

Data Discovery Using the Virtual Observatory Registry



Author: F. Rothmaier

Software: a web browser of your choice, [TOPCAT](#)

The Virtual Observatory Registry (VO Registry) is a database for metadata, a place which provides description, access and contact information about so-called “resources”. A resource is a rather generic term including web pages and VO services, for example a cone search or an image access service. Since everyone can register her or his resources in the VO, the registry represents a world-wide collection of astronomy-related resource metadata.

Access to the registry is provided by the [Web Interface to the Relational Registry](#) (“WIRR”). To benefit from a VO service, our web interface has to be used with a desktop client that “speaks” SAMP, the “Simple Application Messaging Protocol”. We recommend to use [TOPCAT](#) for this purpose.

The web interface

1. Get familiar with...

- Open a **web browser** with <http://dc.g-vo.org/wirr/q/ui>. Make sure that JavaScript is enabled or at least grant the originating page execute privileges for JavaScript. Our web page provides a sidebar, a search field (top) and an info box which is also used to display the query results (bottom).
- Try to get familiar with the search form by playing a little bit around. Change the search criteria (e.g. from the free text to a waveband search), and add or remove one or several constraint lines to the search form. Click the **Run Query** button to send your query to the database.
- Re-launch your query by tightening or loosening your search criteria. Also make use of the preset conditions in the sidebar. You’ll find them below the text “Fill form for...”.

2. Learn how to find resources that...

```
* contain the term quasar either in their description or in their title
* represent searchable catalogs (i.e. cone search services) providing
  - a column that contains redshifts
  - a column that contains a photometric magnitude in the V band
```

- To retrieve resources which contain “quasar” in their description or title, use the “Text Fields match...” criterion which will do the job.
- Add a new constraint line and select “Service Capability is Cone Search”.
- The following step is a bit more tricky. Use the so-called **Unified Content Descriptor**, or short UCD, in your query. Of course, you don’t have to know the UCDs for redshifts and V band magnitudes by heart. Instead, make the [UCD Resolver](#) find the appropriate UCDs for you. On the resolver page, type “redshift” into the “Column description” field. Clicking the **Go** button will provide the correct string “src.redshift”. Repeat the game by typing something like “V band magnitude” into the text field. The desired UCD is called “phot.mag;em.opt.V”.




The screenshot shows a search interface with the following fields and values:

Text Fields	match	quasar	Info
Service Capability	is	Cone Search	Info
Column UCD	like	src.redshift	Info
Column UCD	like	phot.mag;em.opt.V	Info

At the bottom, there is a "Run Query" button and a "Show 20 items per page" dropdown menu.

3. Query the database:

- Click the **Run Query** button. All matching resources are displayed (in alphabetical order) in the box below the search form. The results show up in a tabular layout with the following table cells: resource title – resource capabilities (services) – contact info button.
- Click on the arrow in the beginning of each row to get more detailed information about a resource.

▶ Large Quasar Astrometric Catalogue 2 (LQAC-2) (Souhay+, 2012)	SCS	
▼ Magellanic Quasars Survey: QSOs behind SMC (Kozłowski+, 2011)	SCS	
Description We report the spectroscopic confirmation of 29 new, 12 plausible, and three previously known quasars behind the central -1.5deg^2 region of the Small Magellanic Cloud (SMC). These were identified in a single 2dF/AAOmega observation on the Anglo-Australian Telescope of 268 candidates selected primarily based on their mid-IR colors, along with a smaller number of optically variable sources in OGLE-II close to known X-ray sources.		
Last Update 2013-04-15		
IVOA Identifier ("ivoid") ivo://cds.vizier/j/aps/194/22		
▶ NOT GL survey of multiply imaged quasars (Jaunsen+, 1995)	SCS	

4. Use [TOPCAT](#)... and use it in the right way:

- On the bottom of the page, you find the **Connect to SAMP hub** button. If you click on that button while TOPCAT is not running, a warning will appear.
- Launch [TOPCAT](#).
- Click on **Connect to SAMP hub** again and then allow for connecting to the SAMP hub. See how the SAMP button changes to a **Tabular services** send button after the web interface has been successfully registered to the hub.
- Try to send the resource list to TOPCAT by clicking on **Tabular services**. A warning shows up saying that TOPCAT has received the list successfully but could not make use of it. To get rid of this issue, select **VO** → **Cone Search** in TOPCAT's menu. This will open the **Cone Search** window.
- Choose the registry <http://registry.euro-vo.org/services/RegistrySearch> and try again to send the resource list. This time, it should work fine.
- Select the **Magellanic Quasars Survey**. Then type "SMC" into the "Object Name" field followed by clicking on **Resolve**. For the search radius you may choose one degree. Press the **OK** button.
- TOPCAT will create a table that contains the objects matching the cone search criteria entered by you. Use TOPCAT to plot the data sample, to cross-match it with other catalogues or just do whatever you feel comfortable with.