



Daiquiri

A framework for the publication of scientific databases

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Leibniz-Institut für Astrophysik Potsdam (AIP)**

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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?





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

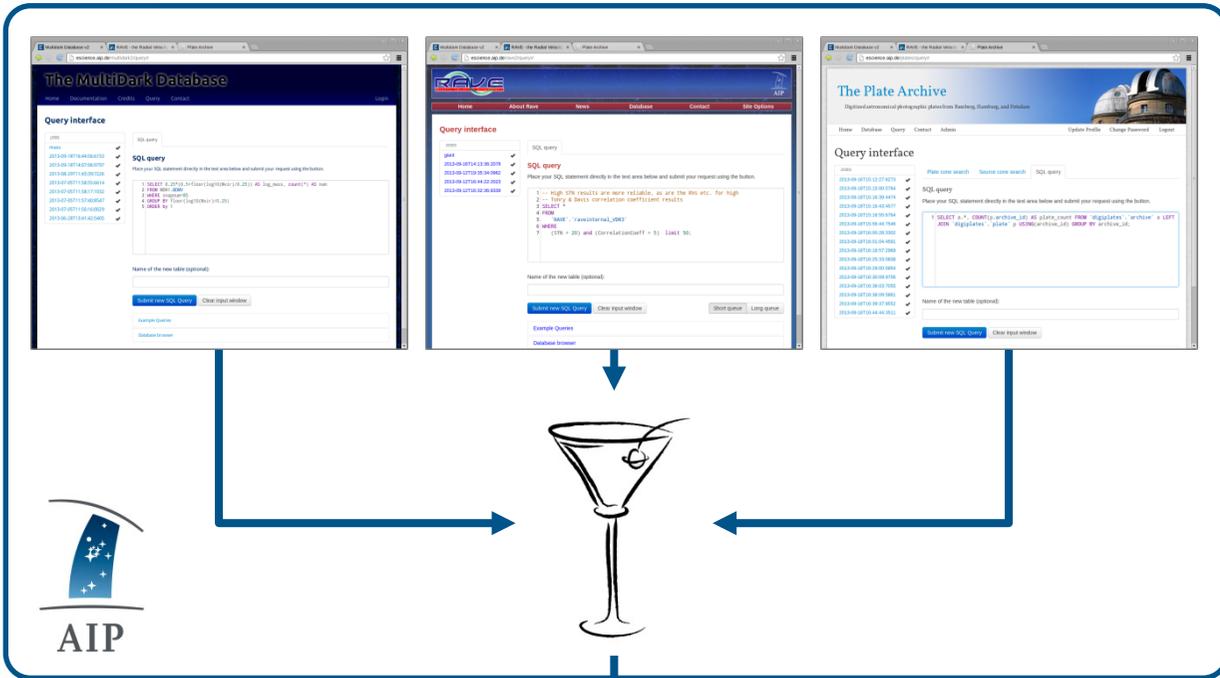
- User management (with user registration workflow)
- Contact form with message management
- Queued SQL queries including SQL query assistance
- Query result table viewer, quick plotting tool
- User database space
- Query result download (CSV, MySQL dump, VOTable, ...)
- VO compatible meta data management 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



Query interface

The image shows a collage of overlapping browser windows displaying the RAVE v2 beta query interface. The interface includes a navigation menu with links for Home, About Rave, News, Database, Contact, and Site Options. A 'Query interface' section contains a 'JOBS' list, a 'SQL query' input field, and a 'Submit new SQL Query' button. A table of data is displayed, and a scatter plot is shown with a 'Create Plot' button.

ID	RAdeg	DEdeg	Glon
9607_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	294.7319

(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

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- 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	Glom
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

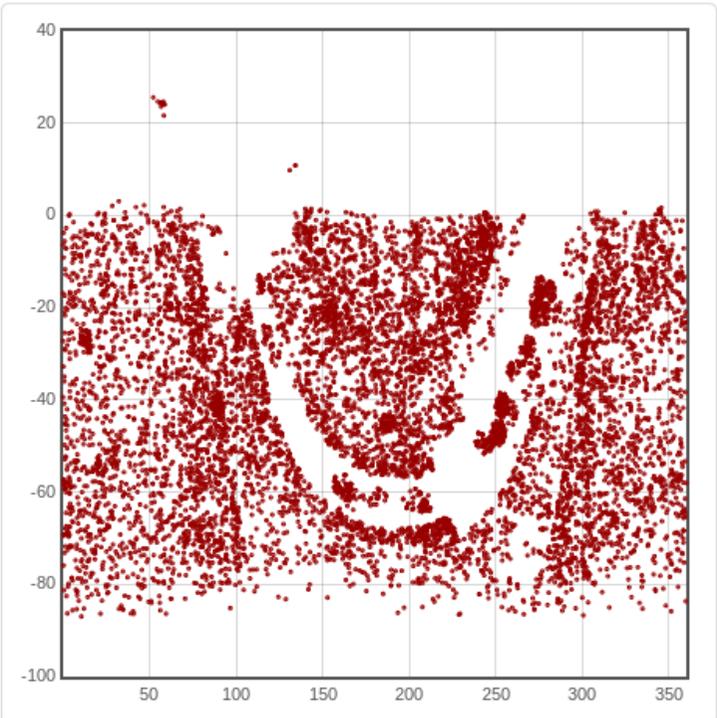
Home About Rave News Database Contact Site Options

Query interface

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- 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

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

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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>

