for

survey teams
for

survey teams
1. data central services: overview
2. document central
3. data central cloud
4. case study: DEVILS

datacentral.org.au
data central services: overview

- SAMI Survey Data Release 1:
  - First dataset for Data Central
  - All data products available (IFU, tables, schema)
  - visualised through single object viewer
  - downloadable
  - Schema browsable
  - Cross-match GAMA using TAP

- GAMA Survey Data Release 2, GALAH Survey Data Release 1 (TAP):
  - Run ADQL queries using TOPCAT or Aladin
  - Visualise results
  - Cross-match SAMI with GAMA DR2
  - Query GALAH_DR1
  - Search AAT archive
Version 1

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A multi-band image cutout routine for all imaging data (GAMA, DEVILS) hosted at data central.

Submit ADQL/SQL, returning records that match some criteria.

Conduct a cone search of a specified radius around a set of coordinates.
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**GALAH**

The GALAH survey is excited to announce our second data release on 18 April 2018. It contains data for 342682 stars with up to 23 elemental abundances per star. 

Observing

The catalogue is accessible through:
- The survey overview on the GALAH Data Central webpage.
- Data downloads.
- The andrewsite document on the Data Central website.

There are several important documents that describe this release:
- GALAH - Overview.
- GALAH - Observing.
- GALAH - Data download.
- GALAH - Data Central.
- GALAH - Data release and analysis.

Questions about GALAH can be directed to Sarah Harland, sarah@datacentral.

Categories

- **GALAH Survey overview**
  - Description of the science goals, observing strategies, and data products in the data release.
  - Literature and planning.
  - Science goals.
  - Data release and analysis.
- **DR2 overview**
  - Description of the data available through the DR2 release.
- **Sample queries**
  - Sample queries to retrieve particular subsets of the data.
  - Details on how to retrieve particular subsets of the data.

Instrumentation and observing

HERMES

HERMES uses the HERMES spectrograph (Shetrone et al. 2013) at the Anglo-Australian Telescope. HERMES is a four-channel, multiobject, R=28000 spectrograph fed by the 2DF fibre positioner (Lewis et al. 2002), which sits at prime focus, 2DF has two field plates, each of which has 392 science fibres and 8 guide bundles that can be allocated across a circular field with a two-degree diameter. One field plate can be set up by the fibre positioning robot while the other plate is being used for observation. Fibres subtend 2.1 arcseconds on the sky, with a positioning accuracy of 0.3 arcseconds, and have a minimum separation of about 30 arcseconds.

The fibres from the two 2DF plates are arranged in two pseudoslits that can move into place to inject light into the spectrograph. HERMES uses an off-axis collimator mirror, a set of dichroic elements, and volume phase holographic gratings to capture the wavelength ranges 4715–4900 Å, 5649–5873 Å, 4748–6737 Å, and 7185–7887 Å in four cameras with independent shutters. The spectra are dispersed in the horizontal direction in the raw data, with one spectrum trace for each fibre.

HERMES spectra have a signal-to-noise ratio of 100 per resolution element in one hour of exposure time for stars with an apparent magnitude of 14 in the relevant Johnson-Kendall filter (B for the blue camera, V for the green camera, R for the red camera, and I for the IR camera). The blue and green cameras use 16 micron, standard silicon detectors; the red camera has a 40 micron, deep depletion device with fringe suppression and an ERT coating; and the IR camera has a 100 micron bulk silicon device with fringe suppression and a “Multi-9” coating. Further details on 2DF and HERMES can be found in the user manual.

Observing

Targets for the main GALAH survey are selected to fall in one of three magnitude ranges: 9<V<12 (bright fields), 12<V<14 (regular fields), or 12<V<14.3 (faint fields). For observability from the Spring Observing, declination is restricted to -80°<dec<+10°, and to avoid target confusion and excessive extinction, Galactic latitude is restricted to |b|>10°.

These targets are divided into 645 fields on the sky with a field radius that varies with the target density and a minimum density of 400 stars per field. Fields containing more than 400 stars are subdivided into multiple 400 star configurations. Observers use the software developed within the team to choose configurations to observe, ensuring that the field centre will be within 1.5 hours of the meridian through the whole observation.

The coordinates and proper motions for the targets in each configuration are input into the Configure program, along with a set of 20 candidate fiducial stars for guiding. The fiducial stars are taken from the GALAH target catalogue in the same field of view, with magnitudes in the range 11<V<12. Configure finds an optimal arrangement for the science targets and fiducial stars using a simulated annealing algorithm and outputs a file that is passed to the fibre positioning robot to set up the field. Further details on Configure can be found in Mészáros et al. 2006.

The standard exposure time for a configuration is one hour, taken as three 20-minute exposures. This is extended to four exposures if the seeing is between 2 and 2.5 arcseconds, and to six exposures if the seeing is between 2.5 and 3.5 arcseconds. Field and arc exposures are taken directly before or after each science configuration, since moving between the two pseudoslits moves the position of the spectrum traces on the detector slightly.

Sample queries:

- Sample queries to GALAH DR2.
Document Central: GALAH

The GALAH survey is excited to announce our second data release on 18 April 2018. It contains data for 342682 stars with up to 23 elemental abundances per star.

The catalogue is accessible through:
- The survey service on the AAO Data Central webpage
- Direct download

There are a number of important documents that describe this release:
- What’s in GALAH DR2
- DR2 Changes
- The table schema
- The data reduction and analysis

Questions about DR2 should be directed to Sarah Handley, s.handley@aaophotonics.edu.au

**Categories**

- **Overview**
- **Science Goals**
- **Data Reduction and Analysis**
- **Table Schema**
- **Sample Queries**
- **Additional Data**

**Instrumentation and observing**

HERMES

GALAH observes using the HERMES spectrograph (Shetrone et al. 2013) at the Anglo-Australian Telescope. HERMES is a four-channel, multimode, R=28,000 spectrograph fed by the 2df fibre positioner (Lewis et al. 2003), which sits at prime focus. 2df has two field plates, each of which has 392 science fibres and 8 guide bundles that can be allocated across a circular field with a two-degree diameter. One field plate can be set up by the fibre positioning robot while the other plate is being used for observation. Fibres subtend 2.1 arcseconds on the sky, with a positioning accuracy of 0.3 arcseconds, and have a minimum separation of about 30 arcseconds.

Fibres from the test uses an offset collim. 4715-4900 Å, 5649-58 horizontal direction in tHERMES spectra have magnitude of 14 in the camera. The blue and fringe suppression and coating. Further details

**Observing**

Targets for the main G, 12-V14.3 faint fields calibration and cross-matching. These targets are divided fields, fields containing small, large, tied, and un-tied.

The estimates and positions of the main G, 12-V14.3 faint fields calibration and cross-matching. These targets are divided fields, fields containing small, large, tied, and un-tied.

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The standard exposure averages 20,000 taken directly before the detector.

**Data Release 2.2 Change Log**

GALAH DR2 contains stellar parameters and abundances for 342682 stars observed as part of the main GALAH survey between 2014 January 16 and 2015 January 20. A full description of its contents can be found on the What’s in GALAH DR2 page.
For GAMA groups with Ngal > 4 and 0.02 < z < 0.1, how many brightest cluster galaxies are also central cluster galaxies.

```
WHERE t2.z BETWEEN 0.1 and 0.3
AND t2.nQ > 2
```

```
SELECT t1.GroupID, t1.Nfog, t1.IterCenCATAID, t1.zfof, t1.BCGCATAID
FROM gama_dr2.G3CFOFGroup as t1
WHERE t1.zfof BETWEEN 0.02 and 0.1
AND t1.Nfog > 4
```
For GAMA groups with $N_{\text{gal}} > 4$ and $0.02 < z < 0.1$, how many brightest cluster galaxies are also central cluster galaxies.

```sql
SELECT t1.GroupID, t1.Nfof, t1.IterCenCATAID, t1.Zfof, t1.BCGCATAID
FROM gama_dr2.G3CFOFGroup as t1
WHERE t1.Zfof BETWEEN 0.02 and 0.1
AND t1.Nfof > 4
```
# Document Central: Editing Content

## Access to Team Data

<table>
<thead>
<tr>
<th>Role</th>
<th>Access Team Data in Data Central</th>
<th>Access Document Central</th>
<th>Create/View/Edit Drafts</th>
<th>Publish Content</th>
<th>Lock Content</th>
<th>Add/Edit Documents/Images</th>
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<td>✓</td>
</tr>
<tr>
<td>Team Administrator</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

## Code snippet

```
WHERE t1.2.z BETWEEN 0.1 and 0.3
AND t2.nQ > 2
```

```
SELECT t1.GroupID, t1.Nfof, t1.IterCenCATAID, t1.2f0f, t1.BGCATAID
FROM gama_dr2.G3CFoFGroup as t1
WHERE t1.2f0f BETWEEN 0.02 and 0.1
AND t1.Nfof > 4
```
document central: protecting content
document central: promoting content
Document central: getting started

Documentation
Find information, examples and FAQs about Data Central, as well as extensive survey-team-curated documentation.

Reference
A complete guide to using Data Central

Editing content with Document Central
How to add, update and manage articles on Data Central's Documentation system.

Private Articles
- Getting Started
  For survey admins/editors, this article describes the basics of adding/updating content.
  26 Mar 2018, 6:02 p.m.
- Adding a category
  Learn how to add new categories to the system
  9 Feb 2018, 12:28 p.m.
- Adding a new article
  Learn how to add a new article
  9 Feb 2018, 12:28 p.m.
Secure file sharing and storage

Team account: 500GB

Drag-and-drop interface (no more ftp!)

File comments and version history

Data recovery: files moved to Trash on delete

Scriptable access (ownCloud command line)


Optional folder syncing

Supports webdav: connect to dc ownCloud server and mount directory
Secure file sharing and storage

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survey support: DEVILS case study

DEVILS: DEEP EXTRAGALACTIC VISIBLE LEGACY SURVEY

- devilsurvey.org
- twitter.com/devilsurvey
- Davies, L. J. M. et al. 2018

- AAT large program survey of ~60,000 galaxies
- Y-mag < 21.2 to >95% completeness (0<z<1)

Deep Extragalactic VIisible Legacy Survey (DEVILS): Motivation, Design and Target Catalogue


D102100187, GALEX NUV, UltraVISTA H, Spitzer COSMOS2
survey support: DEVILS case study

**WA: Team @ ICRAR**
- fibre config

**NSW: observer @ AAT**
- biases
- darks
- raw data

**TAZ pipeline (~6h)**
- Raw AAT data
- Reduce 2dfdr
- Extract 1D spectra
- Stacks repeat observations
- Runs auto-z fitting
- Updates catalogues
- Generates new config files for next obs night

• Nightly feedback mode:
  • Transferring files: FTP/Email?
  • Automation
  • Data management & access
  • Risk management: machine failures
survey support: DEVILS case study

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NSW: observer @ AAT

- biases
  - darks
  - raw data

upload
1am AWST
4am AEST
survey support: DEVILS case study

WA: Team @ ICRAR

- biases
- darks
- raw data

NSW: observer @ AAT

- biases
- darks
- raw data

sync
5am AWST
8am AEST

upload
1am AWST
4am AEST
survey support: DEVILS case study

**WA: Team @ ICRAR**
- biases
- darks
- raw data

**NSW: observer @ AAT**
- biases
- darks
- raw data

<12h

- fibre config
- fibre config

**sync**
- 5am AWST
- 8am AEST

**download**
- 12pm AWST
- 3pm AEST

**upload**
- 1am AWST
- 4am AEST

sync
- 11am AWST
- 2pm AEST

sync
- 1am AWST
survey support: DEVILS case study

WA: Team @ ICRAR

- biases
- darks
- raw data

sync
5am AWST
8am AEST

<12h

sync
11am AWST
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NSW: observer @ AAT

- biases
- darks
- raw data

download
12pm AWST
3pm AEST

upload
1am AWST
4am AEST

invested exposure time

 DEVILS redshift
DEVILS
observed no redshift

date

cumulative number of redshifts

Devil

exposure times

Devil

devils

observed no redshift

devils

observed no redshift
survey support: DEVILS case study

WA: Team @ ICRAR
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8am AEST

<12h

WE: Team @ ICRAR
- fibre config

sync
11am AWST
2pm AEST

NSW: observer @ AAT
- biases
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download
12pm AWST
3pm AEST

upload
1am AWST
4am AEST
Summary

- **SERVICES**
  - Web-based access: image cutout, ADQL query, cone search, auth integration with Lens, TAP, IFS map visualisation, SOV, schema browser, scriptable access

- **SURVEY SUPPORT**
  - document central: create and curate public & private documentation
  - data central cloud: private team space (500GB)

- **COMING SOON DC 1.6**
  - AAT Archive (public)
    - Integrating 2dfdr
  - Updated SOV
  - AstroObject Search and data download
  - SAMI DR2
  - document central v2
  - Permissions integration with catalogue data

- **IN THE INCUBATOR**
  - Aladin lite integration
  - Permissions integration across all services
  - Interactive cube/spectra/2dmap visualisers
  - API release
  - 2dFGRS, 6dFGS, Huntsman, TAIPAN, RAVE, FunnelWeb, GAIA, WiggleZ, AAPS etc…

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