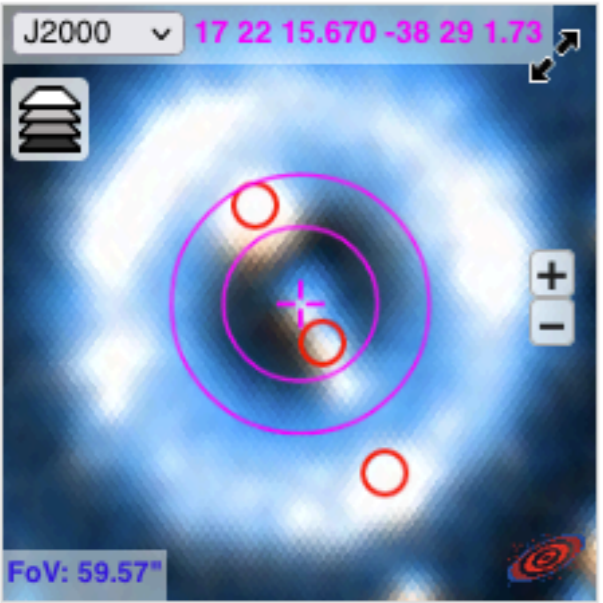


Modernising Target List Visualisation and Classification

NGC6337 [↗](#)

J2000



FoV: 59.57"

$r = 19.14''$; $r = 14.11 \pm 0.04$ mag

BADCLASS: 4
bmiszalski

Select an option...

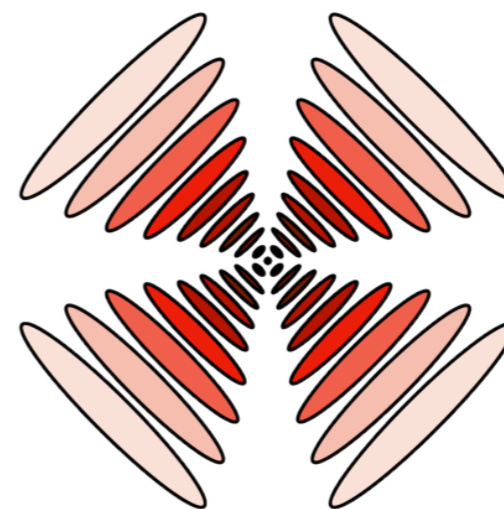
✓ 0 ☆ 1 ★ 2

⚙ 3 ⚙ 4 ⚙ 5

⚡ 6 ⚠ 7 ⚙ 8

Bundle: Small Large


SkyMapper SDSS



**Data
Aggregation
Service**

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Simon O'Toole and James Tocknell
(AAO Macquarie)

data  central



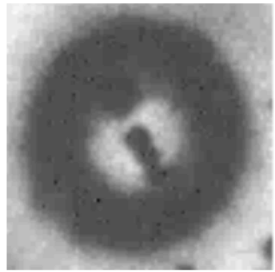
MACQUARIE
University

Target Visualisation

- **Fundamental task for observational astronomers** often need to visualise large target lists (up to ~few 100k)
- **Planning for observing runs:** Select observing priorities. Instrument configuration and aperture (slit/fibre/IFU position, slit or IFU orientation, etc).
- **Image visualisation:** Identify problems (e.g. bright star, misclassified, coordinates offset). Select targets of interest (**extended sources**). Images may involve multiple wavebands (e.g. colour-composites).
- **Display auxiliary information:** Catalogue magnitudes, radial velocities, abundances, lightcurves, spectra, etc.
- **Embedded in complex workflows:** The above may be part of a data reduction or quality control pipeline. Even a Machine Learning pipeline.
- **Flexible output formats:** CSV, input file for multi-object spectrograph, etc.

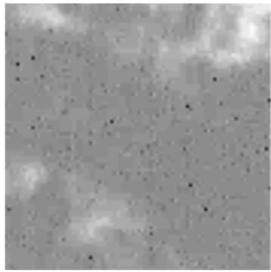
Traditional approach

17 22 15.6 -38 29 1



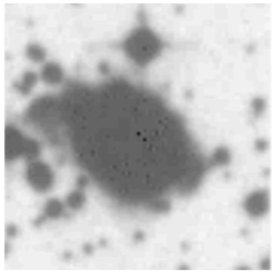
UKST J 00001.fits

13 33 32.8 -65 58 27



UKST J 00002.fits

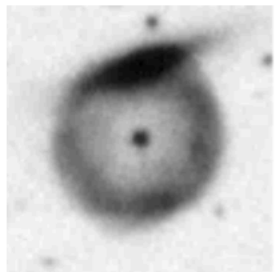
17 20 46.2 -51 45 15



UKST J 00003.fits

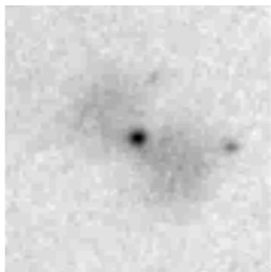
SuperCOSMOS Sky Survey (UKST J)

20 31 33.2 -07 5 18



UKST J 00004.fits

5 45 58.2 +02 21 6



UKST J 00005.fits

UKST J not extracted

Upload CSV with coordinates
Batch download of image
thumbnails (postscript)

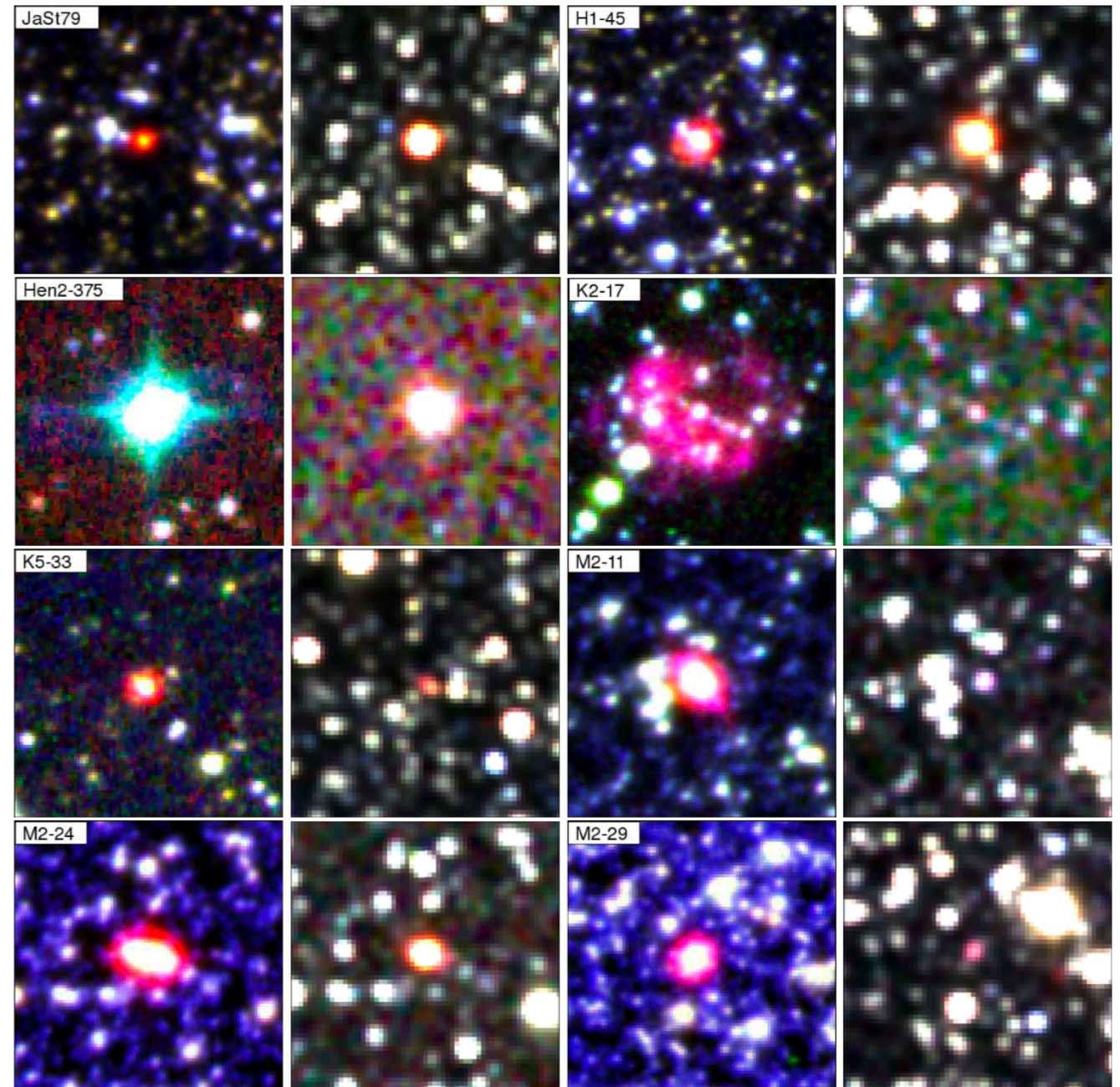
Print to paper

UKST J not extracted

UKST J not extracted

SHS
Halpaa, SR
SSS Bj

2MASS
J, H, Ks

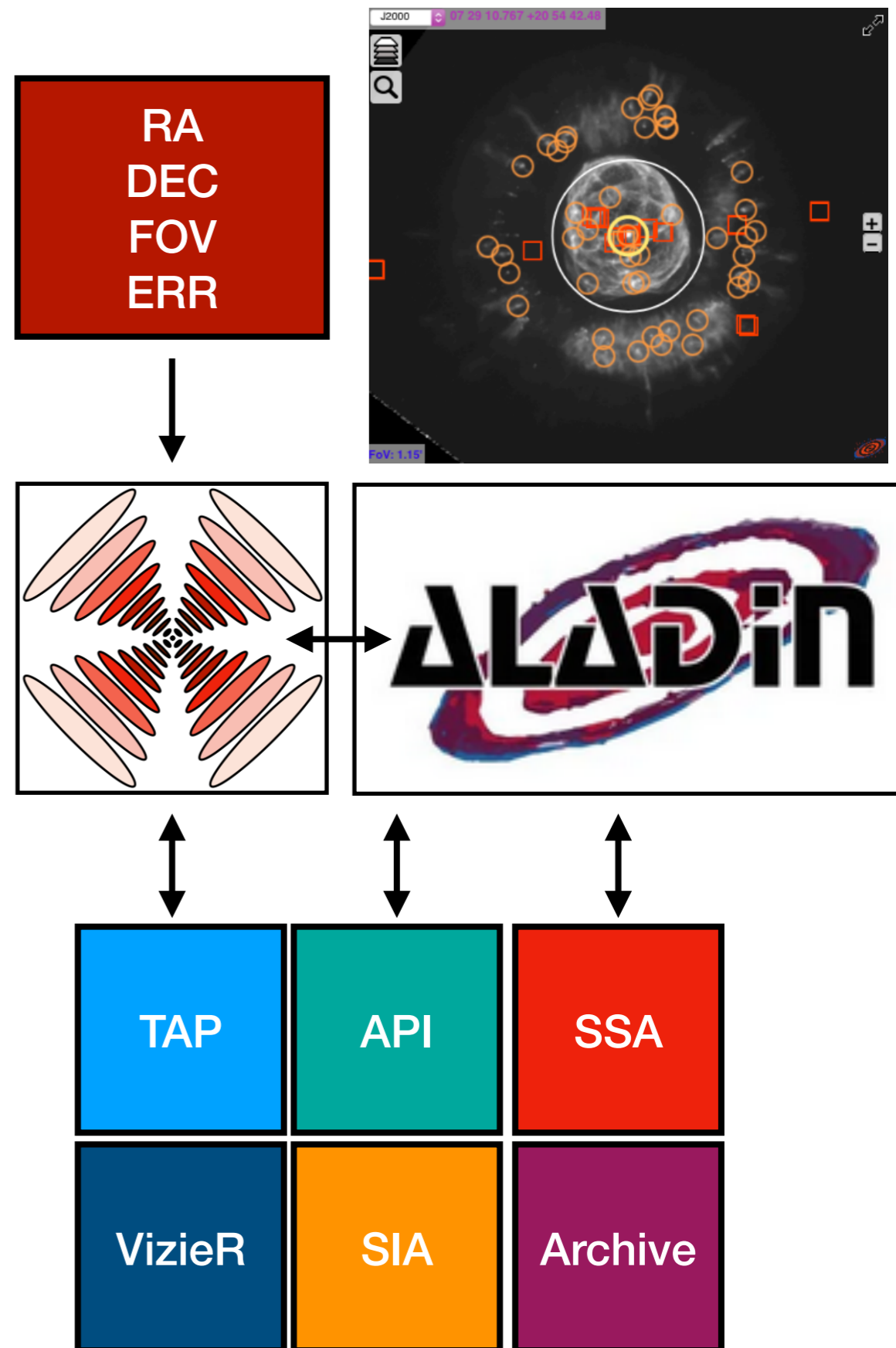


Scripts to download data and
create colour-composite thumbnails
(Miszalski+2013, MNRAS, 432, 3186)

A static web page, PDF or
a simple web application

Data Aggregation Service

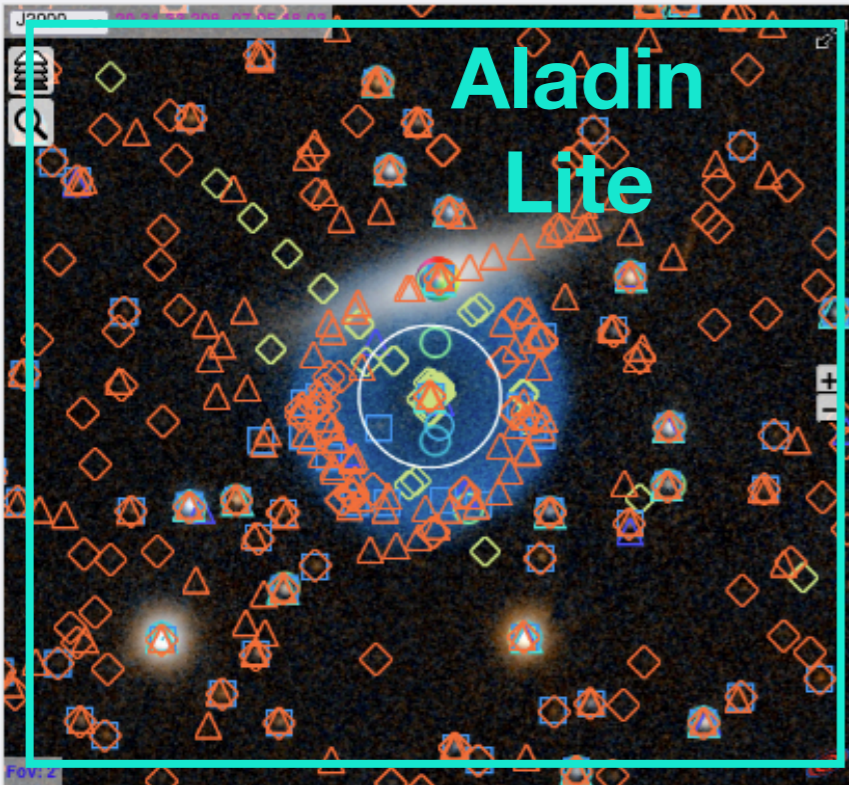
- **A web application** that simultaneously queries multiple online data services. Query results are displayed in browser and may be exported (TOPCAT and Aladin via Web SAMP, .csv, .xls, .vot)
- **Aladin Lite:** interactive visualisation of images and catalogues. Convert FITS to HiPS images on-the-fly.
- **Input GET parameters:** RA, DEC, FOV and ERR (position uncertainty).
- **Innovative features:** Refactored since May interop. Fast and **asynchronous** from the ground up (Starlette/uvicorn/socketio).
- See **ADASS 2021 talk** for more details.
das.datacentral.org.au



Data Aggregation Service



SAMP **Brent Miszalski** Overlay Transparency: 100%
Enable Logout NONE



Aladin
Lite

Resolve Name
Resolve
Resolve name with Sesame
Right Ascension
307.888365097
Decimal degrees, "H M S" or "H:M:S"
Declination
-7.08834222636
Decimal degrees, "D M S" or "D:M:S"

FOV
2.0
Width of the field-of-view (arcmin)
Error radius
10.0
Radius of the error circle (arcsec)

Submit

SIMBAD
Name
resolver

Catalogues	DCSSA	VizieTables	WISE	ESO	NVSS	SIMBAD	SkyMapper	TIC	DCSCS	GAIA	PS1	ZTF
✓ Catalogue	Status	SAMP	Excel	CSV	VOTable							
✓ LS	265 rows											
✓ ZTF	241 rows											
✓ ESO	139 rows											
✓ PS1	106 rows											
✓ TIC	36 rows											
✓ GAIA	36 rows											
✓ WISE	34 rows											
✓ SkyMapper	32 rows											
✓ DCSSA	3 rows											

Catalogues
(Vizier, TAP, SSA, API)

- Toggle on/off
- Mouseover: highlights location in image
- Vizier tables: load on demand

Images	LS	PS1	SkyMapper	FORS2	Gemini						
Images	Status	SAMP	Excel	CSV	VOTable						
SMASH	0 rows										
LS	6 rows										
DES	0 rows										
HLA	0 rows										
PS1	5 rows										
SkyMapper	6 rows										
FORS2	1 row										
Gemini	4 rows										
DCSIA	0 rows										
DECAPS	0 rows										

Images
(SIA, API, Custom Pipelines)

- Mouseover: display image
- Trigger downloads: Large images (HST)

das.datacentral.org.au

A more modern approach

- **Data Aggregation Service (DAS):** We can **repurpose** DAS functionality for target visualisation purposes. **Python 3** code: containerised (docker-compose).
- **Web application:** Access **IVOA DAL** and other services for images and catalogues. MongoDB database to manage classifications. API endpoints.
- **Asynchronous:** Leverage async capabilities of DAS to efficiently retrieve data from multiple sources. Results sent via websocket messages.
- **Aladin Lite:** Flexible visualisation of images and catalogues. Use **HiPS** and **MOC** and formats to individualise content of each target (display best images available, rather than display 'No coverage').
- **Powerful:** Heavy duty jobs handled by async background tasks, e.g. generation of image mosaics, careful analysis/transformation of image pixels (Machine Learning), (re)classification algorithms for whole target list

Overview

- **Target lists:** Import CSV into MongoDB database. User can classify targets and export results.
- **Aladin Lite:** Images and catalogues (loaded **asynchronously**) per target. Display instrument footprints.
- **Filter catalogues:** Radius and magnitude cuts using pandas. Mouseover to view.

The screenshot displays the dataCentral interface. At the top, there is a file upload bar with a 'Choose a file...' button, 'No file selected' text, a 'Load File' button, a checked 'Overwrite' checkbox, 'Prev' and 'Next' navigation buttons, and a '1-8 of 8' indicator. Below this, a file named 'sample_list.csv' is shown with 'Load', 'Download', and 'Delete' buttons. The main area contains four target cards, each with a thumbnail image, a title, a 'BADCLASS' value, a name, a 'Select an option...' menu, a 'Bundle' section, and a 'FoV: 59.57"' label.

NGC6337 [↗](#)
J2000 17 22 15.670 -38 29 1.73
bmiszalski
BADCLASS: 4
Select an option...
 ✓ 0 ☆ 1 ☆ 2
 ⚙ 3 ⚙ 4 ⚙ 5
 ⚡ 6 ⚠ 7 ⚙ 8
Bundle: Small Large
 SkyMapper SDSS
FoV: 59.57"
_r = 19.14"; r = 14.11 ± 0.04 mag

NGC5189 [↗](#)
J2000 13 33 32.880 -65 58 27
FoV: 59.57"
_r = 25.58"; r = 13.06 ± 0.0

A70 [↗](#)
J2000 20 31 33.208 -07 08 18.05
default
BADCLASS: 0
Select an option...
 ✓ 0 ☆ 1 ☆ 2
 ⚙ 3 ⚙ 4 ⚙ 5
 ⚡ 6 ⚠ 7 ⚙ 8
Bundle: Small Large
 SkyMapper SDSS
FoV: 59.57"

Te11 [↗](#)
J2000 05 45 50.204 +02 21 0
FoV: 59.57"

Controls

Choose CSV file

Load selected file

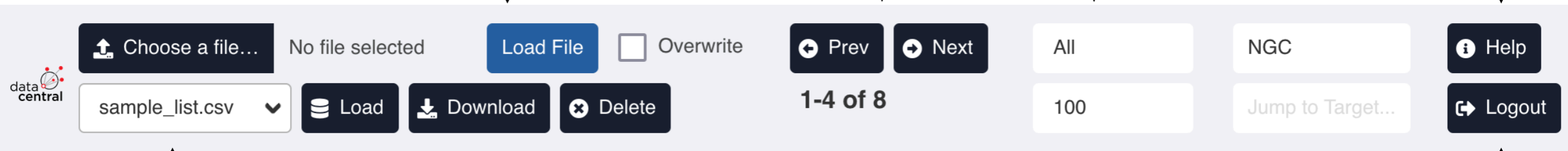
Overwrite file if already in DB

Classification filter
(All, Unclassified, > 0, 1, 2, 3, 4, 5, 6, 7, 8)

Target name filter

Online help (modal)

Page Navigation



List of CSV files available in MongoDB database

Download CSV of selected database (includes user classifications)

Delete selected database

Target numbers displayed (Range of N Total)

Targets per page (1, 2, 3, 4, 5, 10, 15, 20, 30, 50, 100, 200)

Jump to target (resume at target of interest)

Logout (Data Central CAS server)

Load file from database

Link to target page
(shareable URL)

Current classification
and username
of classifier

Label to remind user
of class meaning
(e.g. 4 - Large Galaxy)

Target name

Aladin Lite

NGC6337 

BADCLASS: 5

bmiszalski

Select an option...

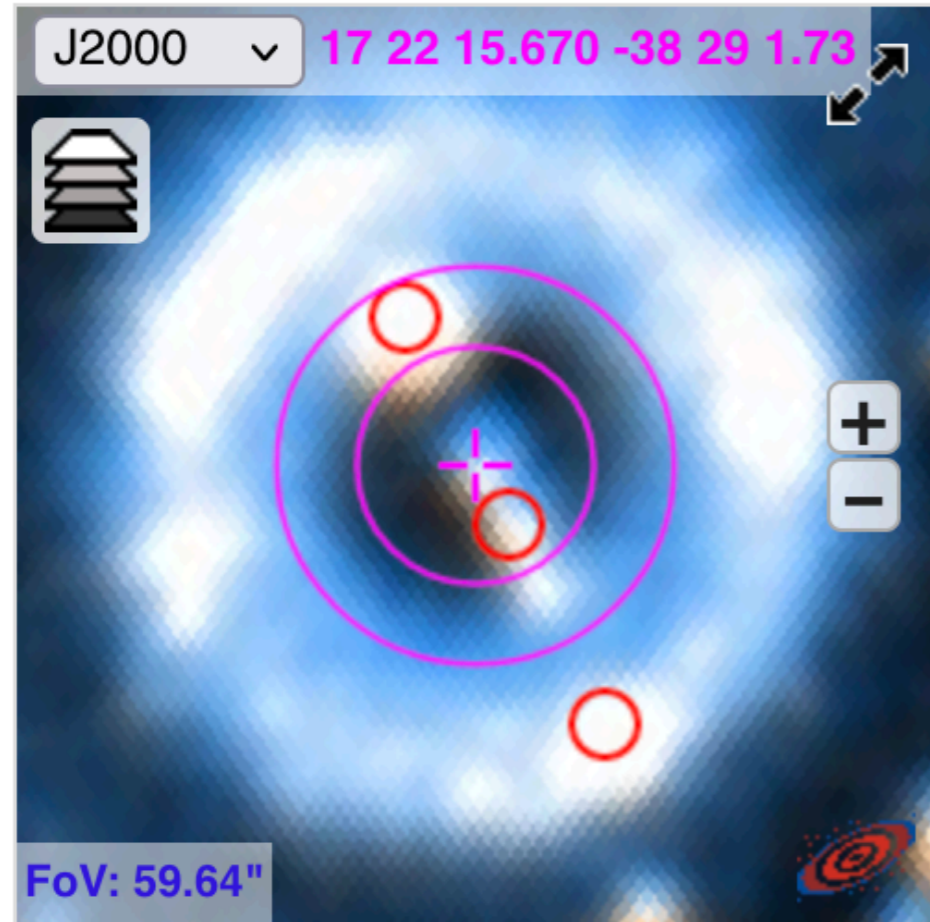
0 1 2

3 4 5

6 7 8

Bundle: Small Large

SkyMapper SDSS



$_r = 4.51''$; $r = 15.51 \pm 0.02$ mag

Label to display
radial distance (arcsec) and
magnitude of catalogued targets
(updated on mouseover of target)

Toggle on/off
Instrument footprints and
loaded catalogues

Radio buttons
to classify target

Navigation

The image displays a grid of six target cards, each representing a different astronomical object. The cards are arranged in two rows and three columns. The top row contains NGC5189, NGC6326, and NGC7008. The bottom row contains Te11 and NGC7008. The NGC5189 card is highlighted with a red border. Each card features a thumbnail image of the target, a red crosshair, and a purple circle. The NGC5189 card also shows a field of view (FoV) of 59.64 arcseconds. Each card includes a 'BADCLASS' rating, a 'bmiszalski' name, a 'Select an option...' menu with icons 0-8, a 'Bundle' section with 'Small' and 'Large' options, and 'SkyMapper' and 'SDSS' checkboxes. The thumbnails also show J2000 coordinates and a field of view (FoV) of 59.64 arcseconds.

- **Mouseover target of interest:** Active target (background shading)
- **Use 0-8 keys:** classification of active target
- **Use Left/Right keys:** Navigate to Prev/Next page of targets.
- **Number of targets per page:** 1 for keyboard only operation, or up to many per page...

Up to a few hundred per page

Targets fill page and adjust when window resized

data central

Choose a file... pne.csv Load File Overwrite All Filter Target...

pne.csv Load Download Delete 101-200 of 200 100 Jump to Target...

<p>004.1-03.8 ↗</p> <p>J2000 <input type="text" value="18 16 12.321 -27 16 36.55"/></p> <p>004.1-03.8</p> <p>BADCLASS: 0 default</p> <p>Select an option...</p> <p><input checked="" type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2</p> <p><input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5</p> <p><input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8</p> <p>Bundle: <input checked="" type="checkbox"/> Small <input checked="" type="checkbox"/> Large</p> <p><input checked="" type="checkbox"/> SkyMapper <input type="checkbox"/> SDSS</p>	<p>004.2-03.2 ↗</p> <p>J2000 <input type="text" value="18 08 1.476 -26 54 0.79"/></p> <p>004.2-03.2</p> <p>BADCLASS: 0 default</p> <p>Select an option...</p> <p><input checked="" type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2</p> <p><input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5</p> <p><input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8</p> <p>Bundle: <input checked="" type="checkbox"/> Small <input checked="" type="checkbox"/> Large</p> <p><input checked="" type="checkbox"/> SkyMapper <input type="checkbox"/> SDSS</p>	<p>004.2-04.3 ↗</p> <p>J2000 <input type="text" value="18 12 24.713 -27 38 54.55"/></p> <p>004.2-04.3</p> <p>BADCLASS: 0 default</p> <p>Select an option...</p> <p><input checked="" type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2</p> <p><input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5</p> <p><input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8</p> <p>Bundle: <input checked="" type="checkbox"/> Small <input checked="" type="checkbox"/> Large</p> <p><input checked="" type="checkbox"/> SkyMapper <input type="checkbox"/> SDSS</p>	<p>004.2-05.9 ↗</p> <p>J2000 <input type="text" value="18 18 18.721 -28 08 5.45"/></p> <p>004.2-05.9</p> <p>BADCLASS: 0 default</p> <p>Select an option...</p> <p><input checked="" type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2</p> <p><input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5</p> <p><input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8</p> <p>Bundle: <input checked="" type="checkbox"/> Small <input checked="" type="checkbox"/> Large</p> <p><input checked="" type="checkbox"/> SkyMapper <input type="checkbox"/> SDSS</p>
<p>004.3+01.8 ↗</p> <p>J2000 <input type="text" value="17 48 34.331 -23 18 36.55"/></p> <p>004.3+01.8</p> <p>BADCLASS: 0 default</p> <p>Select an option...</p> <p><input checked="" type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2</p> <p><input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5</p> <p><input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8</p> <p>Bundle: <input checked="" type="checkbox"/> Small <input checked="" type="checkbox"/> Large</p> <p><input checked="" type="checkbox"/> SkyMapper <input type="checkbox"/> SDSS</p>	<p>004.3-02.6 ↗</p> <p>J2000 <input type="text" value="18 05 17.059 -26 29 41.75"/></p> <p>004.3-02.6</p> <p>BADCLASS: 0 default</p> <p>Select an option...</p> <p><input checked="" type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2</p> <p><input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5</p> <p><input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8</p> <p>Bundle: <input checked="" type="checkbox"/> Small <input checked="" type="checkbox"/> Large</p> <p><input checked="" type="checkbox"/> SkyMapper <input type="checkbox"/> SDSS</p>	<p>004.6+06.0 ↗</p> <p>J2000 <input type="text" value="17 53 17.758 -29 34 17.85"/></p> <p>004.6+06.0</p> <p>BADCLASS: 0 default</p> <p>Select an option...</p> <p><input checked="" type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2</p> <p><input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5</p> <p><input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8</p> <p>Bundle: <input checked="" type="checkbox"/> Small <input checked="" type="checkbox"/> Large</p> <p><input checked="" type="checkbox"/> SkyMapper <input type="checkbox"/> SDSS</p>	<p>004.7-11.8 ↗</p> <p>J2000 <input type="text" value="18 44 13.409 -30 18 26.95"/></p> <p>004.7-11.8</p> <p>BADCLASS: 0 default</p> <p>Select an option...</p> <p><input checked="" type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2</p> <p><input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5</p> <p><input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8</p> <p>Bundle: <input checked="" type="checkbox"/> Small <input checked="" type="checkbox"/> Large</p> <p><input checked="" type="checkbox"/> SkyMapper <input type="checkbox"/> SDSS</p>
<p>004.8+02.0 ↗</p> <p>J2000 <input type="text" value="17 48 34.331 -23 42 54.71"/></p> <p>004.8+02.0</p> <p>BADCLASS: 0 default</p> <p>Select an option...</p> <p><input checked="" type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2</p> <p><input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5</p> <p><input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8</p> <p>Bundle: <input checked="" type="checkbox"/> Small <input checked="" type="checkbox"/> Large</p> <p><input checked="" type="checkbox"/> SkyMapper <input type="checkbox"/> SDSS</p>	<p>004.8-05.0 ↗</p> <p>J2000 <input type="text" value="18 16 11.489 -27 14 57.05"/></p> <p>004.8-05.0</p> <p>BADCLASS: 0 default</p> <p>Select an option...</p> <p><input checked="" type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2</p> <p><input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5</p> <p><input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8</p> <p>Bundle: <input checked="" type="checkbox"/> Small <input checked="" type="checkbox"/> Large</p> <p><input checked="" type="checkbox"/> SkyMapper <input type="checkbox"/> SDSS</p>	<p>004.8-22.7 ↗</p> <p>J2000 <input type="text" value="18 32 7.051 -24 12 53.45"/></p> <p>004.8-22.7</p> <p>BADCLASS: 0 default</p> <p>Select an option...</p> <p><input checked="" type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2</p> <p><input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5</p> <p><input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8</p> <p>Bundle: <input checked="" type="checkbox"/> Small <input checked="" type="checkbox"/> Large</p> <p><input type="checkbox"/> SkyMapper <input type="checkbox"/> SDSS</p>	<p>004.9+04.9 ↗</p> <p>J2000 <input type="text" value="17 58 28.319 -23 08 28.95"/></p> <p>004.9+04.9</p> <p>BADCLASS: 0 default</p> <p>Select an option...</p> <p><input checked="" type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2</p> <p><input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5</p> <p><input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8</p> <p>Bundle: <input checked="" type="checkbox"/> Small <input checked="" type="checkbox"/> Large</p> <p><input checked="" type="checkbox"/> SkyMapper <input type="checkbox"/> SDSS</p>
<p>004.9-04.9 ↗</p> <p>J2000 <input type="text" value="18 16 17.384 -27 04 32.65"/></p> <p>004.9-04.9</p> <p>BADCLASS: 0 default</p> <p>Select an option...</p> <p><input checked="" type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2</p> <p><input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5</p> <p><input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8</p> <p>Bundle: <input checked="" type="checkbox"/> Small <input checked="" type="checkbox"/> Large</p> <p><input checked="" type="checkbox"/> SkyMapper <input type="checkbox"/> SDSS</p>	<p>005.0+03.0 ↗</p> <p>J2000 <input type="text" value="17 45 36.920 -23 02 26.55"/></p> <p>005.0+03.0</p> <p>BADCLASS: 0 default</p> <p>Select an option...</p> <p><input checked="" type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2</p> <p><input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5</p> <p><input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8</p> <p>Bundle: <input checked="" type="checkbox"/> Small <input checked="" type="checkbox"/> Large</p> <p><input checked="" type="checkbox"/> SkyMapper <input type="checkbox"/> SDSS</p>	<p>005.0+04.4 ↗</p> <p>J2000 <input type="text" value="17 48 13.053 -23 15 17.85"/></p> <p>005.0+04.4</p> <p>BADCLASS: 0 default</p> <p>Select an option...</p> <p><input checked="" type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2</p> <p><input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5</p> <p><input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8</p> <p>Bundle: <input checked="" type="checkbox"/> Small <input checked="" type="checkbox"/> Large</p> <p><input checked="" type="checkbox"/> SkyMapper <input type="checkbox"/> SDSS</p>	<p>005.0-03.9 ↗</p> <p>J2000 <input type="text" value="18 12 23.557 -26 33 54.95"/></p> <p>005.0-03.9</p> <p>BADCLASS: 0 default</p> <p>Select an option...</p> <p><input checked="" type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2</p> <p><input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5</p> <p><input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8</p> <p>Bundle: <input checked="" type="checkbox"/> Small <input checked="" type="checkbox"/> Large</p> <p><input checked="" type="checkbox"/> SkyMapper <input type="checkbox"/> SDSS</p>

Jump to target

Enter target name
=> Navigate to its position
(resume classification from last target of interest)

data central

Choose a file... No file selected Load File Overwrite

188-200 of 200

All 100 Filter Target... 010.8+18.0

Help Logout

pne.csv Load Download Delete

010.8+18.0



BADCLASS: 0

default

Select an option...

- 0 ★ 1 ★ 2
- ⚙ 3 ⚙ 4 ⚙ 5
- ⚡ 6 ⚠ 7 ⚙ 8

Bundle: Small Large

SkyMapper SDSS

010.8-01.8



BADCLASS: 0

default

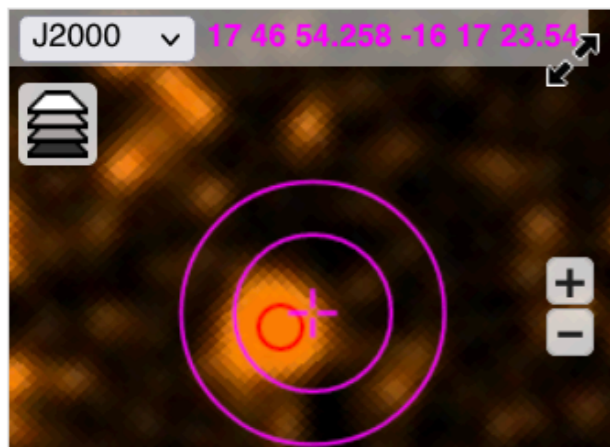
Select an option...

- 0 ★ 1
- ⚙ 3 ⚙ 4
- ⚡ 6 ⚠ 7

Bundle: Small Large

SkyMapper SDSS

011.0+06.2



BADCLASS: 0

default

Select an option...

- 0 ★ 1 ★ 2
- ⚙ 3 ⚙ 4 ⚙ 5
- ⚡ 6 ⚠ 7 ⚙ 8

Bundle: Small Large

011.0-05.1



BADCLASS: 0

default

Select an option...

- 0 ★ 1
- ⚙ 3 ⚙ 4
- ⚡ 6 ⚠ 7

Bundle: Small Large

Filtering on target name

Uses pandas.Series.str.contains
(can also support regex, if needed)

data central

Choose a file... No file selected Load File Overwrite

sample_list.csv Load Download Delete

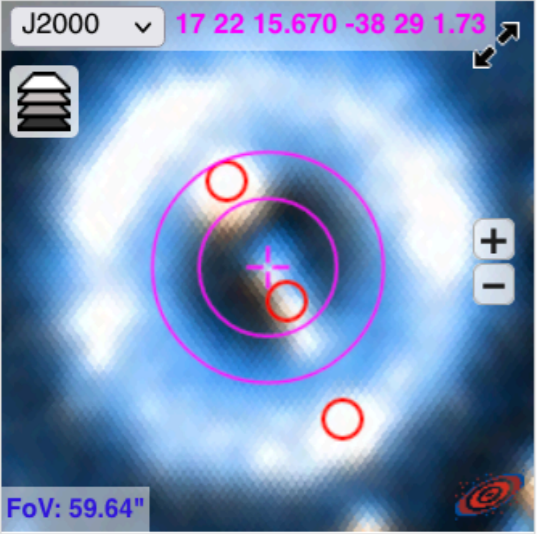
Prev Next 1-4 of 8

All NGC

100 Jump to Target... Help Logout

NGC6337

J2000 17 22 15.670 -38 29 1.73



FoV: 59.64"

BADCLASS: 4
bmiszalski

Select an option...

✓ 0 ☆ 1 ★ 2

⚙️ 3 ⚙️ 4 ⚙️ 5

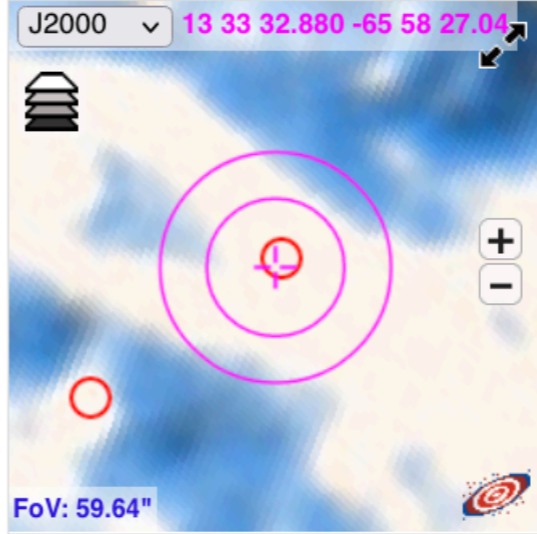
⚡ 6 ⚠️ 7 ⚙️ 8

Bundle: Small Large

SkyMapper SDSS

NGC5189

J2000 13 33 32.880 -65 58 27.04



FoV: 59.64"

BADCLASS: 7
bmiszalski

Select an option...

✓ 0 ☆ 1 ★ 2

⚙️ 3 ⚙️ 4 ⚙️ 5

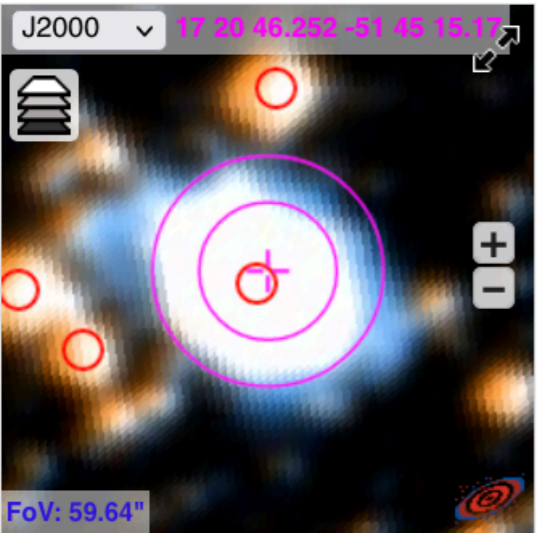
⚡ 6 ⚠️ 7 ⚙️ 8

Bundle: Small Large

SkyMapper SDSS

NGC6326

J2000 17 20 46.352 -31 45 15.17



FoV: 59.64"

BADCLASS: 0
bmiszalski

Select an option...

✓ 0 ☆ 1 ★ 2

⚙️ 3 ⚙️ 4 ⚙️ 5

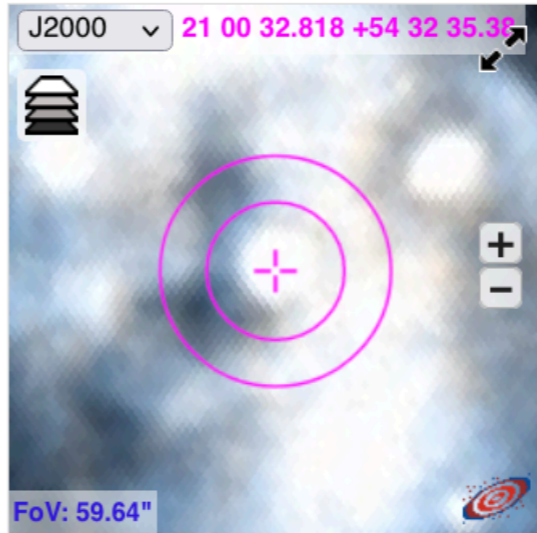
⚡ 6 ⚠️ 7 ⚙️ 8

Bundle: Small Large

SkyMapper SDSS

NGC7008

J2000 21 00 32.818 +54 32 35.35



FoV: 59.64"

BADCLASS: 0
bmiszalski

Select an option...

✓ 0 ☆ 1 ★ 2

⚙️ 3 ⚙️ 4 ⚙️ 5

⚡ 6 ⚠️ 7 ⚙️ 8

Bundle: Small Large

SkyMapper SDSS

Help dialog

Provides answers to common questions
Reminds users of classification scheme

Hector Target Selector Help

Input File Format

You can load a new list of target coordinates with each line in the following format:

```
#This is a comment.  
Target,RA,DEC
```

An example with coordinates in decimal degrees:

```
000.0-06.8,273.3251257,-32.3286112  
000.1+02.6,263.8973961,-27.4009405  
000.1+04.3,262.3485294,-26.4339467  
000.1+17.2,250.9556354,-18.9425272
```

An example with coordinates in sexagesimal format:

```
NGC6337,17:22:15.67,-38:29:01.73  
NGC5189,13:33:32.88,-65:58:27.04  
NGC6326,17 20 46.252, -51 45 15.17
```

The format must follow the following rules:

- The filename must end with '.csv' or '.txt'
- Each target name must be unique
- There must be only 3 columns
- RA/DEC may be either decimal degrees or sexagesimal format
- Sexagesimal coordinates may include ':' or ' ' (space) as separators
- Lines starting with '#' (comments) and blank lines are ignored
- Columns must be in the order: target, ra, dec
- The column order cannot be specified otherwise

Ok

Hector Target Selector Help

have entered, you should try clearing these filters.

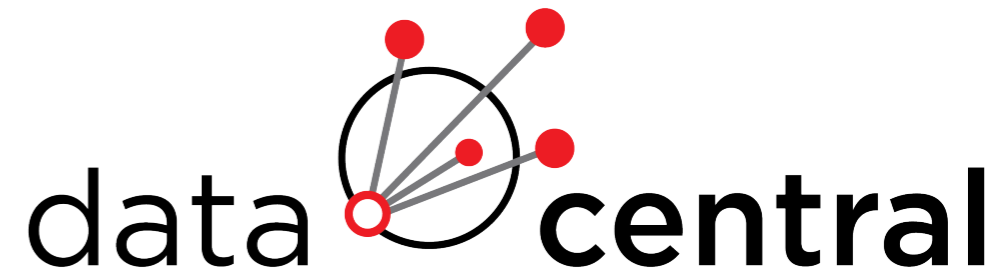
BADCLASS Categories

Each target may be assigned one of the following BADCLASS flags:

- ✓ 0
The target is Ok.
- ★ 1
Bright star nearby. Acceptable stars must be fainter than 16th mag (if radius < 15.5 arcsec) or 15th mag (if radius < 31.0 arcsec).
- ★ 2
The object is a star.
- ⚙️ 3
A subcomponent of a galaxy.
- ⚙️ 4
A very large, low redshift galaxy.
- 🎯 5
Galaxy needs to be recentred.
- 🚫 6
Poor redshift.
- ⚠️ 7
Other problems.
- ⚙️ 8
A smaller component of a close pair of galaxies, where the other component is outside the hexabundle radius.

Ok

Future plans



- Used by Hector team to help prepare for upcoming observations (static images instead of Aladin Lite)
- A general Data Central service? Further investigation needed: how to best customise data sources, define classification schemes and other aspects.
- Input catalogue could be sourced differently: e.g. POST to API endpoint, accepting files exported from other applications (e.g. results of TAP query => visualise the list)
- Results of classifications could also be sent elsewhere (e.g. POST to JSON endpoint of an application for training or refining a machine learning model)
- Seeking collaborations to demonstrate neat use cases (machine learning, pipeline integration, etc.)