

How to add a spectrum in AOTS

1 Login

When navigating to <http://a15.astro.physik.uni-potsdam.de>, you will end on the landing page where the publicly available projects are displayed. From there you can login by clicking on “LOG IN” in the top right corner.

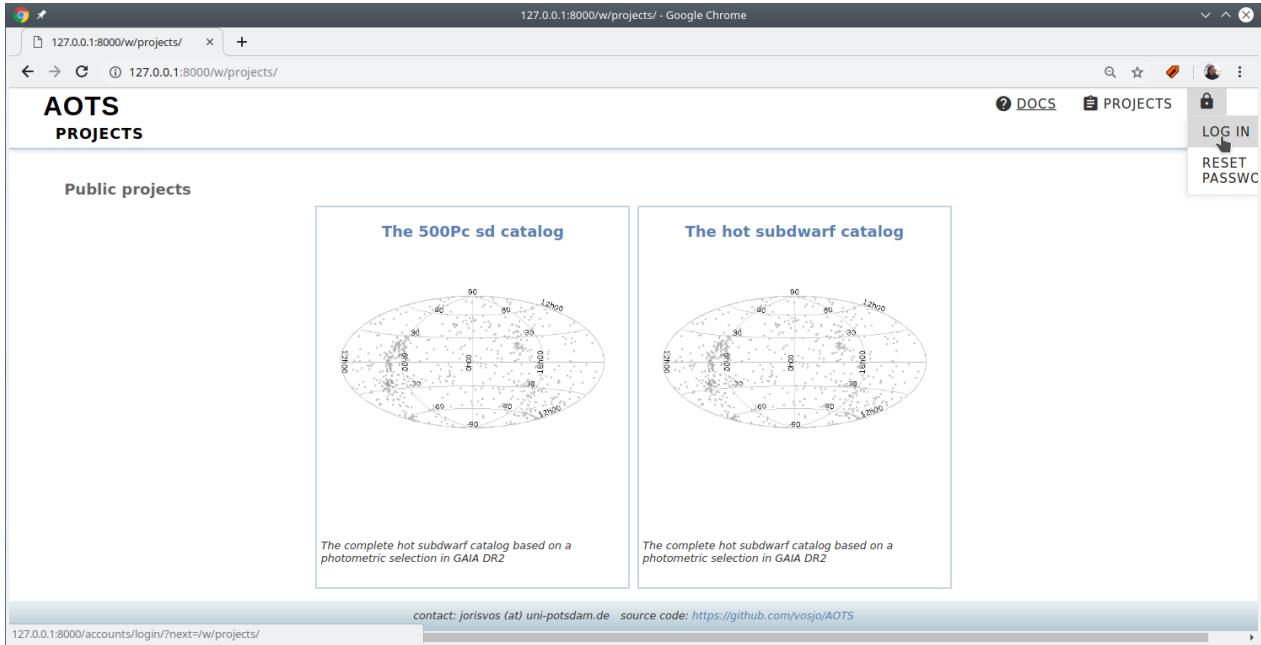


Figure 1: Landing page

This will bring you to the login page where you can log in with the user name and password you received.

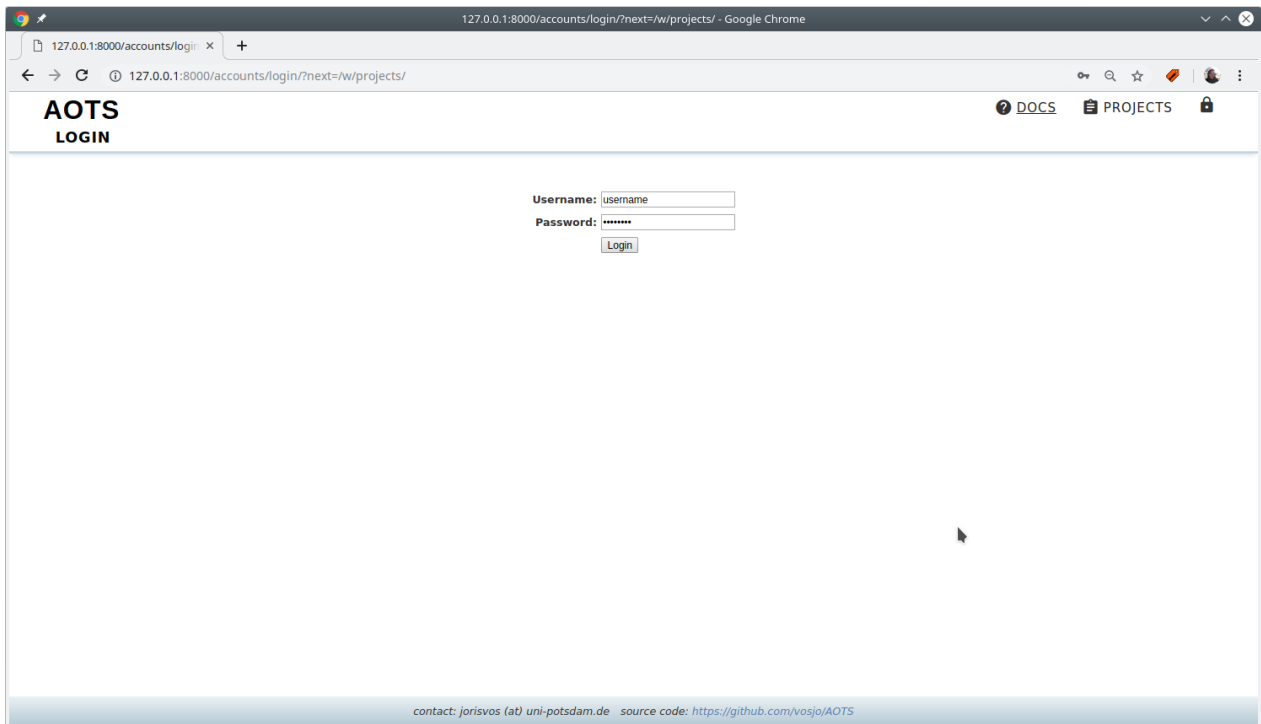


Figure 2: Login page

Note: By hovering over “LOG IN” you also can reset or change your password by selecting ”RESET PASSWORD” or ”CHANGE PASSWORD”, respectively.

2 Uploading spectra

After login you will be redirected to the AOTS landing page. Here you can now select the project that you want to work on by clicking on the name of the project. For example we want to add a spectrum to the “The hot subdwarf catalog”.

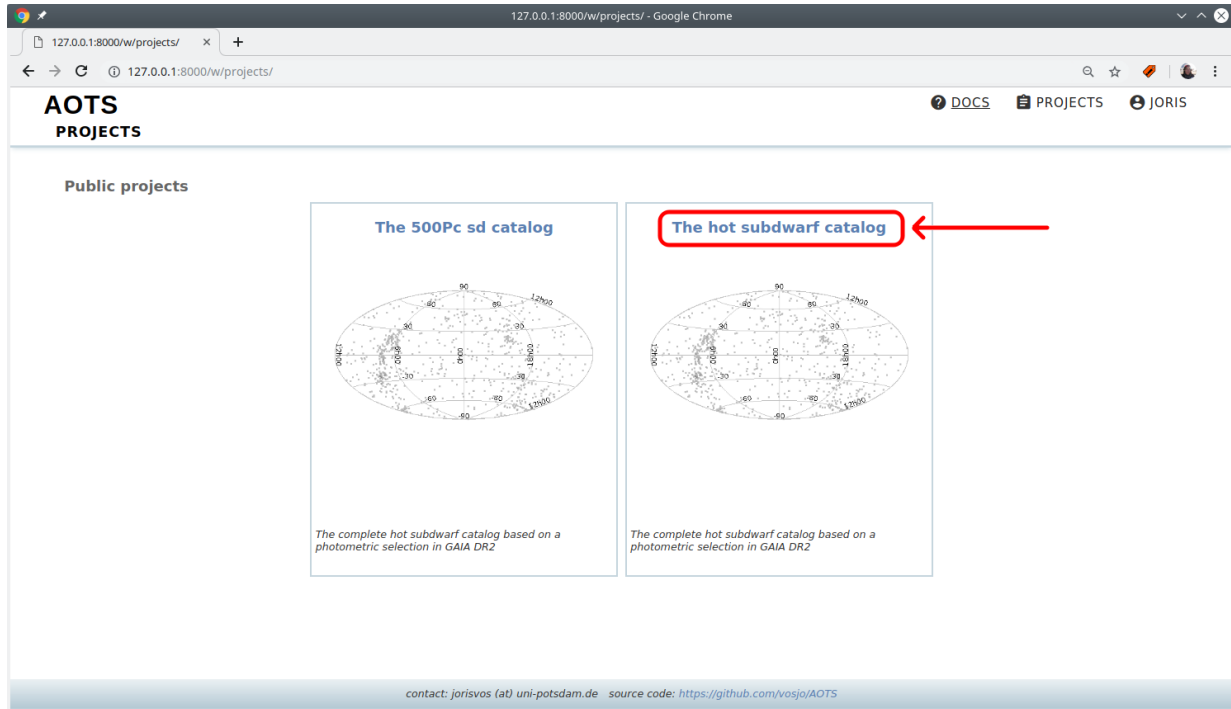


Figure 3: Landing page after login

2.1 Uploading reduced spectra

You will end up on the systems index page that lists all systems that are part of this project. To add a spectrum, navigate to “OBSERVATIONS” → “SPECTRA” → “UPLOAD NEW” in the top navigation bar:

The screenshot shows the AOTS: The hot subdwarf catalog SYSTEMS: INDEX (THE HOT SUBDWARF CATALOG) page. The page has a top navigation bar with links to DOCS, PROJECTS, SYSTEMS, OBSERVATIONS, ANALYSIS, and LOG IN. The 'OBSERVATIONS' menu is open, showing 'SPECTRA', 'OVERVIEW', 'LIGHT CURVES', 'OBSERVATORIES', 'FILE LIST', and 'RAW FILES'. The 'OVERVIEW' option is highlighted with a red box and a red arrow pointing to it. Below the navigation bar is a table of systems. The table has columns: Name, RA, Dec, Class, G-mag, Nobs, Datasets, Tags, and Status. The table lists 20 systems, each with a checkbox, name, coordinates, class, magnitude, number of observations, datasets, and tags.

Name	RA	Dec	Class	G-mag	Nobs	Datasets	Tags	Status
<input type="checkbox"/> SB937	00:00:04.03	-33:35:19.16		14.23	17 / 0 / 0		GAIA catalog	...
<input type="checkbox"/> PHL615	00:00:05.19	-17:08:51.45	sdO	16.8	4 / 0 / 0		GAIA catalog SPEC catalog	...
<input type="checkbox"/> PG2357+174	00:00:15.76	+17:38:52.96	sdB	16.55	18 / 0 / 0		GAIA catalog SPEC catalog	...
<input type="checkbox"/> UVEXJ000016.27+603246.3	00:00:16.27	+60:32:46.32		16.57	7 / 0 / 0		GAIA catalog	...
<input type="checkbox"/> HS2357+2201	00:00:18.40	+22:18:02.96	sdB	14.24	22 / 1 / 0		GAIA catalog SPEC catalog	...
<input type="checkbox"/> MCT2357-3331	00:00:20.09	-33:14:59.49	sdB	16.5	9 / 0 / 0		GAIA catalog SPEC catalog	...
<input type="checkbox"/> SDSSJ000028.22+322727.1	00:00:28.22	+32:27:27.22		15.87	20 / 0 / 0		GAIA catalog	...
<input type="checkbox"/> J000042.3+362809	00:00:42.31	+36:28:09.43		18.8	5 / 0 / 0		GAIA catalog	...
<input type="checkbox"/> J000043.8+802855	00:00:43.80	+80:28:55.48		18.51	3 / 0 / 0		GAIA catalog	...
<input type="checkbox"/> J000053.4+465337	00:00:53.37	+46:53:37.08		16.95	4 / 0 / 0		GAIA catalog	...
<input type="checkbox"/> PG2358+107	00:01:06.73	+11:00:36.32	sdB	13.61	22 / 1 / 0		GAIA catalog SPEC catalog	...
<input type="checkbox"/> SDSSJ000111.65+000342.6	00:01:11.65	+00:03:42.69	sdOB	19.27	10 / 0 / 0		SPEC catalog	...
<input type="checkbox"/> SDSSJ000112.66+325701.0	00:01:12.66	+32:57:01.14		16.78	13 / 0 / 0		GAIA catalog	...
<input type="checkbox"/> BPSCS22957-23	00:01:32.25	-05:19:17.77	sdB	13.51	22 / 0 / 0		SPEC catalog	...
<input type="checkbox"/> MCT2359-3556	00:01:37.64	-35:39:53.46	sdB	14.48	17 / 0 / 1		GAIA catalog SPEC catalog	...

Figure 4: System page

At the top of this page is an upload form where you can select one or more spectra in fits format or as simple txt files to upload them to the database.

AOTS: The hot subdwarf catalog

ADD A NEW SPECTRUM

DOCS

PROJECTS

SYSTEMS

OBSERVATIONS

ANALYSIS

ADMIN

File selection

(required)

File(s), .txt or .fits:

Browse...

 No files selected.

Header information

(the underlined quantities are required for .txt files or if they are not included in the Header)

Add to/Modify Header data: ☐

Target

Target:

Ra:

hms or d.d°

Dec:

°'"/ or d.d°

Create new: ☒

Spectral type:

Classification type:

Photometric

Observer

Observer name:

Instrument and setup

HJD-MID:

Telescope:

Instrument:

Exptime (s):

Resolution:

SNR:

Flux calibrated: ☐

Flux units:

Weather and conditions

Wind direction (deg):

Wind speed (m/s):

Seeing ("):

Airmass:

Spectrum infos

Barycentric corrected: ☐

Normalized: ☐

File label:

Observatory

Observatory:

Name:

Is spacecraft: ☐

Latitude (deg):

Longitude (deg):

Altitude (m):

Note

Upload

Figure 5: Spectrum upload page

AOTS tries to extract all necessary data automatically from the fits headers. See Sect. 2.2 for a list of all fully supported file types and the recognized keywords.

The extracted header information can be completed or overwritten by the form in the “Header information” section. To activate this form select “Add to/Modify Header data”. Most of the parameters are optional. The underlined quantities: “Target”, “Ra”, “Dec”, “HJD-MID” are required, if they are not included in the fits header. In addition, an “Observatory” must be selected or the necessary information (“Name”, “Is spacecraft”, “Latitude (deg)”, “Longitude (deg)”, “Altitude (m)”) to create a new observatory must be provided. However, in most cases the observatory can be identified or newly created based on the fits header information.

AOTS: The hot subdwarf catalog

ADD A NEW SPECTRUM

DOCS

PROJECTS

SYSTEMS

OBSERVATIONS

ANALYSIS

ADMIN

File selection

(required)

File(s), .txt or .fits:

Browse...

 No files selected.

Header information

(the underlined quantities are required for .txt files or if they are not included in the Header)

Add to/Modify Header data: ☒

Target

Target:

Ra:

hms or d.d°

Dec:

°'"/ or d.d°

Create new: ☒

Spectral type:

Classification type:

Photometric

Observer

Observer name:

Instrument and setup

HJD-MID:

Telescope:

Instrument:

Exptime (s):

Resolution:

SNR:

Flux calibrated: ☐

Flux units:

Weather and conditions

Wind direction (deg):

Wind speed (m/s):

Seeing ("):

Airmass:

Spectrum infos

Barycentric corrected: ☒

Normalized: ☐

File label:

Observatory

Observatory:

Name:

Is spacecraft: ☐

Latitude (deg):

Longitude (deg):

Altitude (m):

Note

Upload

Figure 6: Spectrum upload page with activated form

txt files are expected to be a simple two-column table with the wavelength in the first column and the flux in the

second column. For txt files, filling in the header information form is mandatory. Required are, as described above, the underlined quantities. However, as many fields as possible should be filled in.

After pressing the upload button the spectra will be processed by AOTS and you will be redirected to the spectrum files page, which can also be reached from the top navigation bar via “OBSERVATIONS” → “SPECTRA” → “FILE LIST”. A confirmation notice for the upload is displayed at the top of this page to confirm that everything went well. The newly uploaded spectrum will be added to the list of “Uploaded files”. (You might have to sort on “Added on” to find the spectrum).

AOTS: The hot subdwarf catalog
SPECTRUM FILES

Specfile added to new Spectrum OES@ZEISS-2m - 2459489.39878472 (Target: BD+11 78), and added to new System BD+11 78: 10.05 12.01

Upload new Spectra

Uploaded files
(multiple files might be combined into a single spectrum)

Show 20 entries

HJD	Instrument	Filetype	Filename	Added on	System	Processed	Action
2457541.2097222	LRS	LAMOST_DR5_NAOC-LAMOST_462005158	spec-57541-HD173133N504043M01_sp05-158.fits	2019-02-07 12:11:34	PG1729+500	Yes	
2457541.28958333	LRS	LAMOST_DR5_NAOC-LAMOST_462109242	spec-57541-HD200108N143123B01_sp09-242.fits	2019-02-07 12:13:54	J200654.9+144254	Yes	
2457542.11458333	LRS	LAMOST_DR5_NAOC-LAMOST_462202202	spec-57542-HD152630N280739B02_sp02-202.fits	2019-02-07 12:13:39	Ton228	Yes	
2457542.11458333	LRS	LAMOST_DR5_NAOC-LAMOST_462211151	spec-57542-HD152630N280739B02_sp11-151.fits	2019-02-07 12:13:46	Ton231	Yes	
2458577.88804791	Goodman Spectro	UK	calF_J1648-0447.ms.fits	2019-10-01 15:07:38	J164806.3-044725	Yes	
2459489.39878472	OES	UK	BD1178_20211001.fits	2022-01-07 23:17:31	BD+11 78	Yes	

Figure 7: Spectral file list - after upload - In this example a OES spectrum (taken with the ZEISS 2m telescope in Ondrejov) of BD+11 78 was uploaded

To add further spectra files click on the large button below “Upload new Spectra”, which will take you again to the spectrum upload page.

AOTS: The hot subdwarf catalog
SPECTRUM FILES

Specfile added to new Spectrum OES@ZEISS-2m - 2459489.39878472 (Target: BD+11 78), and added to new System BD+11 78: 10.05 12.01

Upload new Spectra

Uploaded files
(multiple files might be combined into a single spectrum)

Show 20 entries

HJD	Instrument	Filetype	Filename	Added on	System	Processed	Action
2418024.5	UK	UK	113840-003531_sdss_c_org_Gcz9GPE.fits	2020-03-11 14:58:54	TYC 178-2608-1	Yes	
2451609.90121852	SDSS spectrograph	SDSS_final	spec-0292-51609-0013.fits	2019-02-04 15:22:16	SDSSJ125410.86-010408.3	Yes	
2451633.64341076	SDSS spectrograph	SDSS_final	spec-0268-51633-0008.fits	2019-02-04 15:24:26	SDSSJ100019.98-003413.3	Yes	
2451637.89862766	SDSS spectrograph	SDSS_final	spec-0306-51637-0194.fits	2019-02-04 15:21:27	LBQS1429-0015	Yes	
2451662.84851852	SDSS	SDSS_final	spec-0308-51662-0436.fits	2019-02-15 08:21:25	SDSSJ144514.93+000248.9	Yes	
2451665.89720289	SDSS spectrograph	SDSS_final	spec-0311-51665-0575.fits	2019-02-04 15:23:29	SDSSJ151231.28+005317.7	Yes	
2451666.78490475	SDSS	SDSS_final	spec-0300-51666-0081.fits	2019-02-15 08:20:02	SDSSJ135025.81-011035.6	Yes	
2451671.76853368	SDSS	SDSS_final	spec-0299-51671-0592.fits	2019-02-15 08:20:27	SDSSJ134545.22-000641.6	Yes	
2451671.89448472	SDSS spectrograph	SDSS_final	spec-0348-51671-0074.fits	2019-02-04 15:21:57	SDSSJ163815.97-001919.1	Yes	
2451671.89448472	SDSS spectrograph	SDSS_final	spec-0348-51671-0043.fits	2019-02-04 15:24:47	SDSSJ163702.79-011351.7	Yes	

Figure 8: Spectral file list - Upload button

Multiple uploaded files might be automatically combined into a single spectrum, if they belong to the same system (measured based on the right ascension and declination) and are taken at approximately the same time with the same instrument. If you click on “spectrum” be taken to the main spectrum page, which you can also access from the top

navigation bar by clicking on “OBSERVATIONS” → “SPECTRA” → “OVERVIEW”.

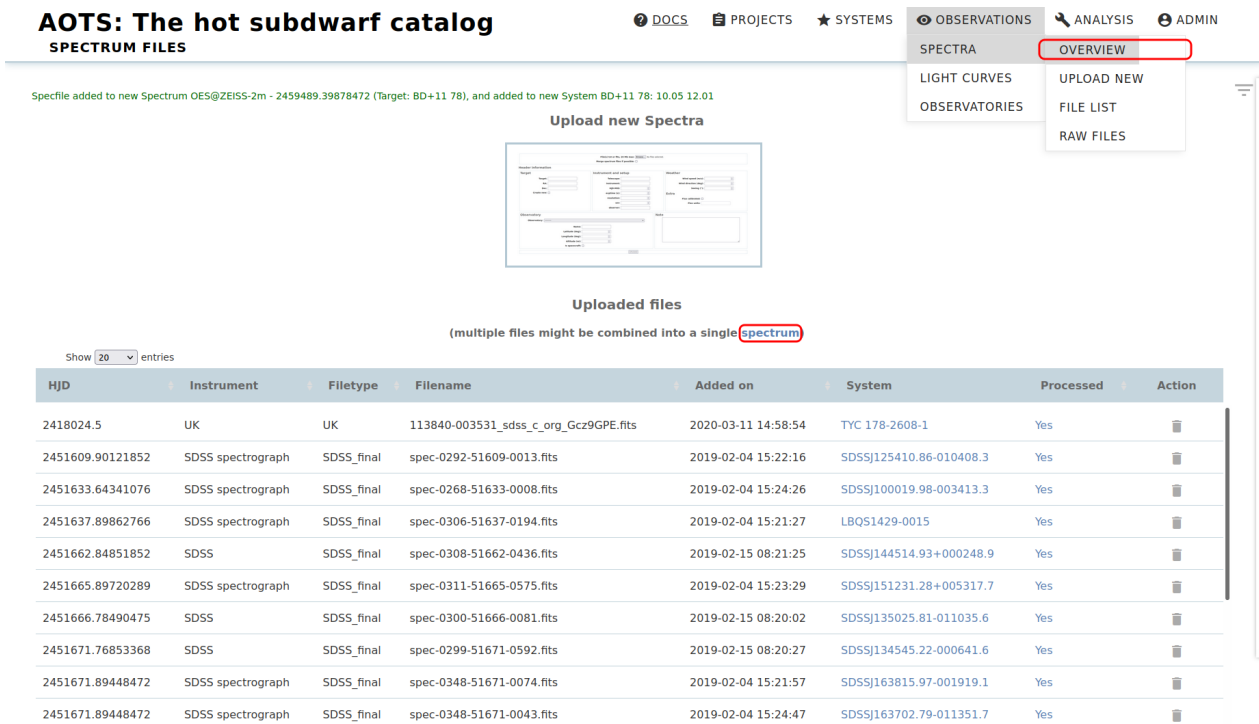


Figure 9: Spectral file list - Link to spectra overview page

If you click on the “Yes” in the “Processed” column, you will be taken to the spectrum details page where you can check the added spectrum. You can check the associated system by clicking on the system name in the “System” column.

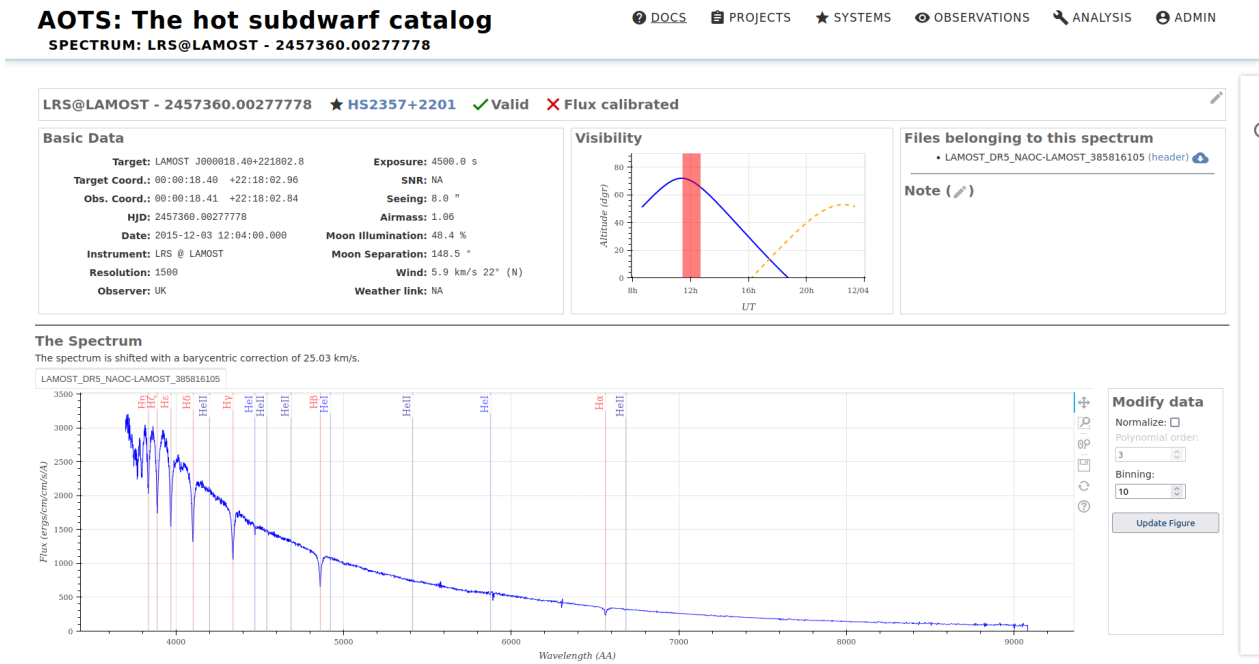


Figure 10: Spectrum detail page

2.2 Recognized header keywords (reduced spectra)

Multiple types of fits files are recognized by AOTS:

- ESO phase 3
- ESO Reflex fits files

- FEROS fits files from the CERES pipeline
- HERMES fits files
- SDSS fits files
- LAMOST fits files
- MODS fits files

For all other spectra in fits format the following header keywords are recognized:

Keyword	explanation
HJD, BJD, MJD, DATE-OBS	time at mid observation
OBJECT	object name
RA	right ascension in decimal degrees or in hours (hexadecimal)
DEC	declination in degrees, decimal of hexadecimal
INSTRUME	instrument
TELESCOP	telescope
EXPTIME	exposure time in seconds
OBSERVER	name of the observer
SPEC_RES	spectral resolution
SNR	signal to noise ratio
SEEING	seeing during the observation

2.3 Uploading raw data

To add raw data to reduced spectrum files, navigate to “OBSERVATIONS” → “SPECTRA” → “RAW FILES” in the top navigation bar:

AOTS: The hot subdwarf catalog DOCS PROJECTS SYSTEMS **OBSERVATIONS** ANALYSIS ADMIN

SYSTEMS: INDEX (THE HOT SUBDWARF CATALOG)

Show 50 entries Edit Tags Change Status

SPECTRA OVERVIEW
LIGHT CURVES UPLOAD NEW
OBSERVATORIES FILE LIST
RAW FILES

<input type="checkbox"/>	Name	RA	Dec	Class	G-mag	Nobs	Datasets	Tags	Status
<input type="checkbox"/>	SB937	00:00:04.03	-33:35:19.16		14.23	17 / 0 / 0		GAIA catalog	...
<input type="checkbox"/>	PHL615	00:00:05.19	-17:08:51.45	sdO	16.8	4 / 0 / 0		GAIA catalog SPEC catalog	...
<input type="checkbox"/>	PG2357+174	00:00:15.76	+17:38:52.96	sdB	16.55	18 / 0 / 0		GAIA catalog SPEC catalog	...
<input type="checkbox"/>	UVEXJ000016.27+603246.3	00:00:16.27	+60:32:46.32		16.57	7 / 0 / 0		GAIA catalog	...
<input type="checkbox"/>	HS2357+2201	00:00:18.40	+22:18:02.96	sdB	14.24	22 / 1 / 0		GAIA catalog SPEC catalog	...
<input type="checkbox"/>	MCT2357-3331	00:00:20.09	-33:14:59.49	sdB	16.5	9 / 0 / 0		GAIA catalog SPEC catalog	...
<input type="checkbox"/>	SDSSJ000028.22+322727.1	00:00:28.22	+32:27:27.22		15.87	20 / 0 / 0		GAIA catalog	...
<input type="checkbox"/>	J000042.3+362809	00:00:42.31	+36:28:09.43		18.8	5 / 0 / 0		GAIA catalog	...
<input type="checkbox"/>	J000043.8+802855	00:00:43.80	+80:28:55.48		18.51	3 / 0 / 0		GAIA catalog	...
<input type="checkbox"/>	J000053.4+465337	00:00:53.37	+46:53:37.08		16.95	4 / 0 / 0		GAIA catalog	...
<input type="checkbox"/>	PG2358+107	00:01:06.73	+11:00:36.32	sdB	13.61	22 / 1 / 0		GAIA catalog SPEC catalog	...
<input type="checkbox"/>	SDSSJ000111.65+000342.6	00:01:11.65	+00:03:42.69	sdOB	19.27	10 / 0 / 0		SPEC catalog	...
<input type="checkbox"/>	SDSSJ000112.66+325701.0	00:01:12.66	+32:57:01.14		16.78	13 / 0 / 0		GAIA catalog	...
<input type="checkbox"/>	BPSCS22957-23	00:01:32.25	-05:19:17.77	sdB	13.51	22 / 0 / 0		SPEC catalog	...
<input type="checkbox"/>	MCT2359-3556	00:01:37.64	-35:39:53.46	sdB	14.48	17 / 0 / 1		GAIA catalog SPEC catalog	...

Showing 1 to 50 of 41,239 entries

Previous 1 2 3 4 5 ... 825 Next

Figure 11: System page

You can upload multiple raw files at once using the form at the top of the page. The files must be in fits format. The “System” and “Spectra” fields allow you to select the reduced spectral files for which the raw data will be uploaded.

Figure 12: Raw file page

After a system is selected, the “Spectra” selection is reduced to the files belonging to that system. Multiple selections are possible, so that e.g. flats, darks, and biases for all targets of a night can be uploaded at once.

Figure 13: Raw file page - Spectra selected

After pressing the upload button, a progress bar is displayed to illustrate the progress of the upload. Since raw data is usually quite large, the upload process can take a considerable amount of time.

Figure 14: Raw file page with upload progress bar

AOTS will process the files and display a confirmation notice for the upload at the top of the page to confirm that everything went well.

e202104220004.ft (raw file) added to: 2457359.94861111@LRS - LAMOST_DR5_NAOC-LAMOST_385905170 (PG2359+197), 2456214.09583333@LRS - LAMOST_DR5_NAOC-LAMOST_66605009 (PG2358+107),
e202104220003.ft (raw file) added to: 2457359.94861111@LRS - LAMOST_DR5_NAOC-LAMOST_385905170 (PG2359+197), 2456214.09583333@LRS - LAMOST_DR5_NAOC-LAMOST_66605009 (PG2358+107),
e202104220002.ft (raw file) added to: 2457359.94861111@LRS - LAMOST_DR5_NAOC-LAMOST_385905170 (PG2359+197), 2456214.09583333@LRS - LAMOST_DR5_NAOC-LAMOST_66605009 (PG2358+107),
e202104220001.ft (raw file) added to: 2457359.94861111@LRS - LAMOST_DR5_NAOC-LAMOST_385905170 (PG2359+197), 2456214.09583333@LRS - LAMOST_DR5_NAOC-LAMOST_66605009 (PG2358+107).

Add raw data

Systems:

162357+2201: 0.08 22.30
PG2358+107: 0.28 11.01
PG2359+197: 0.54 19.99
J000406.1+230149: 1.03 23.03

Spectra:

2456214.09583333@LRS - LAMOST_DR5_NAOC-LAMOST_66605009
2457359.94861111@LRS - LAMOST_DR5_NAOC-LAMOST_385905170
2457360.00277778@LRS - LAMOST_DR5_NAOC-LAMOST_385816165
2457360.00277778@LRS - LAMOST_DR5_NAOC-LAMOST_385811215

Raw files: No files selected.

<input type="checkbox"/>	HJD	Instrument	File type	Exposure time	File name	Added on	Systems
<input type="checkbox"/>	2459327.26158565	OES	Dark	1	e202104220008.ft	2022-01-08 20:09:41	PG2359+197, PG2358+107
<input type="checkbox"/>	2459327.26209491	OES	Dark	0	e202104220009.ft	2022-01-08 20:09:41	PG2359+197, PG2358+107
<input type="checkbox"/>	2459327.26259259	OES	Dark	1	e202104220010.ft	2022-01-08 20:09:41	PG2359+197, PG2358+107
<input type="checkbox"/>	2459327.26446759	OES	Flat	25	e202104220011.ft	2022-01-08 20:09:41	PG2359+197, PG2358+107
<input type="checkbox"/>	2459327.26525463	OES	Flat	25	e202104220012.ft	2022-01-08 20:09:41	PG2359+197, PG2358+107
<input type="checkbox"/>	2459327.26604167	OES	Flat	25	e202104220013.ft	2022-01-08 20:09:41	PG2359+197, PG2358+107
<input type="checkbox"/>	2459327.2668287	OES	Flat	25	e202104220014.ft	2022-01-08 20:09:41	PG2359+197, PG2358+107
<input type="checkbox"/>	2459327.26761574	OES	Flat	25	e202104220015.ft	2022-01-08 20:09:41	PG2359+197, PG2358+107
<input type="checkbox"/>	2459327.26840278	OES	Flat	25	e202104220016.ft	2022-01-08 20:09:41	PG2359+197, PG2358+107

Showing 1 to 20 of 58 entries

Figure 15: Raw file page - Upload complete

The newly uploaded spectrum will be added to the table below the form. This table also lists the “File type” that is derived from the “IMAGETYP” fits header keyword. All recognized fits header keywords are listed in the Table below. You can check the associated system by clicking on the system name in the “Systems” column.

2.4 Recognized header keywords (raw data)

For all raw files the following header keywords are recognized:

Keyword	explanation
HJD, BJD, MJD, DATE-OBS	time at mid observation
OBJECT	object name
RA	right ascension in decimal degrees or in hours (hexadecimal)
DEC	declination in degrees, decimal of hexadecimal
INSTRUME	instrument
TELESCOP	telescope
EXPTIME	exposure time in seconds
OBSERVER	name of the observer
IMAGETYP	file type