15:39.67	19:10:56.67	Arcturus	ATLAS	ATLAS.Arc
213.915300	19.182409	14:15:39.67	19:10:56.67	Arcturus	HARPS	HARPS.Archive_Arc
213.915300	19.182409	14:15:39.67	19:10:56.67	Arcturus	NARVAL	NARVAL_Arc
213.915300	19.182409	14:15:39.67	19:10:56.67	Arcturus	UVES_POP	UVES_POP_Arc
213.915300	19.182409	14:15:39.67	19:10:56.67	Arcturus	HARPS	HARPS.GBOG_Arc

ID: ESPaDOnS_18Sco-1

Available links

GBS original spectrum (vot) :	VOTable	(application/x-votable+xml)
GBS original spectrum (ascii) :	ASCII	(text/plain)
GBS original spectrum (fits) :	FITS	(application/fits)
GBS normalized spectrum (vot) :	VOTable	(application/x-votable+xml)
GBS normalized spectrum (ascii) :	ASCII	(text/plain)
GBS normalized spectrum (fits) :	FITS	(application/fits)
GBS original spectrum, resolution: 47.000 (vot) :	VOTable	(application/x-votable+xml)
GBS original spectrum, resolution: 47.000 (ascii) :	ASCII	(text/plain)
GBS original spectrum, resolution: 47.000 (fits) :	FITS	(application/fits)
GBS normalized spectrum, resolution: 47.000 (vot) :	VOTable	(application/x-votable+xml)
GBS normalized spectrum, resolution: 47.000 (ascii) :	ASCII	(text/plain)
GBS normalized spectrum, resolution: 47.000 (fits) :	FITS	(application/fits)
Reference :	Heiter et al. 2015, A&A 582, A49.	(text/html)
Reference :	Blanco-Cuaresma et al. 2014, A&A 566, A98.	(text/html)
Reference :	Jofre et al. 2014, A&A 564, A133.	(text/html)
Reference :	Jofre et al. 2015, A&A 582, A81	(text/html)
Reference :	Hawkins et al. 2016, A&A 592, A70.	(text/html)
Reference :	Jofre et al. 2016, A&A, 601, A38	(text/html)
Reference :	Gaia Benchmark Stars web	(text/html)

Stellar libraries in the VO

The screenshot displays a multi-panel interface for a Virtual Observatory (VO) application. On the left, a browser window shows the SAO/NASA ADS Astronomy Abstract Service page for a Gaia FGK benchmark star. The page includes metadata such as the title 'Gaia FGK benchmark stars: Metallicity', authors (Jofre, Heiter, Soubiran, Blanco-Cuaresma, Wortley, Pancino, Cantat-Gaudin, Magrini, Bergemann, González Hernández, Hill, Lardo, de Laverny, Lind, Masseron, Montes, Mucciarelli, Nordlander, Pecio Blanco, Sobek, Sordo, Sousa, Taberner, Vallinari, Van Eck), and affiliation (AAInstitute of Astronomy, University of Cambridge). A red arrow points from the 'More info' links in the ADS page to a central menu box.

The central menu box lists various spectral data options:

- GBS original spectrum (vot)
- GBS original spectrum (ascii)
- GBS original spectrum (fits)
- GBS normalized spectrum (vot)
- GBS normalized spectrum (ascii)
- GBS normalized spectrum (fits)
- GBS original spectrum, resolution: 47.000 (vot)
- GBS original spectrum, resolution: 47.000 (ascii)
- GBS original spectrum, resolution: 47.000 (fits)
- GBS normalized spectrum, resolution: 47.000 (vot)
- GBS normalized spectrum, resolution: 47.000 (ascii)
- GBS normalized spectrum, resolution: 47.000 (fits)

Below the menu, three references are listed:

- Reference: Heiter et al. 2015, A&A 582, A49.
- Reference: Blanco-Cuaresma et al. 2014, A&A 566, A98.
- Reference: Jofre et al. 2014, A&A 564, A133.
- Reference: Jofre et al. 2015, A&A 582, A81

On the right, a text editor window titled 'gbs_ori_txt_HARPS.Archive_muAra.txt' displays a table of spectral data:

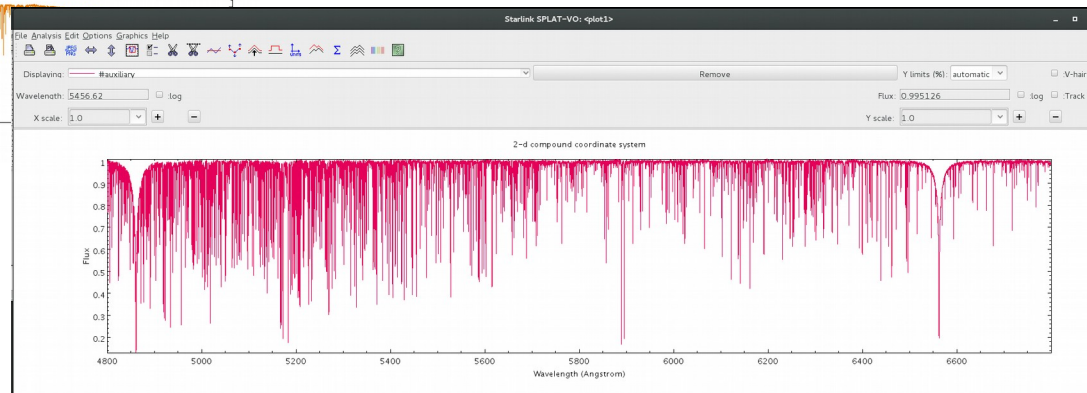
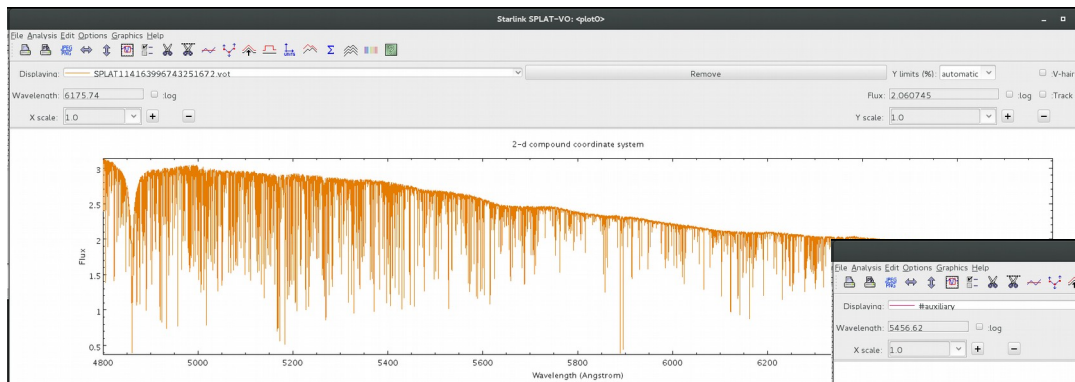
51	#Column 3: error		
52	4800.000	31827.8125	154.654083252
53	4800.010	32159.0664062	156.263687134
54	4800.020	31911.0976562	155.058792114
55	4800.030	31972.3183594	155.356262207
56	4800.040	31699.0839844	154.028579712
57	4800.050	31396.8945312	152.560241699
58	4800.060	31177.6816406	151.495056152
59	4800.070	30560.7949219	148.497543335
60	4800.080	29477.4394531	143.233428955

At the bottom right, a spectral plot shows the flux distribution of the star, with a search bar and various control elements. The plot includes a search bar with the text 'Search' and a zoom level of '150.23444 +02.8069'. The plot also shows the coordinates '23:20:20.58 +05:22:52.7' and a zoom level of '180° x 174.6°'. The plot is titled 'The Gaia FGK Benchmark' and 'CDS/P/SDDS9/color'.

Stellar libraries in the VO

The image shows two windows from the Starlink SPLAT-VO interface. The left window, titled "Starlink SPLAT-VO: A Spectral Analysis Tool", displays a "Global list of spectra:" on the left and "Properties of current spectra:" on the right. The properties include fields for "Short name:", "Full name:", "Format:", "Coordinates", "Data", "Errors", "Columns", "Colour", "Composite", "Line type", "Line width", "Point type", and "Error bars". The right window, titled "Starlink SPLAT-VO: Query VO for Spectra", shows search parameters for "procvon" with RA: 07:39:18.119 and Dec: +05:13:29.96. It includes a "Query results" table with columns for "Title", "Npoints", "access_url", and "access_format".

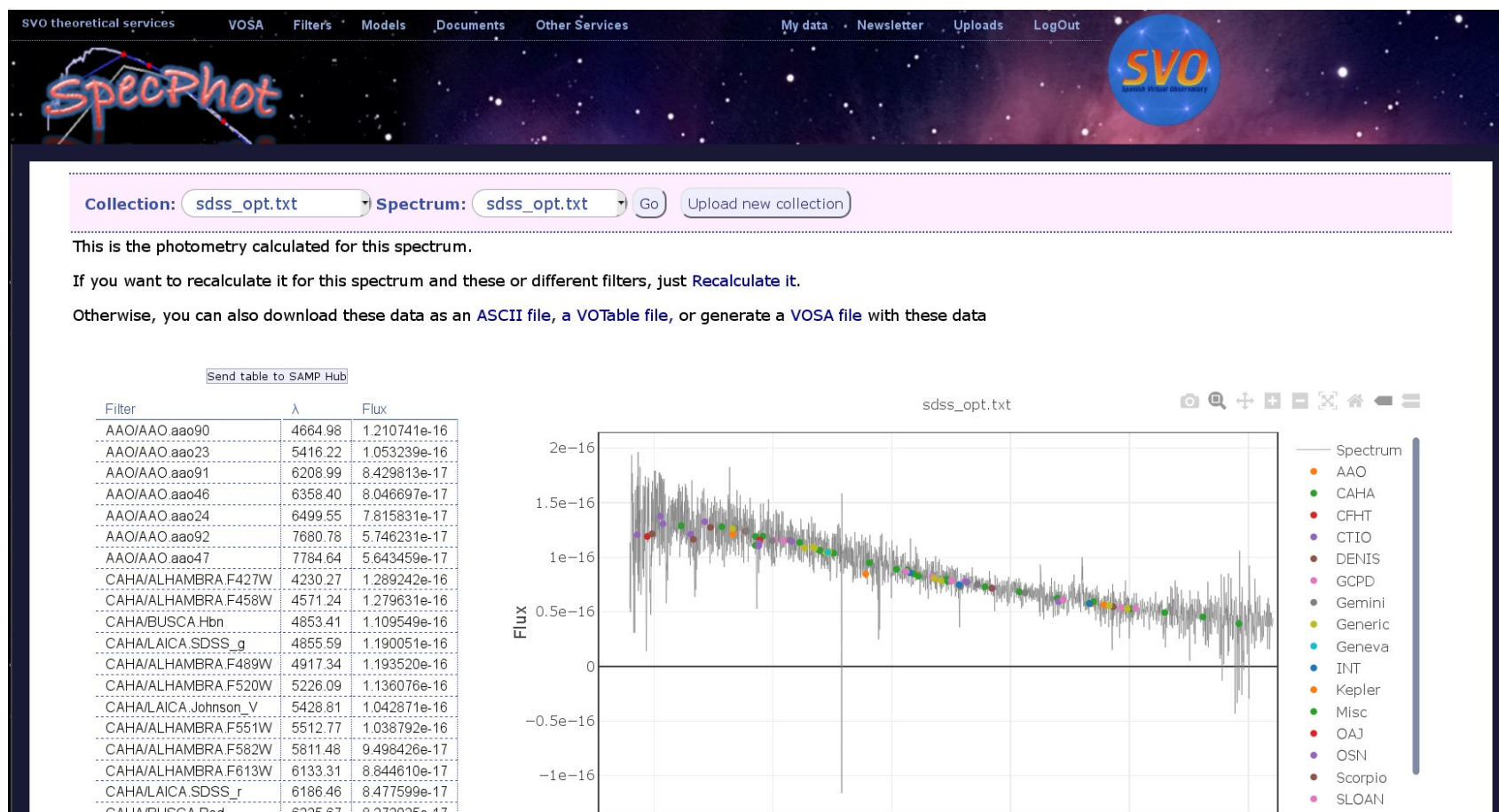
Title	Npoints	access_url	access_format
1 GBS original spectrum (vot)	200000	http://svo2.cab.inta-csic.es/...	application/x-votable+xml.c
2 GBS original spectrum (ascii)	200000	http://svo2.cab.inta-csic.es/...	application/x-votable+xml.c
3 GBS original spectrum (fits)	200000	http://svo2.cab.inta-csic.es/...	application/x-votable+xml.c
4 GBS normalized spectrum (v...	200000	http://svo2.cab.inta-csic.es/...	application/x-votable+xml.c
5 GBS normalized spectrum (/	200000	http://svo2.cab.inta-csic.es/...	application/x-votable+xml.c



Combining photometry and spectra

Extremely iron-poor stars and the Early Galaxy in the context of Gaia

Jonay I. González Hernández, David S. Aguado, Carlos Allende-Prieto (IAC)
Gaia, WEAVE, J-PAS and GTC



Combining photometry and spectra



Filter Profile Service

A repository of Filter information for the VO



[VO Service](#) [Browse](#) [Search](#) [News](#) [Help-Desk](#)

AuthId: Passw: [Login](#) [Register](#)

2MASS	AAO	AKARI	Astrosat	BOK	CAHA	CFHT	COBE	CTIO	DENIS	Euclid	GAIA	GALEX	GCPD	Gemini
Generic	Geneva	GTC	Herschel	Hipparcos	HST	IAC80	ING	INT	IRAS	ISO	IUE	JWST	Keck	Kepler
KPNO	LasCumbres	LaSilla	LBT	LCO	LICK	Liverpool	LSST	McD	Misc	MKO	MMT	MSX	NAOC	NIRT
NOAO	NOT	OAF	OAJ	OAQ	OSN	P200	Palomar	PAN-STARRS	Paranal	SAO	Scorpio	SkyMapper	SLOAN	SOFIA
Special	Spitzer	STELLA	Subaru	Swift	TCS	TD1	TESS	TJO	TNG	TNO	TNT	TYCHO	UKIRT	VATT
WFIRST	WHT	WISE	WIYN	XMM										

Combining photometry and spectra

Paranal filters: FORS1 FORS2 HAWKI ISAAC NACO OmegaCAM SPHERE VIMOS VISIR VISTA

Filter ID	λ_{mean}	λ_{eff}	λ_{min}	λ_{max}	W_{eff}	ZP (Jy)	Obs. Facility	Instrument	Description
Paranal/VISTA.Z_filter	8790.1	8772.0	8157	9400	958.7	2264.1	Paranal	VIRCAM	VISTA Z filter (filter only)
Paranal/VISTA.Z	8807.3	8789.5	8163	9401	889.5	2264.4	Paranal	VIRCAM	VISTA Z filter (full)

Paranal/VISTA.Z

Filter Description

Filter ID (?): Paranal/VISTA.Z
 Description (?): VISTA Z filter (full)
 Phot.System (?): VISTA
 Detector Type (?): Photon counter
 Band Name (?): Z
 Obs. Facility (?): Paranal
 Instrument (?): VIRCAM
 Comments (?): Includes mirror, ccd QE and atmosphere model (1.0)

Mathematical properties

Property	Calculated	Specified	Unit
λ_{mean} (?)	8807.32	-----	(Angstrom)
λ_{cen} (?)	8786.67	-----	(Angstrom)
λ_{eff} (?)	8789.53	-----	(Angstrom)
λ_{peak} (?)	9050.00	-----	(Angstrom)
λ_{pivot} (?)	8793.20	-----	(Angstrom)
λ_{phot} (?)	8798.99	-----	(Angstrom)
λ_{min} (?)	8163.48	-----	(Angstrom)
λ_{max} (?)	9400.91	-----	(Angstrom)
W_{eff} (?)	889.46	-----	(Angstrom)
FWHM (?)	970.78	-----	(Angstrom)
A_f/A_v (?)	0.52	-----	()

Transmission

Paranal/VISTA.Z

Data file: [ascii_VOTable](#)
 Reference for filter response: [Paranal Instrumentation: VIRCAM](#)

Calibration properties

Vega System

Property	Specified	Calculated	Unit
Zero Point (?)	-----	8.787e-10	(erg/cm ² /s/Å)
	-----	2264.42	(Jy)
ZP Type (?)	Pogson		
PhotCal ID (?)	Paranal/VISTA.Z/Vega		

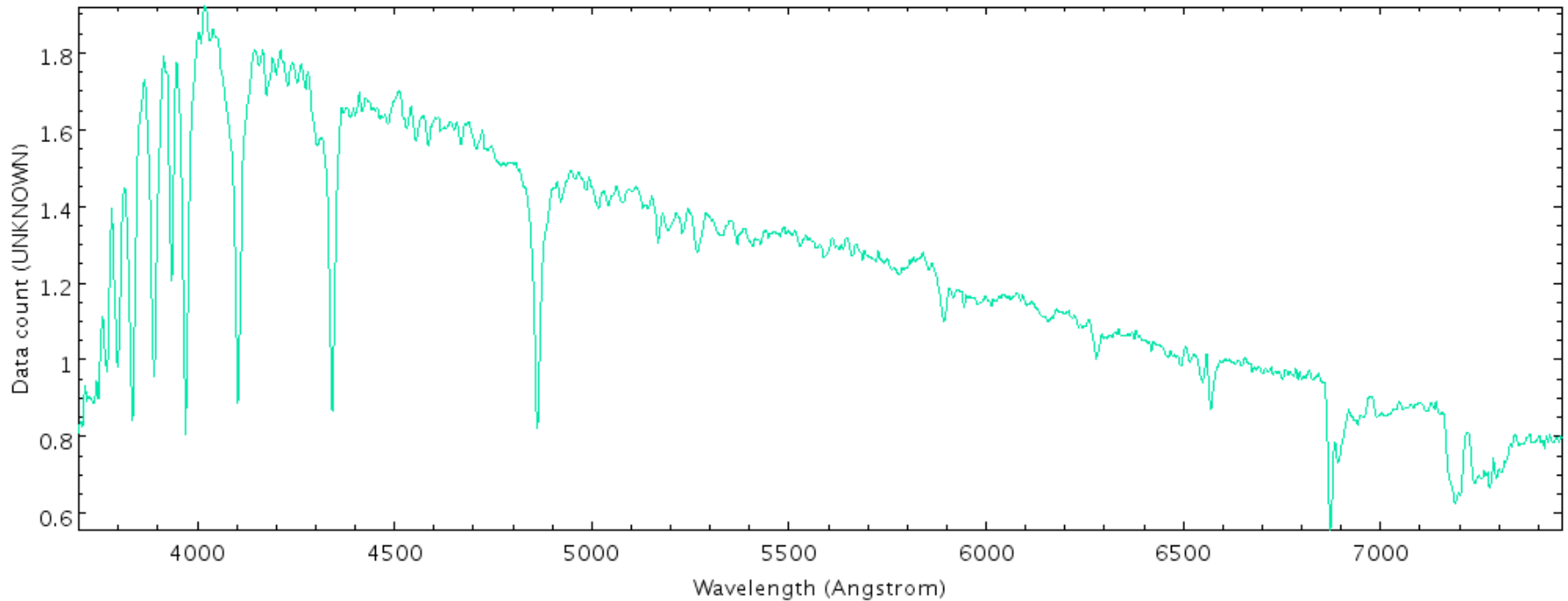
AB System

Property	Specified	Calculated	Unit
Zero Point (?)	-----	1.409e-9	(erg/cm ² /s/Å)
	-----	3631.00	(Jy)
ZP Type (?)	Pogson		
PhotCal ID (?)	Paranal/VISTA.Z/AB		

ST System

Property	Specified	Calculated	Unit
Zero Point (?)	-----	2.021e-9	(erg/cm ² /s/Å)
	-----	5052.50	(Jy)
ZP Type (?)	Pogson		
PhotCal ID (?)	Paranal/VISTA.Z/ST		

Combining photometry and spectra



Combining photometry and spectra



Your collections Upload new collection Help

Collection: Spectrum:

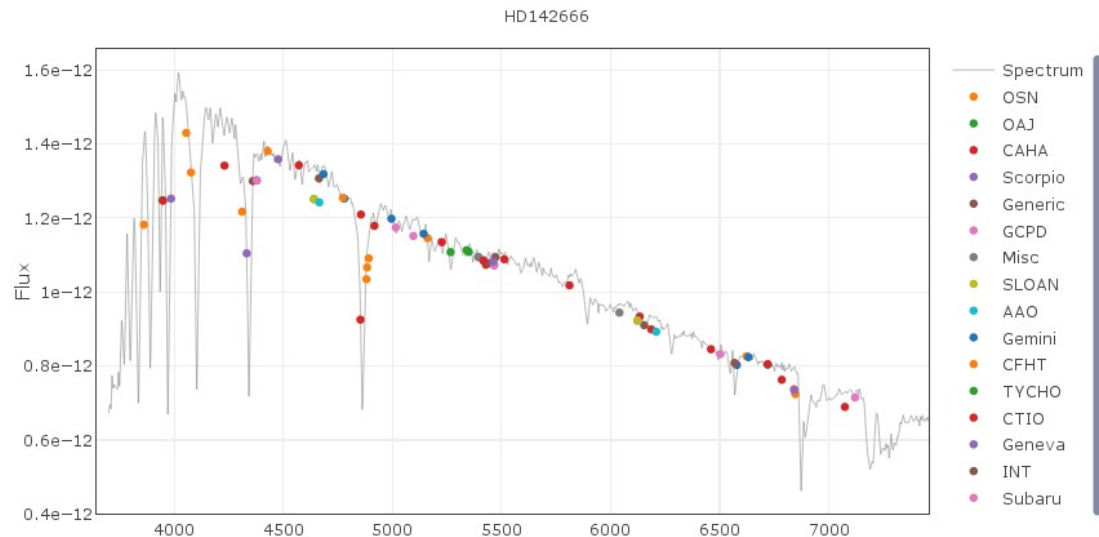
This is the photometry calculated for this spectrum.

If you want to recalculate it for this spectrum and these or different filters, just Recalculate it.

Otherwise, you can also download these data as an ASCII file, a VOTable file, or generate a VOSA file with these data. Photometry is rescaled so that:
 $\text{Flux}(\text{TYCHO}/\text{TYCHO.V}) = 0.00000000001113 \text{ erg/cm}^2/\text{s}/\text{\AA}$

[Send table to SAMP Hub](#)

Filter	λ	Flux
OSN/Comet50.CN	3861.09	1.181880e-12
OAJ/JPLUS.F0395_filter	3946.00	1.247897e-12
CAHA/ALHAMBRA.F396W	3948.62	1.246946e-12
Scorpio/Comet.CN_3980	3985.47	1.252321e-12
OSN/Comet50.C3_z1	4054.91	1.429949e-12
OSN/Comet50.C3_z2	4076.89	1.322959e-12
CAHA/ALHAMBRA.F427W	4230.27	1.341522e-12
OSN/Comet25.CO	4310.95	1.217003e-12
Scorpio/Comet.CO	4332.22	1.104631e-12
Generic/Bessell.B	4360.00	1.299717e-12
GCPD/JHKLMN.B	4378.12	1.301704e-12
Generic/Johnson.B	4378.12	1.301704e-12
OSN/Comet50.Cont4430	4428.59	1.380708e-12
Scorpio/Comet.Cont_4470	4476.24	1.358791e-12
CAHA/ALHAMBRA.F458W	4571.24	1.342527e-12
Misc/APASS.sdss_g	4640.42	1.251096e-12
SLOAN/SDSS.g	4640.42	1.251096e-12
Generic/Stromgren.b	4663.26	1.307066e-12
AAO/AAO_3980	4664.98	1.247970e-12



Tools: Clusterix

Machine learning and Gaia DR2, on the hunt for open clusters

A. Castro-Ginard, C. Jordi and X. Luri (ICCUB)

Tools: Clusterix

Clusterix 2.0

This is a beta version. Clusterix is still in development which means you can encounter some bugs or experience some changes as we are constantly adjusting and improving the application. ✕

If you want to know more about the project, submit feedback or report a bug, please **contact us**

Clusterix 2.0 is an interactive web-based application to calculate the grouping probability of a list of objects using proper motions and the non parametric method proposed by [Cabrera-Cañó & Alfaro \(1990\)](#) and described in [Galadí-Enríquez et al. \(1998\)](#). It also allows the possibility of gathering physical parameters (parallaxes, radial velocities, proper motions,...) from VizieR and estimating effective temperatures, surface gravities and metallicities using [VOSA](#).

For more information visit the following [link](#)

Step 1/3: Information gathering (coordinates and physical parameters)

Search by Id

ID

Radius

Catalogue

Q-Filter?

Magnitude limits (min/max)

≤ ≤

Search

Search by Coordinates

RAJ2000(deg),DEJ2000(deg)

Radius

Catalogue

Q-Filter?

Magnitude limits (min/max)

≤ ≤

Search in Webda ?

Search by file?

No file selected.

Tools: Clusterix

Clusterix 2.0

Step 2/3: Region selection

Cluster info: M67_300_arcmin_GAIADR2

Selection of the "cluster+field" and "only field" regions

Click *Drawing Info* button if you need help on how to make the region selection

Area definition: Cluster+Field Void Field

Clear

Cluster+field:	Cluster+field area
<input type="text" value="132.85,11.81,0.5;"/>	<input type="text" value="0.7853981633974483"/>
Void:	Void area
<input type="text" value="132.85,11.81,2.9;"/>	<input type="text" value="25.635396053292713"/>
Only field:	Field area
<input type="text" value="132.85,11.81,3.7;"/>	<input type="text" value="16.587609210954113"/>

Membership determination parameters

Proper motion limits (mas/yr)

Maximum μ : Maximum μ err:

Magnitude range \leq mag. \leq

Smooth param (mas/yr) (?):

Fine tuning values

γ threshold (?):

Cluster size provided by

Simbad:

Majaxis=25.0 arcmin

Minaxis=25.0 arcmin

Matrix size ?

Normal High precision

Total number of stars: 144665

Number of stars in the "cluster+field" region: 2500

Number of stars in the "field" region: 30197

Field sample size? 30197

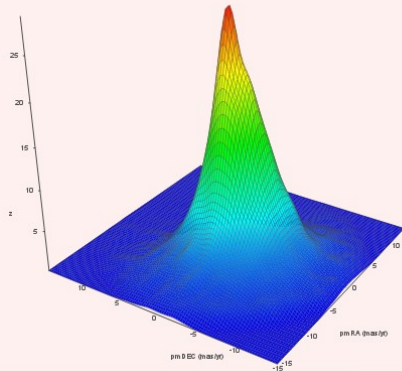
J2000

FoV: 15°34'

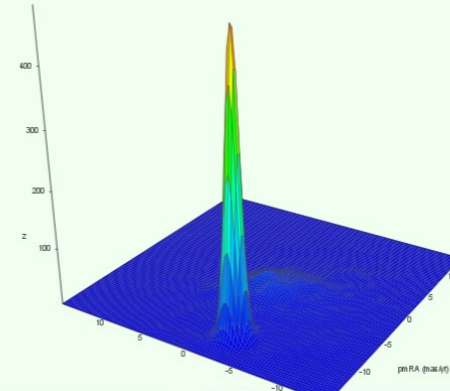
Drawing info

Tools: Clusterix

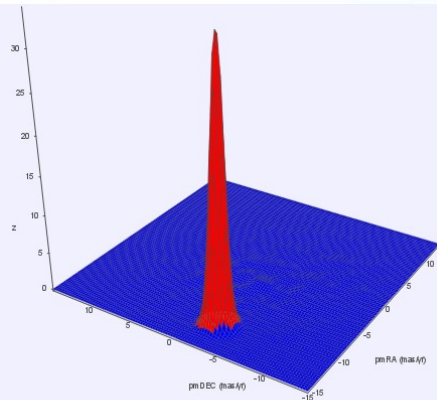
Only Field frequency function



Cluster+field frequency function

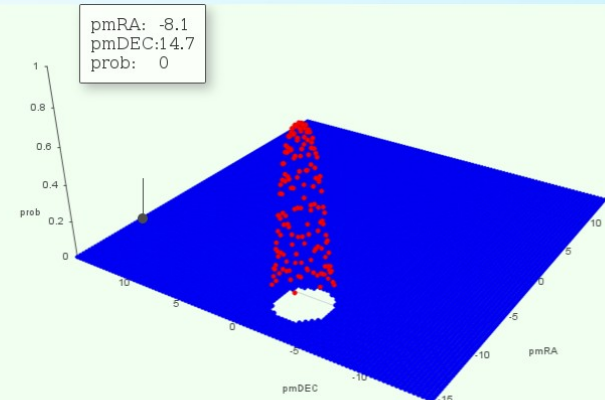


Cluster+field - only field frequency function



1887 expected candidates

Kinematic probability



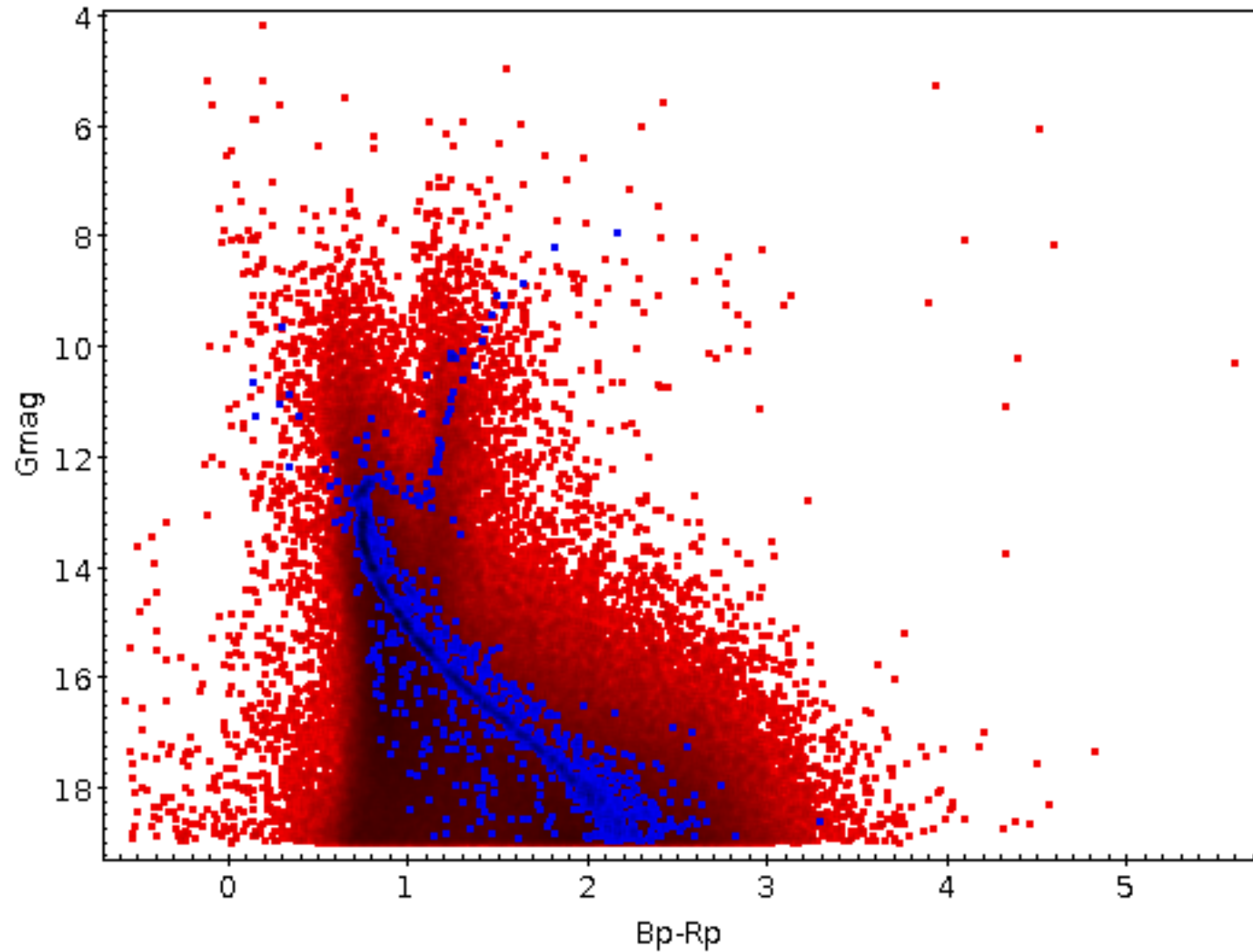
Tools: Clusterix

```
#
# FIELD BOUNDARIES:
# 132.85,11.81,3.7;
#
# VOID BOUNDARIES:
# 132.85,11.81,2.9;
#
# NUM STARS: 178748
#
# EXPECTED NUMBER OF MEMBERS: 1687
#
# For Webda clusters, STAR_NO is the merge of the Data source reference and the star number: Ref_Star
#
# Region values: F = star was inside a "only field" region
#                C = star was inside a "cluster+field" region
#                V = star was outside the selected regions
#
```

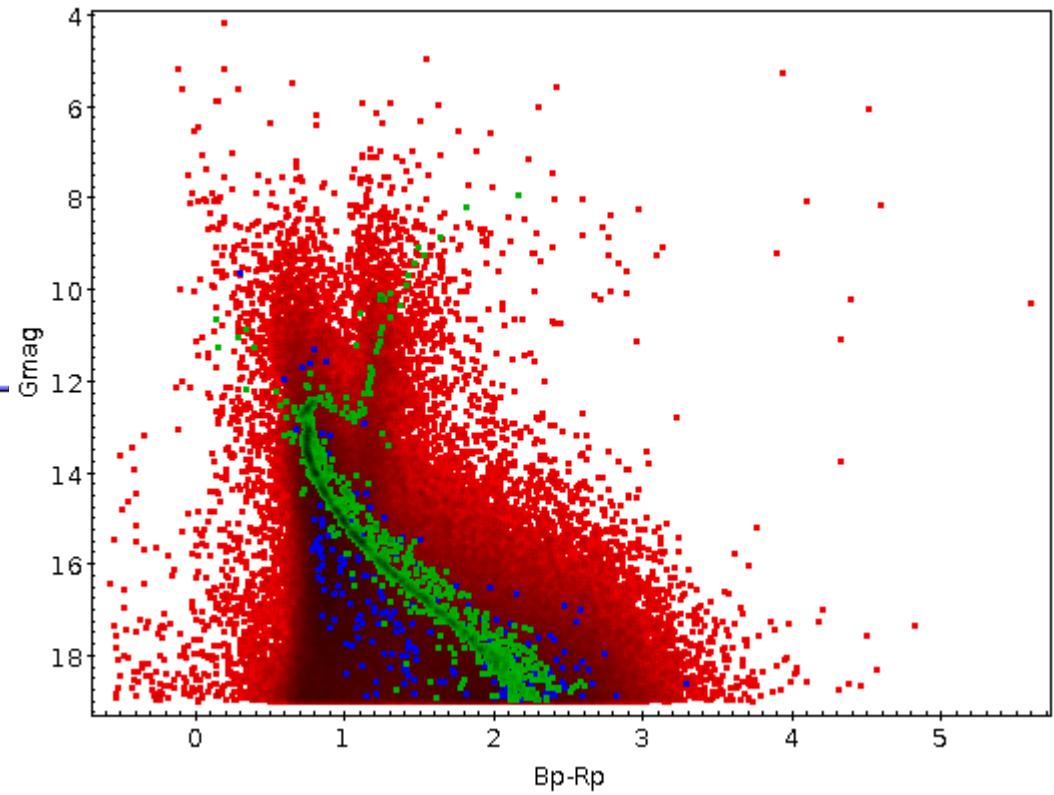
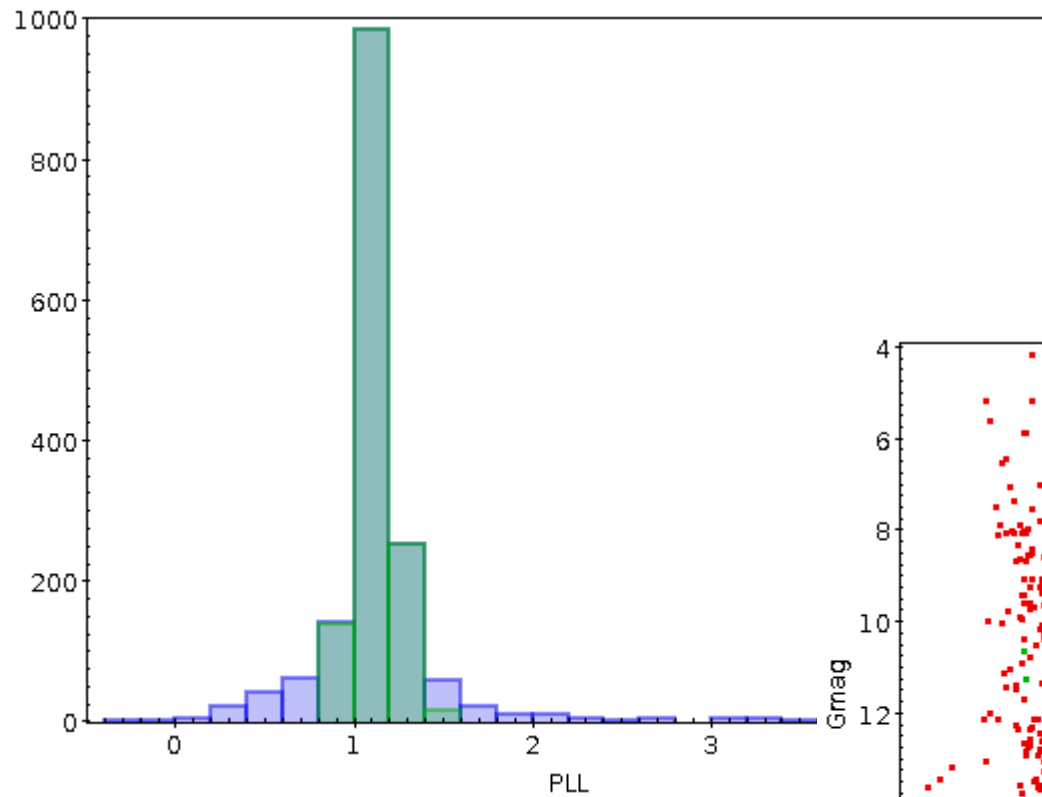
Highest probability results sample (only 50 first shown).

##STAR_N	RAJ2000	DECJ2000	pmRA	epmRA	pmDEC	epmDEC	P11	eP11	BP	eBP	RP	eRP	G	eG	RV	eRV	PROB	Region
117145	132.8091 05	11.78714 2	-11.199	0.29	-2.878	0.213	1.2468	0.1719	18.7464	0.0199	16.8367	0.0071	17.8448	0.0019	NaN	NaN	0.91168	C
117550	132.8590 49	11.89776 1	-11.002	0.069	-2.881	0.053	1.1579	0.0398	10.7649	7.0E-4	9.5266	6.0E-4	10.2024	2.0E-4	34.29	0.3	0.91168	C
118735	132.3463 47	12.02693 2	-10.97	0.066	-2.964	0.046	1.1569	0.0383	15.3999	0.0015	14.4336	0.0012	14.9928	3.0E-4	NaN	NaN	0.91168	V
117490	132.8272 07	11.82263 1	-11.148	0.072	-2.819	0.052	1.1695	0.0444	12.8231	9.0E-4	12.0311	7.0E-4	12.505	2.0E-4	NaN	NaN	0.91168	C
117659	132.8974 71	11.96569 7	-11.097	0.067	-3.008	0.044	1.1499	0.0422	13.0064	0.0012	12.0803	0.001	12.6197	2.0E-4	34.78	1.08	0.91168	C
117055	132.7211 04	11.66728 4	-10.91	0.045	-3.003	0.031	1.1099	0.0259	13.8341	9.0E-4	13.08	8.0E-4	13.5344	2.0E-4	NaN	NaN	0.91168	C
117132	132.8200 37	11.76157 2	-11.149	0.051	-2.85	0.035	1.1073	0.0303	14.3493	0.0012	13.4483	0.0011	13.9798	3.0E-4	NaN	NaN	0.91168	C
119601	133.5440	12.27711	-11.067	0.075	-2.881	0.05	1.0541	0.0468	14.8713	0.0015	13.9957	0.0013	14.5116	2.0E-4	NaN	NaN	0.91168	V

Tools: Clusterix



Tools: Clusterix



Tools: Clusterix

Clusterix 2.0

Step 3/3. Determination of membership probabilities

Send to VO tools

Save as text

Gather photometry for cluster members (in VOSA format)

SVO theoretical services

VOSA

Filter's

Models

Documents

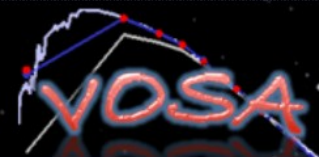
Other Services

My data

Newsletter

Uploads

LogOut



VO SED Analyzer

This is VOSA 6.0

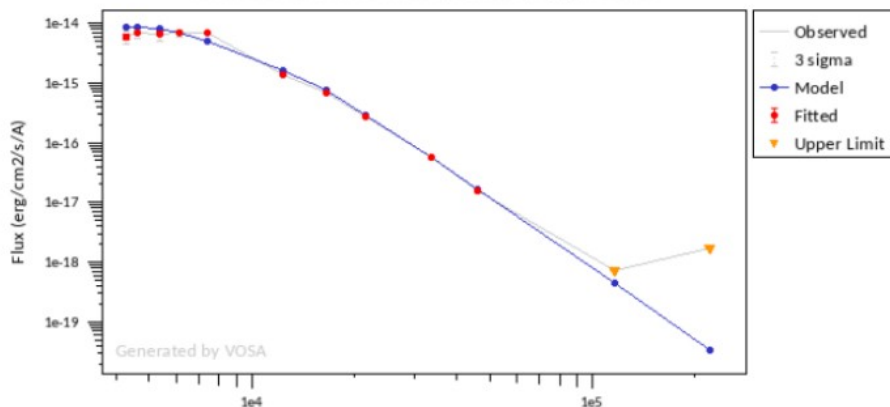
This project has received funding from the European Union's Seventh Framework Programme (FP7-SPACE-2013-1) for research, technological development and demonstration under grant agreement no. 606740



Object	RA	DEC	D (pc)	Model	A_v	T_{eff}	logg	Meta.	more	χ^2	M_d	$F_{\text{obs}}/F_{\text{tot}}$	$L_{\text{bol}}/L_{\text{sun}}$	$\Delta L_{\text{bol}}/L_{\text{sun}}$	$N_{\text{fit}}/N_{\text{tot}}$	Data VOTables
15679	132.027592	10.57096	880.196	Kurucz	---	6250	5	0	---	4.760e+1	6.492e-22	0.57	1.295e+0	1.127e-1	12/12	Syn.Spec.
16088	132.498168	10.931766	921.531	Kurucz	---	5750	5	0	---	7.653e-1	7.141e-22	0.57	1.137e+0	1.718e-1	12/12	Syn.Spec.
16218	132.951477	11.302158	875.569	Kurucz	---	5750	5	0	---	5.312e-1	6.653e-22	0.58	9.728e-1	1.106e-1	12/12	Syn.Spec.
17136	132.539938	11.644976	869.840	Kurucz	---	5750	4	0	---	8.322e-1	7.014e-22	0.58	1.002e+0	1.527e-1	12/12	Syn.Spec.
17248	131.872333	11.478723	868.712	Kurucz	---	5500	4	0	---	1.937e+0	7.081e-22	0.59	8.793e-1	9.053e-2	12/12	Syn.Spec.

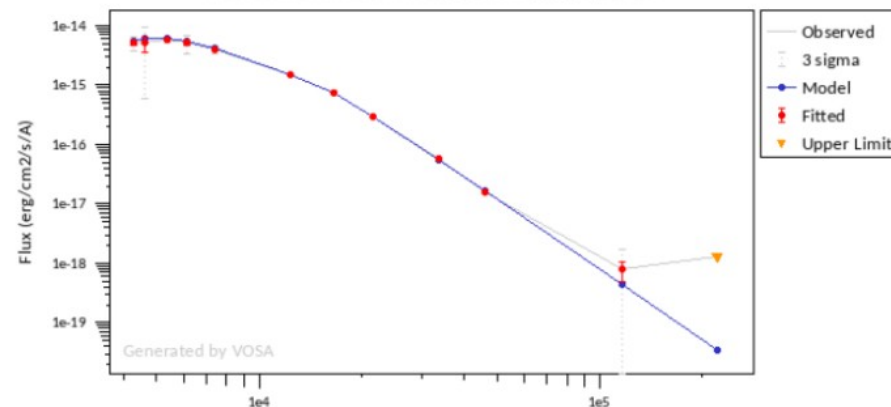
15679

Kurucz ODFNEW /NOVER models, Teff:6250, logg:5, Meta.:0





16088

Kurucz ODFNEW /NOVER models, Teff:5750, logg:5, Meta.:0



Clusterix 2.0: a virtual observatory tool to estimate cluster membership probability

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C. Jordi,¹ F. Jimenez-Esteban,² E. Masana,¹ J. Carbajo-Hijarrubia¹ and E. Paunzen ⁴

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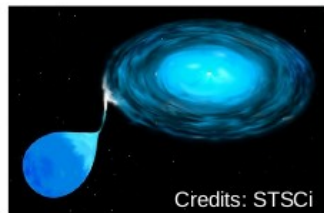
³*Observatorio de Calar Alto, Sierra de los Filabres, E-04550-Gérgal (Almería), Spain*

⁴*Department of Theoretical Physics and Astrophysics, Masaryk University, Brno, Czech Republic*

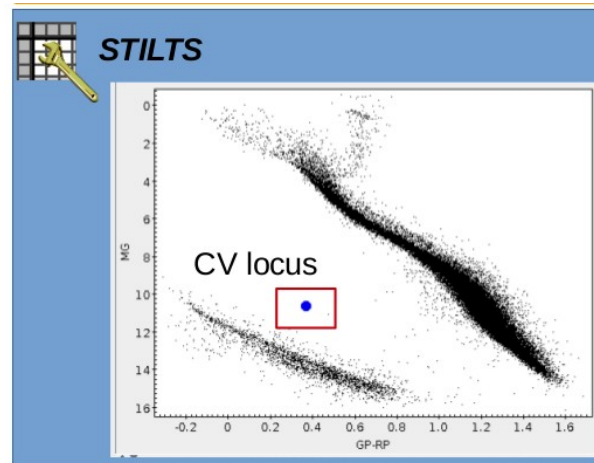
Accepted 2019 December 17. Received 2019 November 25; in original form 2019 October 10

Gaia alerts

Cataclysmic Variables



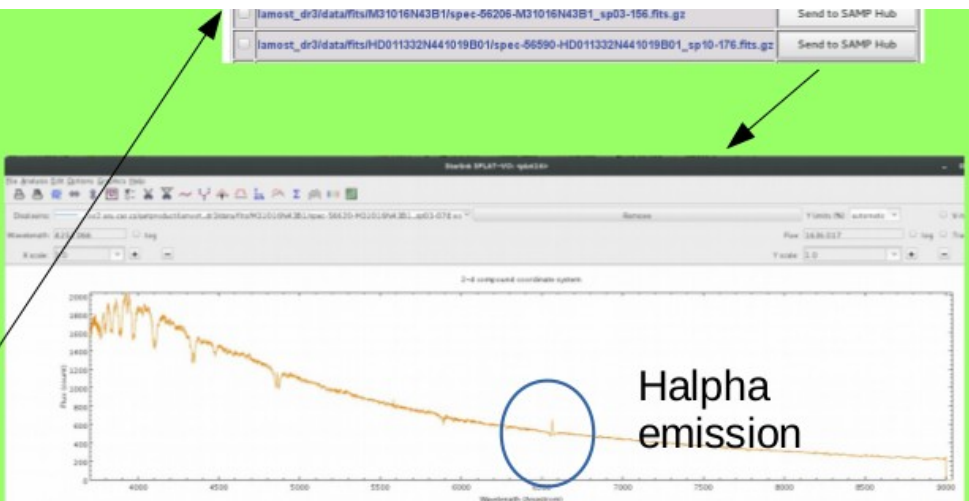
- H α emission due to accretion.
- Close binaries (WD+Main Seq)
→ composite SEDs.
- Well defined locus in the HR diagram.



VO Spectrum Services (VO: SSAP)

Services	Results
6	19

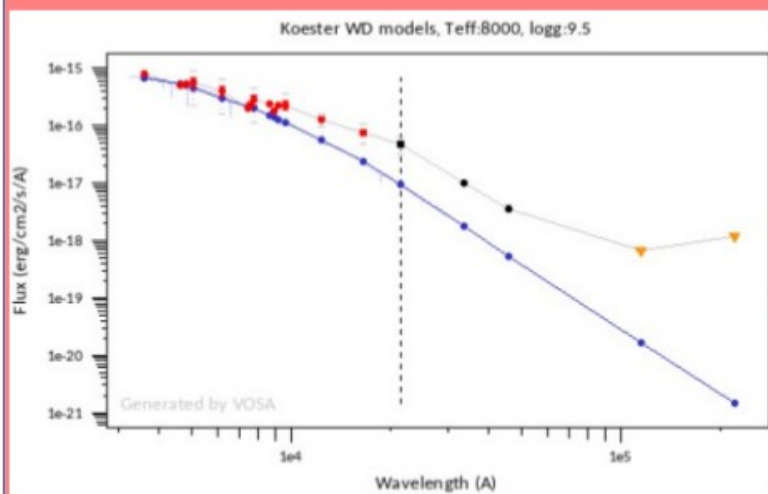
Service name	Results
DFBS SSAP	2
FUSE	1
LAMOST DR2 SSAP	6
LAMOST DR3 SSAP	6



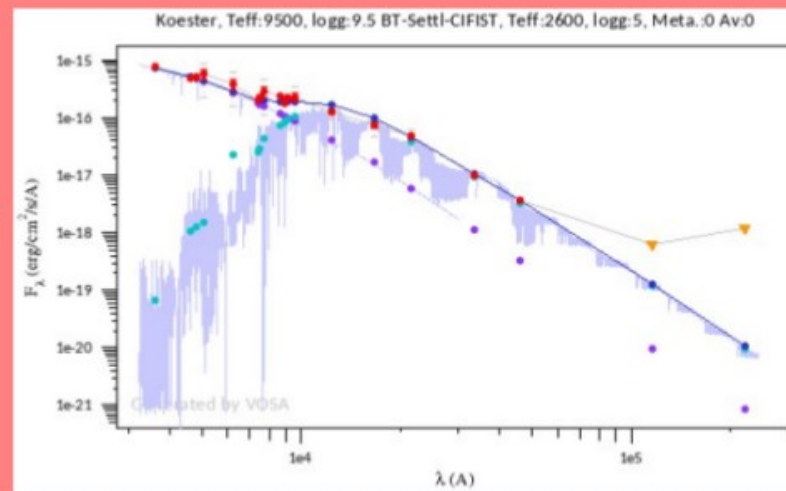
Gaia alerts



(VO: ConeSearch)



→
If excess
→ 2-body fitting



A white dwarf catalogue from *Gaia*-DR2 and the Virtual Observatory

F M Jiménez-Esteban ✉, S Torres, A Rebassa-Mansergas, G Skorobogatov, E Solano, C Cantero, C Rodrigo

Monthly Notices of the Royal Astronomical Society, Volume 480, Issue 4, November 2018, Pages 4505–4518, <https://doi.org/10.1093/mnras/sty2120>

Published: 06 August 2018 **Article history** ▼

[A complete catalogue of WDs at < 100 pc.](#)

Random Forest identification of the thin disc, thick disc, and halo *Gaia*-DR2 white dwarf population


S Torres ✉, C Cantero, A Rebassa-Mansergas, G Skorobogatov, F M Jiménez-Esteban, E Solano

Monthly Notices of the Royal Astronomical Society, Volume 485, Issue 4, June 2019, Pages 5573–5589, <https://doi.org/10.1093/mnras/stz814>

Published: 20 March 2019 **Article history** ▼

Tools: VO-Science

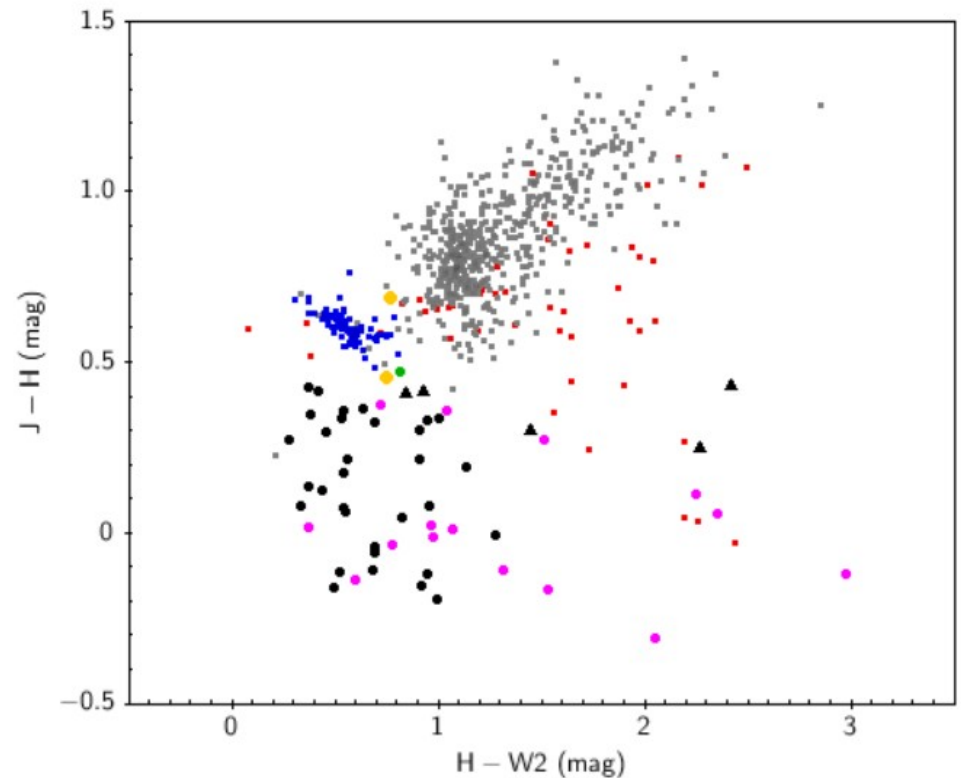
Infrared-excess white dwarfs in the *Gaia* 100 pc sample

A Rebassa-Mansergas , E Solano, S Xu (许偲艺), C Rodrigo, F M Jiménez-Esteban, S Torres

Monthly Notices of the Royal Astronomical Society, Volume 489, Issue 3, November 2019,

Pages 3990–4000, <https://doi.org/10.1093/mnras/stz2423>

Published: 02 September 2019 **Article history** ▼



Summary

- VO-compliant archives for your data collections
- Stellar libraries
- VO services
 - Specphot
 - Filter Profile Service
- VO tools
 - Clusterix
 - VOSA
 - Alerts / Transients
- VO science / collaborations

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