



Daiquiri

A framework for the publication of scientific databases

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Outline

- Database publication in Astronomy
- Daiquiri – a new framework for DB applications
- Features and main concepts
- A few impressions of the query interface
- How can you use Daiquiri for your database?





Database publication in Astronomy and Astrophysics

Sloan Digital Sky Survey / SkyServer

DR7 Tools

SQL Search

This page allows you to directly submit a SQL (Structured Query Language) query to the SDSS database server. You can modify the default query as you wish, or cut and paste a query from the SDSS Sample Query page.

Please note: To be fair to other users, queries run from SkyServer search tools are restricted in how long they can run and how much data they return, by intervals and row limits. Please see the Query Limits help page. To run a query that is not restricted by a limit on number of rows returned, please use the [CASH tool](#).

```
-- This query does a table JOIN between the imaging (PhotoG) and spectra -- (SpecObj) tables and includes the necessary columns in the SELECT to upload -- the results to the DAS (Data Archive Server) for FITS file retrieval.
SELECT TOP 10
  p.objid,r.ra,p.dec,r.p.p.e.p.r.p.i.p.z,
  p.rah,p.ram,p.catcol,p.field,
  s.spectralid,s.specClass,s.i.f.redshift,
  s.plate,s.aid,s.fiberid
FROM PhotoObj AS p
JOIN SpecObj AS s ON s.bestobjid = p.objid
WHERE
  p.i BETWEEN 0 AND 10
AND s BETWEEN 0 AND 20
```

Submit Check Syntax Only Output Format: HTML XML CSV Reset

RAVE Database Query

Query Form: My Account: Logout: Help

Quick Options:

- DB: RAVE
- DB: RAVEINPUT
- DB: RAVEOBJ
- DB: RAVEOBJA
- DB: RAVE_OBJA
- DB: RAVE_OBJB
- DB: RAVE_OBJC
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Submit Refresh Help

GAVO ADQL Query

On this page, you can use ADQL to query some of our tables. This is mainly for debugging; use TAP for larger jobs (e.g., using TAPHandle within your browser).

To learn what ADQL is or for further information on this implementation, see the [service info](#).

Related: [Tables available for ADQL](#)

Metadata: [Metadata](#), [Description](#), [Keywords](#), [Creator](#), [Created](#), [Data updated](#), [Reference URL](#)

Try ADQL to query our data.

Please report errors and omissions to the [GAVO](#) team.

Timeout after: seconds until the query is aborted. If you find yourself having to raise this beyond 200 or so, please contact the site operators for hints on how to optimize your query.

Output format:

To protect your nerves, the server inserts a TOP 2000 phrase



Common Issues

People want database access via SQL!

- Projects want to publish data
- Scientists want to use data for their science

However ...

- Custom made applications, hardly reusable.
- Considerable maintenance costs per web site...
- ... which multiply for each new project





Possible applications @ AIP

A lot of projects are interested in DB publication ...

- RAVE survey
- MultiDark project
- The Plate Archive
- GAIA projects
- CLUES project
- CALIFA survey
- 4MOST instrument
- MUSE instrument
- LBT database
- Verlust der Nacht
- Cepheid database
- eRosita database





Daiquiri

- Highly customizable framework for database publication
- Many applications – one code base, maintained by the E-Science group at AIP
- State-of-the-art web technologies
- Hardened SQL query interface
- Best of all: Entirely open source!





Features

- User management (with user registration workflow)
- Contact form with message management
- Queued SQL queries including SQL query assistance
- Query result table viewer, quick plotting tool
- User database space
- Query result download (CSV, MySQL dump, VOTable, ...)
- VO compatible meta data management for databases
- UWS (VO Universal Worker Service)
- Interface to PaQu (Parallel query)
- Interface to WordPress as Content Management System

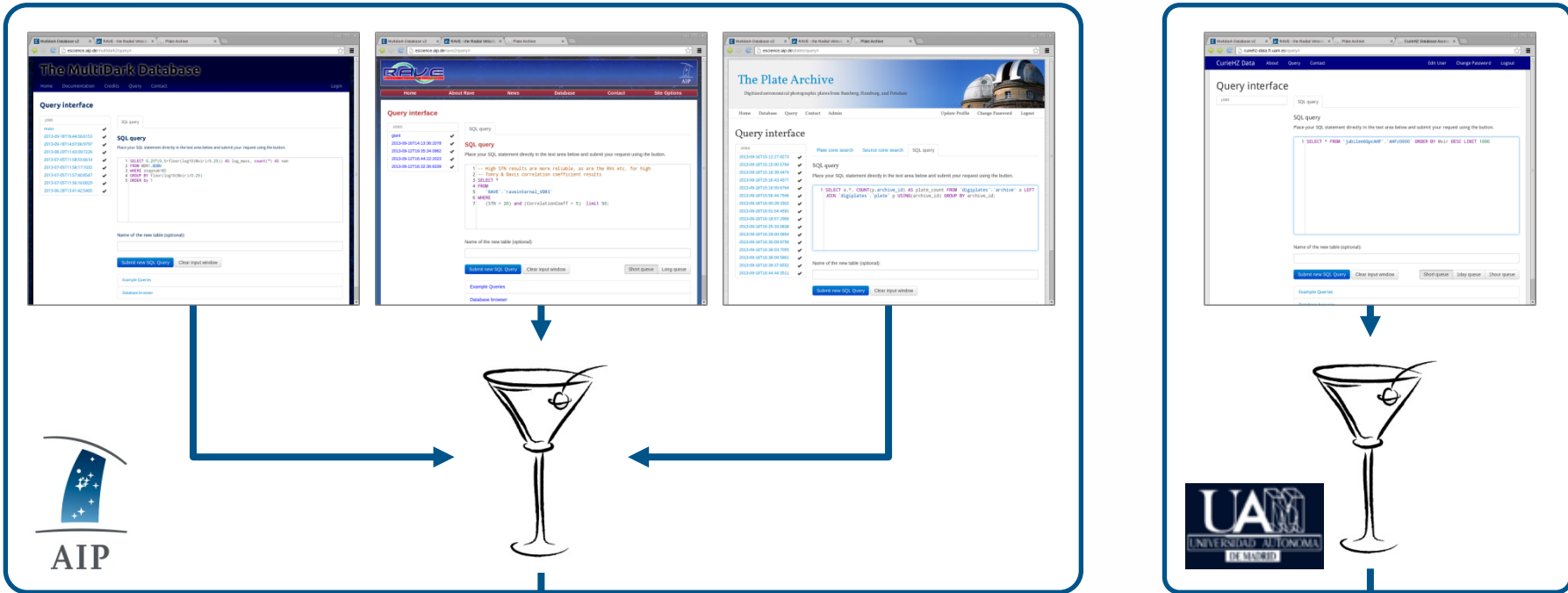




Modular approach


- Separation of
 - The web application (*daiquiri-app*)
 - Configuration files
 - Layout
 - Style sheets
 - Customization
 - Core functionality (*daiquiri*)
 - Modules (auth, query, contact, ...)
 - Library (base classes, helper, client library, ...)
 - Common client code (js, css, 3rd party libs)





Development @ AIP

- Bug fixes
- New Features





github
SOCIAL CODING



CurieH2 Data

Query interface

SQL query

```
1. SELECT * FROM "jobListQuery" WHERE "JOBID" = 100000 ORDER BY "JOBID" DESC LIMIT 1000
```

Submit new SQL Query

Clear input window

Short query

Info query

Test query



Query interface

The image shows a collage of overlapping browser windows displaying the RAVE v2 beta query interface. The main window in the foreground shows the following components:

- Navigation Menu:** Home, About Rave, News, Database, Contact, Site Options.
- Query interface section:**
 - JOBS:** A list of jobs with checkboxes, including 'good2', 'good', and 'giant'.
 - SQL query:** A text area for entering SQL statements. Below it, instructions state: "Place your SQL statement directly in the text area below and submit your request using the button."
 - Example SQL query:**



```
1 -- High STN results are more reliable, as are the RVs etc. for high
2 -- Tony & Davis correlation coefficient results
3 SELECT *
4 FROM
5 'RAVE', 'raveinternal_VDR3'
6 WHERE
7 (STN > 20) and (CorrelationCoeff > 5) limit 10000;
```
 - Name of the new table (optional):** An empty text input field.
 - Buttons:** 'Submit new SQL Query', 'Clear input window', 'Short queue', and 'Long queue'.
 - Example Queries and Database browser:** Links for 'Example Queries' and 'Database browser'.
- Data Table:** A table with columns ID, RAdeg, DEdeg, and Glon. The first few rows are:

ID	RAdeg	DEdeg	Glon
607_1	103.424166666667	-53.3635	263.1575
3.552834	22.9974166666667	-55.4761666666667	291.1640
0.481505	24.062875	-68.2515	296.7152
9.643227	159.845333333333	-64.5408333333333	289.3293
2.540147	184.5845	-54.0299722222222	298.0282
0_1850974	119.94225	-28.2382777777778	245.5577
2.610945	86.584375	-61.1625833333333	270.1157
2	238.653791666667	-49.0936388888889	330.9858
6_2231619	159.832083333333	-59.0671944444444	296.7061
0.540049	19.25025	-54.0137777777778	294.7219
- Plot:** A scatter plot showing a distribution of red points. The X-axis ranges from 0 to 350, and the Y-axis ranges from 0 to 350.
- Select Cols for plot:** A section with dropdown menus for 'Column for X axis' (set to RAdeg) and 'Column for Y axis' (set to DEdeg). It also has a 'Number of rows to plot' field set to 10000 and a 'Create Plot' button.

(RAVE v2 beta)

Daiquiri x RAVE - the Radial Velocity x RAVE - the Radial Velocity x

escience.aip.de/rave2/query



Home About Rave News Database Contact Site Options

Query interface

JOBS	
good2	⊘
good2	✓
good	✓
giant	✓
2013-09-16T14:13:36:2078	✓
2013-09-12T19:35:34:0962	✓
2013-09-12T16:44:22:2023	✓
2013-09-12T16:32:36:8339	✓

SQL query

SQL query

Place your SQL statement directly in the text area below and submit your request using the button.

```
1 -- High STN results are more reliable, as are the RVs etc. for high
2 -- Tonry & Davis correlation coefficient results
3 SELECT *
4 FROM
5   `RAVE`.`raveinternal_VDR3`
6 WHERE
7   (STN > 20) and (CorrelationCoeff > 5) limit 10000;
```

Name of the new table (optional):

[Example Queries](#)

[Database browser](#)

[Home](#)
[About Rave](#)
[News](#)
[Database](#)
[Contact](#)
[Site Options](#)

Query interface

JOBS

- good2
- good2
- good
- giant
- 2013-09-16T14:13:36:2078
- 2013-09-12T19:35:34:0962
- 2013-09-12T16:44:22:2023
- 2013-09-12T16:32:36:8339

[SQL query](#)
[Job Details](#)
[Results Table](#)
[Plot](#)
[Download](#)

Page 1 of 1000 (10000 rows total)

RAVE_OBS_ID	RAVEID	OBJECTID	RAdeg	DEdeg	Glon
20051212_0639m51_132	J065341.8-532149	T8537_00607_1	103.4241666666667	-53.3635	263.1575
20070923_0118m54_126	J013159.4-552834	J013159.3-552834	22.9974166666667	-55.4761666666667	291.1640
20080929_0201m68_045	J013615.1-681505	J013615.0-681505	24.062875	-68.2515	296.7152
20100608_1049m63_024	J103922.9-643227	J103922.9-643227	159.8453333333333	-64.5408333333333	289.3293
20120312_1225m54_027	J121820.3-540148	J121820.2-540147	184.5845	-54.0299722222222	298.0282
20050130_0809m29_056	J075946.1-281418	CAT00000_1650974	119.94225	-28.2382777777778	245.5577
20071013_0540m62_092	J054620.3-610945	J054620.2-610945	86.584375	-61.1625833333333	270.1157
20040510_1607m49_042	J155436.9-490537	HD142062	238.6537916666667	-49.0936388888889	330.9858
20050128_1045m58_028	J103943.7-590402	OCL00255_2231619	159.9320833333333	-59.0671944444444	286.7061
20070923_0118m54_071	J011700.1-540050	J011700.0-540049	19.25025	-54.0137777777778	294.7319

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esience.aip.de/rave2/query

RAVE
RADIAL VELOCITY EXPERIMENT

AIP

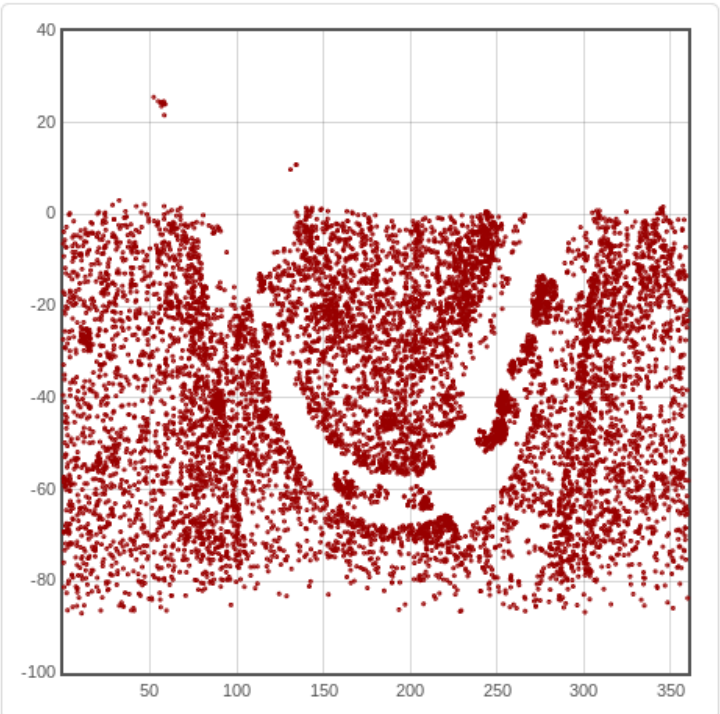
Home About Rave News Database Contact Site Options

Query interface

JOBS

- good2 ✓
- good2 ∅
- good ✓
- giant ✓
- 2013-09-16T14:13:36:2078 ✓
- 2013-09-12T19:35:34:0962 ✓
- 2013-09-12T16:44:22:2023 ✓
- 2013-09-12T16:32:36:8339 ✓

SQL query Job Details Results Table **Plot** Download



Select Columns for plot

Column for X axis: RAdeg



Column for Y axis: DEdeg

Number of rows to plot: 10000

Create Plot

Browser tabs: Daiquiri, RAVE - the Radial Velocity, RAVE - the Radial Velocity

Address bar: escience.aip.de/rave2/query



Navigation menu: Home, About Rave, News, Database, Contact, Site Options

Query interface

JOBS	
good2	✓
good2	∅
good	✓
giant	✓
2013-09-16T14:13:36:2078	✓
2013-09-12T19:35:34:0962	✓
2013-09-12T16:44:22:2023	✓
2013-09-12T16:32:36:8339	✓

SQL query Job Details Results Table Plot Download

Download table

Please select the format for your download:

Select format: IVOA VOTable XML file - ASCII Format ▾

Download

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How do I use Daiquiri

- As a User:
 - Daiquiri demo page: escience.aip.de/daiquiri
 - MultiDark DB v2 beta: escience.aip.de/multidark2
 - RAVE DB v2 beta: escience.aip.de/rave2
 - Plate Archive: www.plate-archive.org
- As a provider
 - Code: github.com/jochenklar/daiquiri
 - Documentation and demo: escience.aip.de/daiquiri





Can I use it for my database

Dependencies for a basic installation:

- Linux Server, Apache2 with PHP5
- MySQL 5.5
- Zend Framework 1.12

Advanced dependencies:

- For queued queries: MySQL query queue plugin (by AIP)
- For queued downloads: Gearman job daemon
- For VO Formats: mysqldump_vo (by AIP)
- For CMS functionality: WordPress





How do I set it up for my DB?

- Obtain **daiquiri** and **daiquiri-app**
- Specify options in the **init.php** script
- Run **init.php** to perform various tasks

```
Terminal
[jochen@coma rave2]$ ./init.php -h
Usage: ./init.php [ options ]
-h|--help           Displays usage information.
-a|--application    Creates the application.ini file (must be invoked first).
-l|--links          Creates the necessary softlinks.
-u|--user           Displays the commands to create the database user.
-c|--clean          Displays the commands to clean the database.
-v|--vhost          Displays the virtual host configuration.
-d|--drop           Drops the databases including the user databases.
-s|--sync           Creates the databases and tables as long as they do not exist yet.
-i|--init           Runs the initialisation process.
[jochen@coma rave2]$
```



Customizing Daiquiri

Easy

- Change style using own css files

Medium

- Create custom layout using html and some PHP

Pro

- Create own Views, Controllers, Models or Forms using the Zend Framework





Summary

- Daiquiri is a new framework for astronomical database access and everything you need for that
- Daiquiri is developed and maintained by the E-Science group @ AIP and is 100% open source
- Daiquiri interoperates with our database developments (PaQu, Query queue, ...)
- You can use it for your own project and configure it to your particular needs





Thank you

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<http://escience.aip.de/daiquiri>

<https://github.com/jochenklar/daiquiri>

