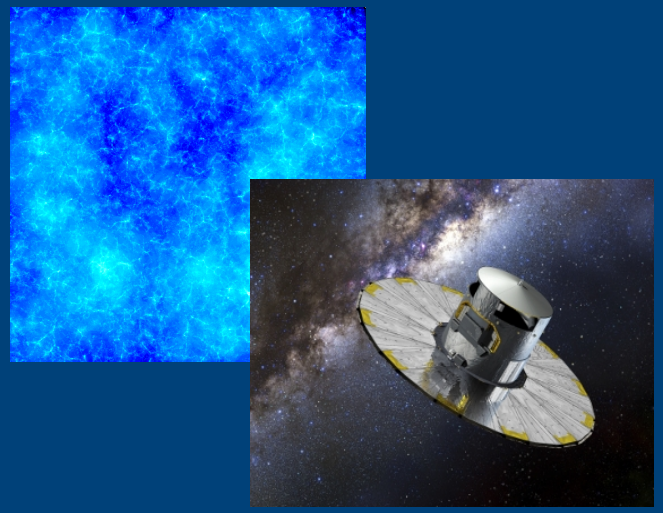
Leibniz-Institut für
Astrophysik Potsdam

Daiquiri - Python based framework for the publication of scientific databases



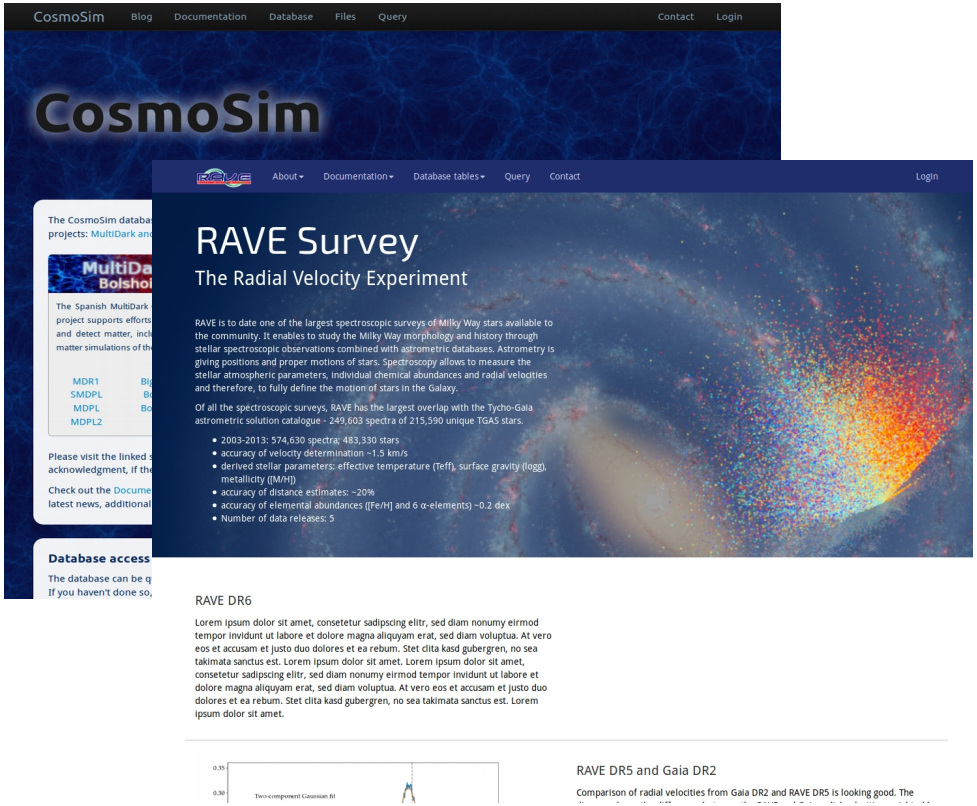
Anastasia Galkin
Jochen Klar
Gal Matijevič
Kristin Riebe
Harry Enke

ADASS 2019

Scientific Databases hosted @AIP

- CosmoSim https://www.cosmosim.org

Scientific Databases hosted @AIP

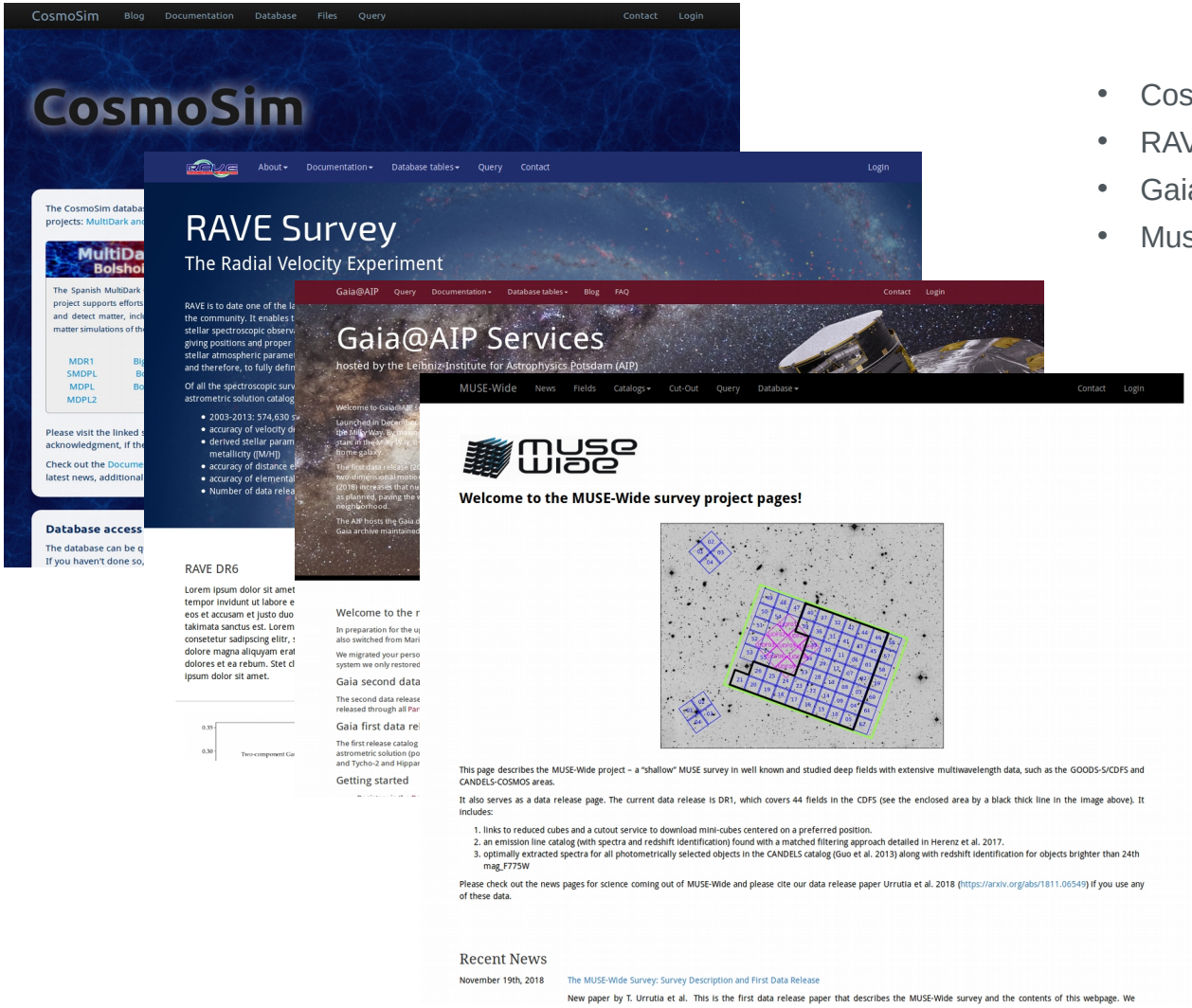


- CosmoSim https://www.cosmosim.org
- RAVE https://www.rave-survey.org

Scientific Databases hosted @AIP

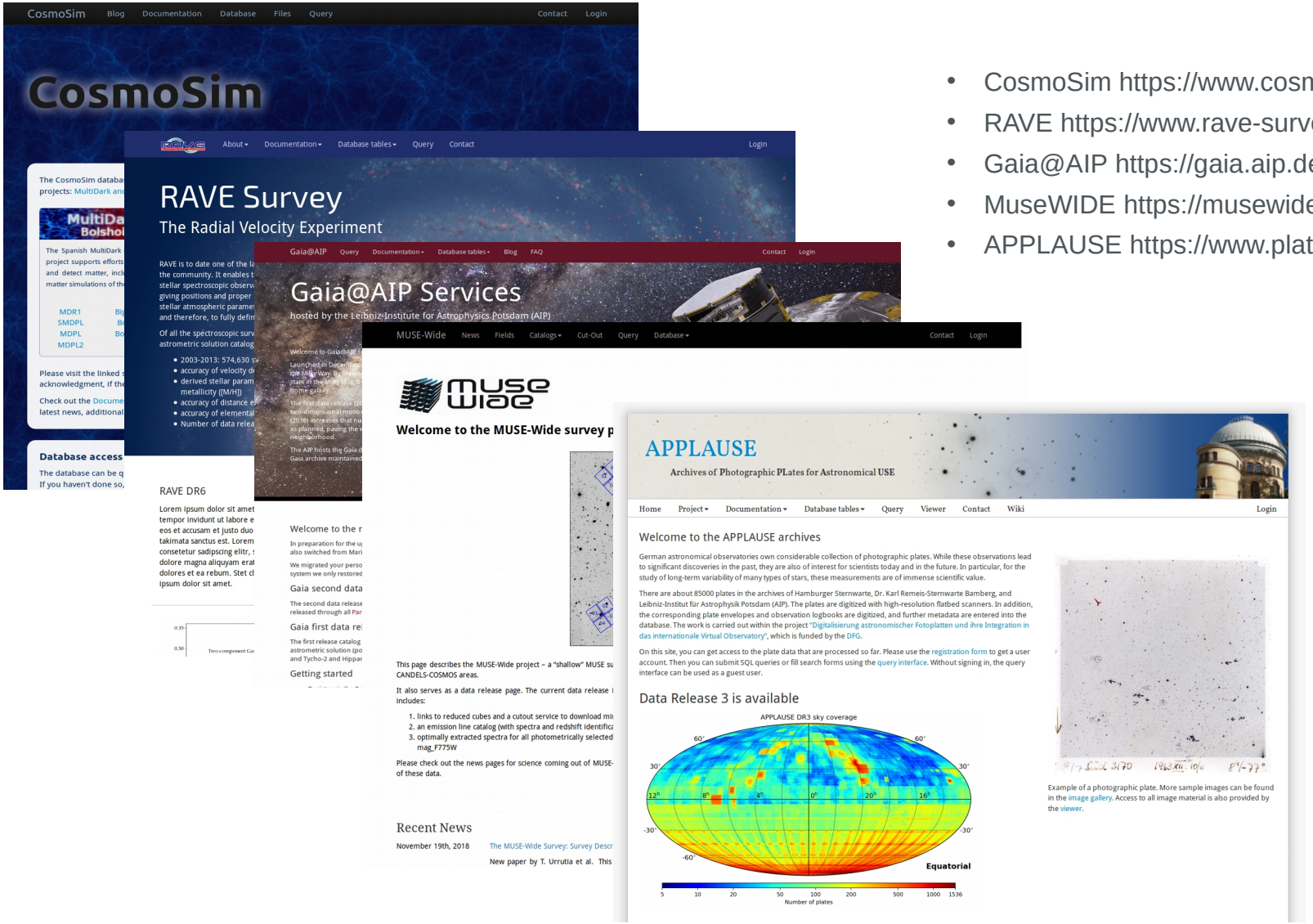
- CosmoSim https://www.cosmosim.org
- RAVE https://www.rave-survey.org
- Gaia@AIP https://gaia.aip.de

Scientific Databases hosted @AIP

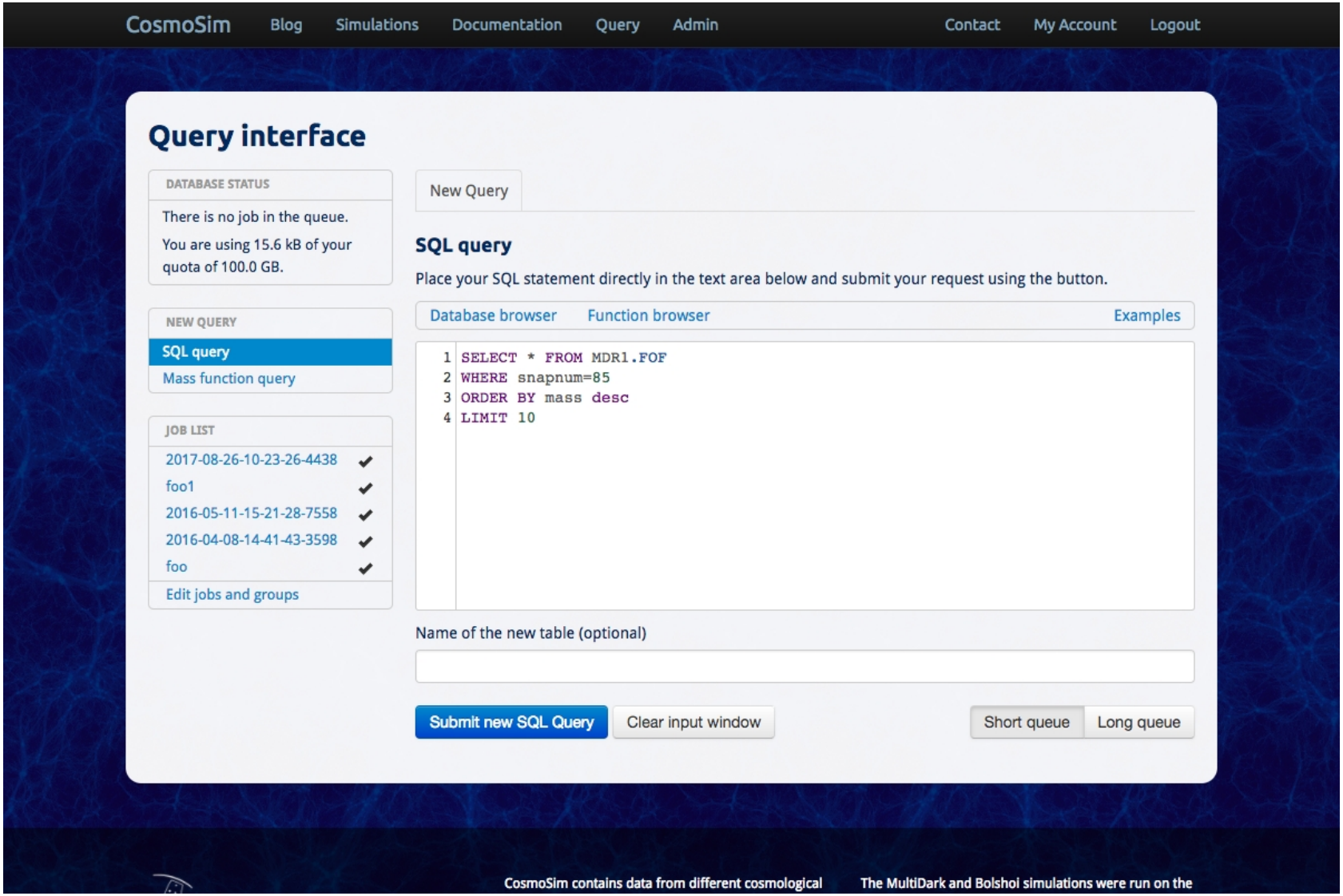


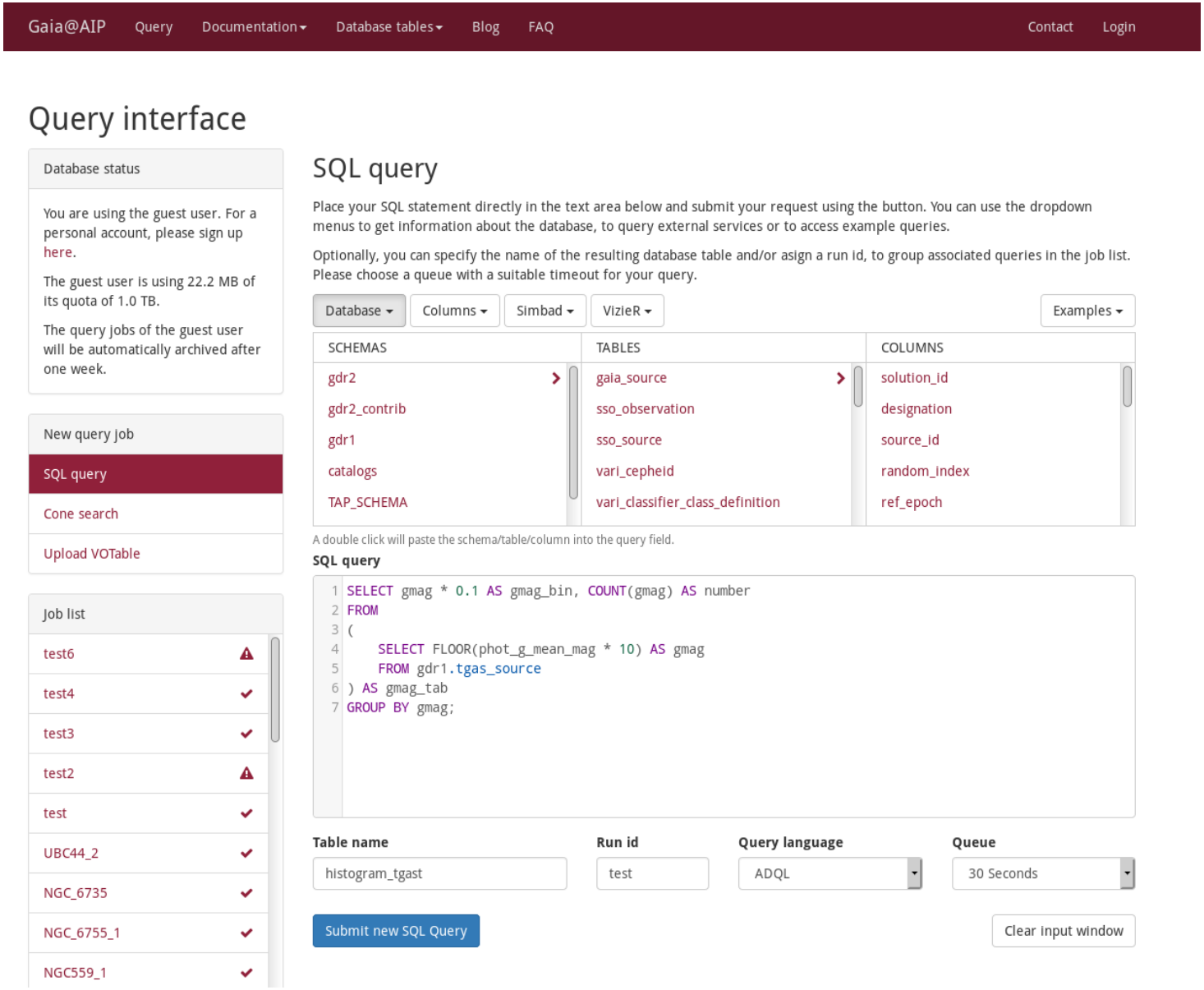
- CosmoSim https://www.cosmosim.org
- RAVE https://www.rave-survey.org
- Gaia@AIP https://gaia.aip.de
- MuseWIDE https://musewide.aip.de

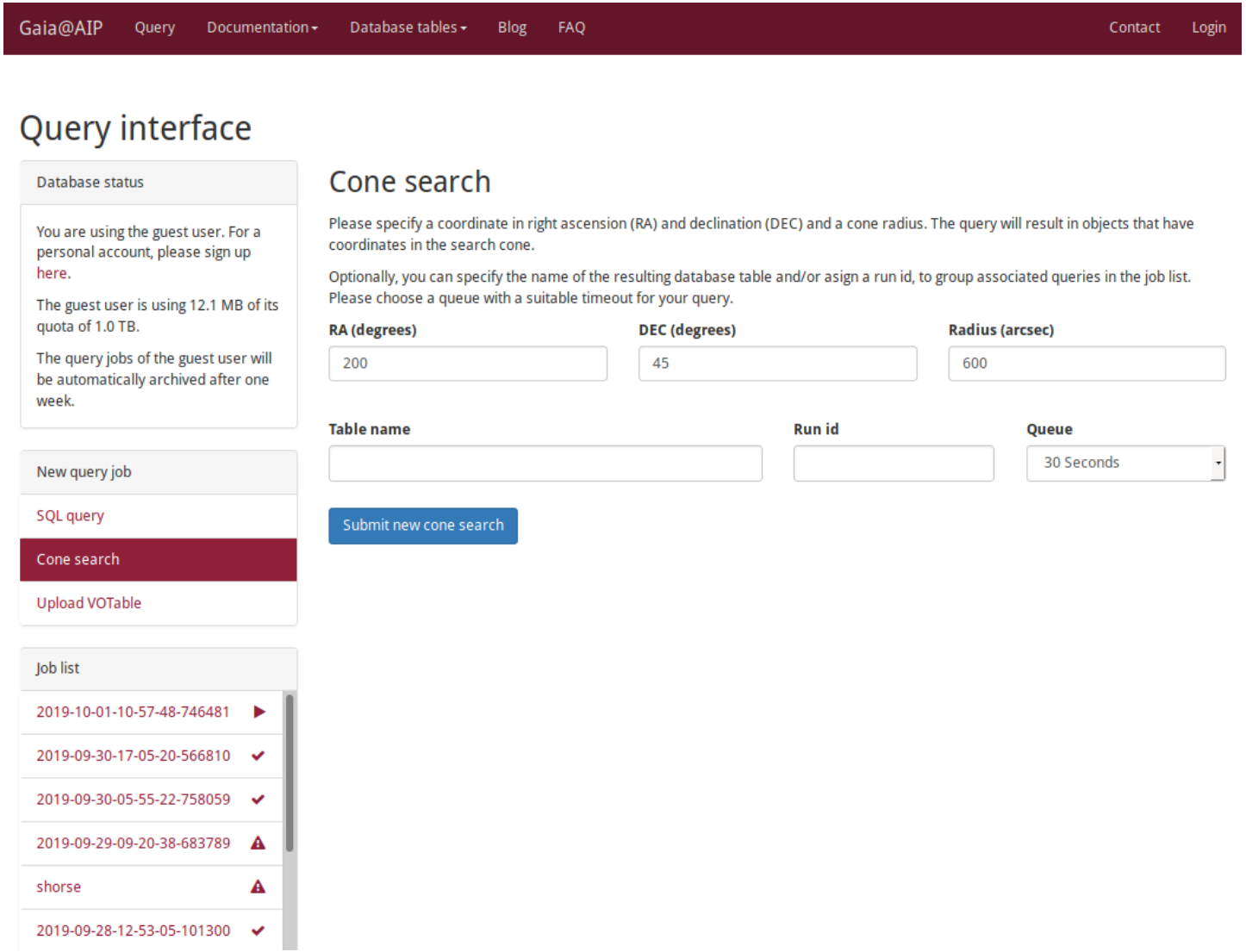
Scientific Databases hosted @AIP

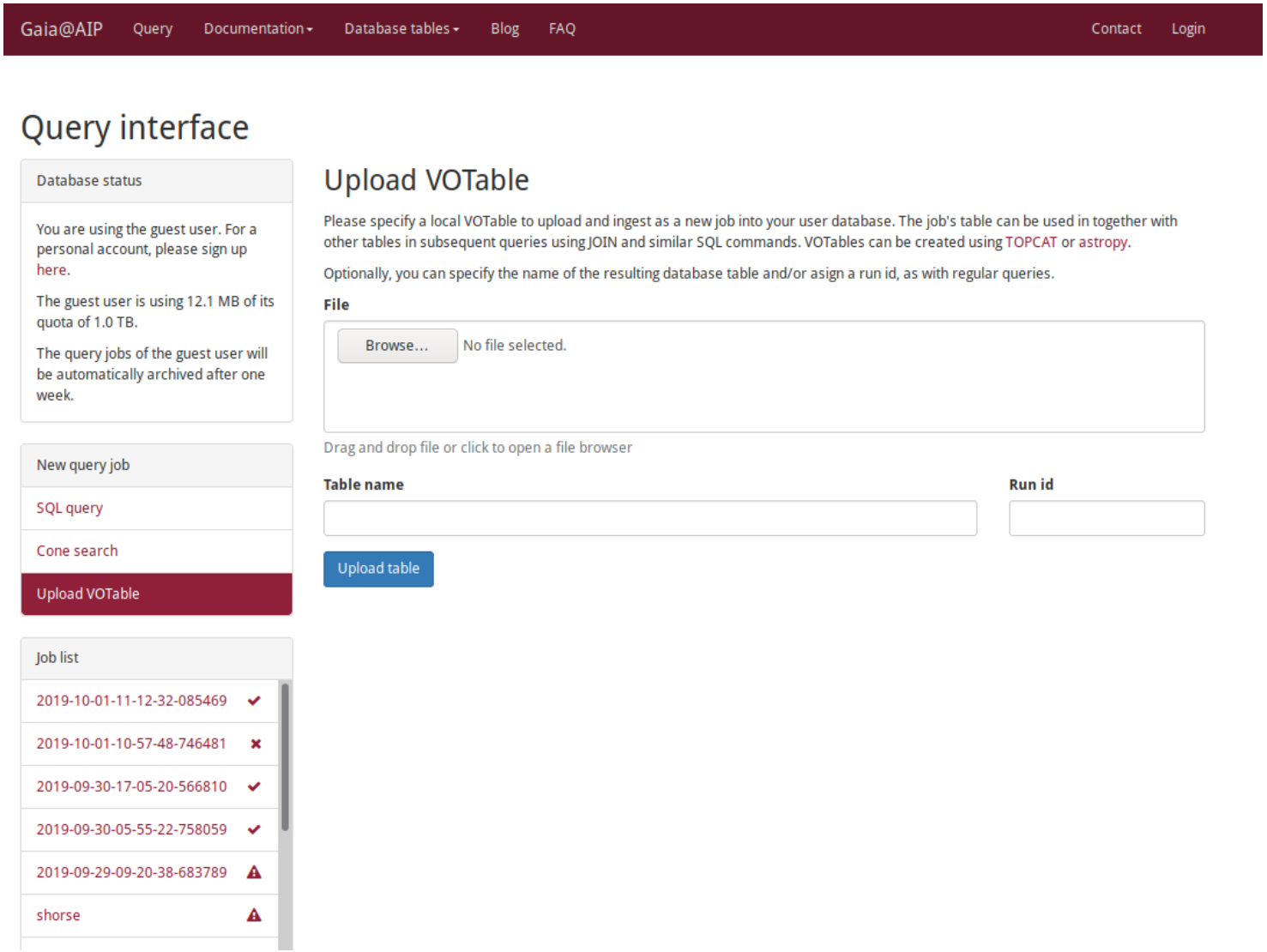


- CosmoSim https://www.cosmosim.org
- RAVE https://www.rave-survey.org
- Gaia@AIP https://gaia.aip.de
- MuseWIDE https://musewide.aip.de
- APPLAUSE https://www.plate-archive.org


CosmoSim
Blog
Simulations
Documentation
Query
Admin
Contact
My Account
Logout
Query interface
DATABASE STATUS
There is no job in the queue.
You are using 15.6 kB of your quota of 100.0 GB.
NEW QUERY
SQL query
Mass function query
JOB LIST
2017-08-26-10-23-26-4438
foo1
2016-05-11-15-21-28-7558
2016-04-08-14-41-43-3598
foo
Edit jobs and groups
New Query
SQL query
Place your SQL statement directly in the text area below and submit your request using the button.
Database browser
Function browser
Examples
1 SELECT * FROM MDR1.FOF
2 WHERE snapnum=85
3 ORDER BY mass desc
4 LIMIT 10
Name of the new table (optional)
Submit new SQL Query
Clear input window
Short queue
Long queue
CosmoSim contains data from different cosmological
The MultiDark and Bolshoi simulations were run on the


Gaia@AIP
Query
Documentation
Database tables
Blog
FAQ
Contact
Login
Query interface
Database status
You are using the guest user. For a personal account, please sign up here.
The guest user is using 22.2 MB of its quota of 1.0 TB.
The query jobs of the guest user will be automatically archived after one week.
New query job
SQL query
Cone search
Upload VOTable
Job list
test6
test4
test3
test2
test
UBC44_2
NGC_6735
NGC_6755_1
NGC559_1
SQL query
Place your SQL statement directly in the text area below and submit your request using the button. You can use the dropdown menus to get information about the database, to query external services or to access example queries.
Optionally, you can specify the name of the resulting database table and/or asign a run id, to group associated queries in the job list. Please choose a queue with a suitable timeout for your query.
Database
Columns
Simbad
VizieR
Examples
SCHEMAS
gdr2
gdr2_contrib
gdr1
catalogs
TAP_SCHEMA
TABLES
gaia_source
sso_observation
sso_source
vari_cepheid
vari_classifier_class_definition
COLUMNS
solution_id
designation
source_id
random_index
ref_epoch
A double click will paste the schema/table/column into the query field.
SQL query
1 SELECT gmag * 0.1 AS gmag_bin, COUNT(gmag) AS number
2 FROM
3 (
4 SELECT FLOOR(phot_g_mean_mag * 10) AS gmag
5 FROM gdr1.tgas_source
6) AS gmag_tab
7 GROUP BY gmag;
Table name
histogram_tgast
Run id
test
Query language
ADQL
Queue
30 Seconds
Submit new SQL Query
Clear input window


Gaia@AIP
Query
Documentation
Database tables
Blog
FAQ
Contact
Login
Query interface
Database status
You are using the guest user. For a personal account, please sign up here.
The guest user is using 12.1 MB of its quota of 1.0 TB.
The query jobs of the guest user will be automatically archived after one week.
New query job
SQL query
Cone search
Upload VOTable
Job list
2019-10-01-10-57-48-746481
2019-09-30-17-05-20-566810
2019-09-30-05-55-22-758059
2019-09-29-09-20-38-683789
shorse
2019-09-28-12-53-05-101300
Cone search
Please specify a coordinate in right ascension (RA) and declination (DEC) and a cone radius. The query will result in objects that have coordinates in the search cone.
Optionally, you can specify the name of the resulting database table and/or asign a run id, to group associated queries in the job list. Please choose a queue with a suitable timeout for your query.
RA (degrees)
200
DEC (degrees)
45
Radius (arcsec)
600
Table name
Run id
Queue
30 Seconds
Submit new cone search


Gaia@AIP
Query
Documentation
Database tables
Blog
FAQ
Contact
Login
Query interface
Database status
You are using the guest user. For a personal account, please sign up here.
The guest user is using 12.1 MB of its quota of 1.0 TB.
The query jobs of the guest user will be automatically archived after one week.
New query job
SQL query
Cone search
Upload VOTable
Job list
2019-10-01-11-12-32-085469
2019-10-01-10-57-48-746481
2019-09-30-17-05-20-566810
2019-09-30-05-55-22-758059
2019-09-29-09-20-38-683789
shorse
Upload VOTable
Please specify a local VOTable to upload and ingest as a new job into your user database. The job's table can be used in together with other tables in subsequent queries using JOIN and similar SQL commands. VOTables can be created using TOPCAT or astropy.
Optionally, you can specify the name of the resulting database table and/or asign a run id, as with regular queries.
File
Browse...
No file selected.
Drag and drop file or click to open a file browser
Table name
Run id
Upload table

MUSE-Wide News Fields Catalogs Cut-Out Query Database Contact Login

Fields in MUSE-Wide DR1

Download Exposure Map: expmap_dr1_seconds.fits

Download Field Mapping: musewide_field_mapping.fits

Please click on the `field_name` of a field for an overview, download options and the photometric catalog for this field.

Search

First Previous Next Last Reset

field_name	ra	dec	datacube_header	datacube_fits
candels-cdfs-01	53.0627015	-27.8081858	DATACUBE_candels-cdfs-01_v1.0_dcbgc_effnoised.txt	DATACUBE_candels-cdfs-01_v1.0_dcbgc_effnoised.fits
candels-cdfs-02	53.0686827	-27.822625	DATACUBE_candels-cdfs-02_v1.0_dcbgc_effnoised.txt	DATACUBE_candels-cdfs-02_v1.0_dcbgc_effnoised.fits
candels-cdfs-03	53.0741458	-27.8371172	DATACUBE_candels-cdfs-03_v1.0_dcbgc_effnoised.txt	DATACUBE_candels-cdfs-03_v1.0_dcbgc_effnoised.fits
candels-cdfs-04	53.0819606	-27.8519903	DATACUBE_candels-cdfs-04_v1.0_dcbgc_effnoised.txt	DATACUBE_candels-cdfs-04_v1.0_dcbgc_effnoised.fits
candels-cdfs-05	53.086262	-27.8666155	DATACUBE_candels-cdfs-05_v1.0_dcbgc_effnoised.txt	DATACUBE_candels-cdfs-05_v1.0_dcbgc_effnoised.fits
candels-cdfs-06	53.0787868	-27.80296	DATACUBE_candels-cdfs-06_v1.0_dcbgc_effnoised.txt	DATACUBE_candels-cdfs-06_v1.0_dcbgc_effnoised.fits
candels-cdfs-07	53.0848577	-27.8173972	DATACUBE_candels-cdfs-07_v1.0_dcbgc_effnoised.txt	DATACUBE_candels-cdfs-07_v1.0_dcbgc_effnoised.fits
candels-cdfs-08	53.0912035	-27.8320211	DATACUBE_candels-cdfs-08_v1.0_dcbgc_effnoised.txt	DATACUBE_candels-cdfs-08_v1.0_dcbgc_effnoised.fits
candels-cdfs-09	53.0968875	-27.8466478	DATACUBE_candels-cdfs-09_v1.0_dcbgc_effnoised.txt	DATACUBE_candels-cdfs-09_v1.0_dcbgc_effnoised.fits
candels-cdfs-10	53.1028208	-27.86133	DATACUBE_candels-cdfs-10_v1.0_dcbgc_effnoised.txt	DATACUBE_candels-cdfs-10_v1.0_dcbgc_effnoised.fits
candels-cdfs-11	53.0954458	-27.7974778	DATACUBE_candels-cdfs-11_v1.0_dcbgc_effnoised.txt	DATACUBE_candels-cdfs-11_v1.0_dcbgc_effnoised.fits
candels-cdfs-12	53.1014583	-27.81201	DATACUBE_candels-cdfs-12_v1.0_dcbgc_effnoised.txt	DATACUBE_candels-cdfs-12_v1.0_dcbgc_effnoised.fits
candels-cdfs-13	53.1078417	-27.8267356	DATACUBE_candels-cdfs-13_v1.0_dcbgc_effnoised.txt	DATACUBE_candels-cdfs-13_v1.0_dcbgc_effnoised.fits
candels-cdfs-14	53.1133833	-27.84136	DATACUBE_candels-cdfs-14_v1.0_dcbgc_effnoised.txt	DATACUBE_candels-cdfs-14_v1.0_dcbgc_effnoised.fits
candels-cdfs-15	53.1194042	-27.8559689	DATACUBE_candels-cdfs-15_v1.0_dcbgc_effnoised.txt	DATACUBE_candels-cdfs-15_v1.0_dcbgc_effnoised.fits

Page 1 of 3 (44 rows total)

Show 15 of rows

MUSE-Wide News Fields Catalogs Cut-Out Query Database Contact Login

Cut-Out Service

RA

53.0602886

Central right ascension (J2000) in deg

a

6

Radius in RA in arcsec

DEC

-27.81351

Central declination (J2000) in deg

B

6

Radius in DEC in arcsec

λ_0

4750

Start of the wavelength in Å

λ_1

9350

End of the wavelength range in Å

Download cut-out Reset values

It can take a moment until the download starts. Please be patient.

This datacube can also be directly downloaded using the following url:

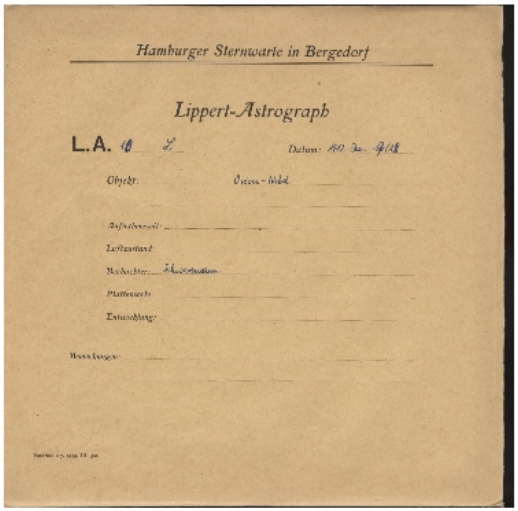
https://musewide.aip.de/cutout/api/datacubes/?A=6&B=6&DEC=-27.81351&L0=4750&L1=9350&RA=53.0602886

APPLAUSE

Archives of Photographic PLates for Astronomical USE

Envelope from Lippert-Astrograph (Hamburg)

Envelope



Download logpage

Applause ID:	dr.3/envelopes/101_8092
Archive:	Lippert-Astrograph (Hamburg)
Page number:	
Page order:	
Image size:	1496 × 1476 px
Image created:	April 21, 2010, 9:13 a.m.
File format:	JPEG
File:	DR3/covers/HAM-LA/LA00010_cover.jpg

Digital object identifier

You can use the following DOI to cite this envelope in a publication:

https://doi.org/10.17876/plate/dr.3/envelopes/101_8092

License

This envelope is published under the Attribution 4.0 International (CC BY 4.0).

Navigation

Next envelope in this archive →

Back to overview

Daiquiri – from a user perpective

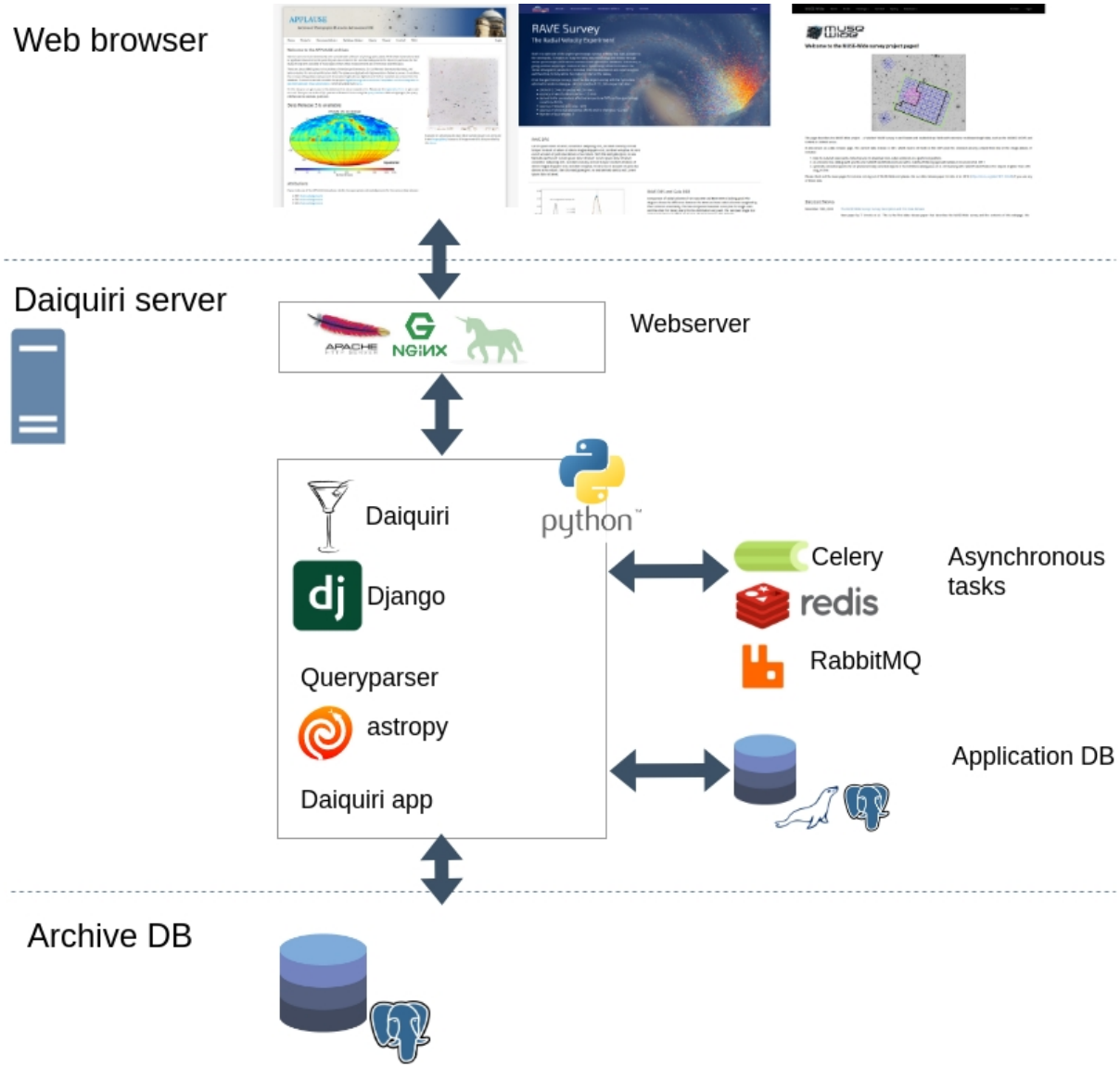
A framework for the publication of scientific databases

- Allows for highly customizable web applications
- Based on a common easily maintainable code base
- Separated into an **app** and the **daiquiri** library
- Features:
  - SQL web interface to relational databases
  - User management and user registration work flow
  - Metadata management and access control
  - First impression in-browser plotting
  - Table download
  - Archive file service
  - VOTable upload
- Employs VO protocols and standards

Daiquiri features for the provider

- **SQL query interface** (with examples, job list, plotting) - full SQL syntax of PostgresQL – pgSphere integration, ADQL support
- Customizable data query forms
- **Contact messages** to the support staff
- **DOI integration** and landing pages for databases and tables
- **OAI-PMH** interface for harvesting services
- File service and zip-archive creation
- Registration and log-in using Oauth2 (twitter, GitHub, Google, ORCID)
- **WordPress integration** for project presentation and documentation
- **VO protocols**: Table Access Protocol (TAP), Cone search, UWS
- File access, filtering and download for observatory archives (MUSE WIDE)
- Cut-out service for images and datacubes

open source and available on GitHub and PyPy


Web browser
Daiquiri server
Webserver
Daiquiri
python
Django
Celery
Asynchronous tasks
redis
RabbitMQ
Queryparser
astropy
Application DB
Daiquiri app
Archive DB

Language and framework

Python and Django

- Python: todays preferred scripting language, widely used in astronomy
- Django: full MVC framework with everything included, huge community
- Django REST framework: de-facto standard for REST interfaces in Django
- django-allauth: local and social authentication, registration work flows
- astropy: community python library for Astronomy
- Queryparser and ANTLR for translation between ADQL and PostgresQL
- ...

Front end: AngularJS and Bootstrap

- AngularJS 1: awesome since Daiquiri v1
- Bootstrap 3: responsive layout, mobile friendly

Back end:

- PostgresQL, MariaDB
- Asynchronos tasks with Celery, Redis, RabbitMQ
- Systemd, linux pipes

Asynchronous jobs

Celery and RabbitMQ

- Celery asynchronous task queue queue in Python, widely adopte
- RabbitMQ: message broker in Erlang
- redis: in-memory data structure store for task results, can also be used for caching
- systemd: new init system for Linux, make it easy to deploy daemons

Downloading tables

Celery and RabbitMQ and old-school unix pipes

```
mysqldump database_name table_name | some_magic > table_name.csv
```

Try django-daiquiri!

as a user

Production version of the Gaia@AIP Services: gaia.aip.de or plate-archive.org

as a provider

https://github.com/django-daiquiri/daiquiri

as docker

https://github.com/django-daiquiri/daiquiri-docker-compose

Leibniz-Institut für
Astrophysik Potsdam

Questions?

Anastasia Galkin

agalkin@aip.de

github.com/django-daiquiri

escience.aip.de