

TOPCAT and Aladin Working Together



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Software: [TOPCAT](#), [Aladin](#)

One of the greatest achievements of the Virtual Observatory (VO) is the development of standards for how data should look like (data formats and models) and how machines are expected to exchange such data (protocols).

Two applications in the Virtual Observatory can communicate with each other by using the so-called “Simple Application Messaging Protocol”, or short “SAMP”.

This tutorial will show how tabular data can be easily transferred from [TOPCAT](#) to [Aladin](#) or the other way, and it will illustrate the benefits of this inter-client communication for VO users.

Examination of a Cluster of Galaxies

1. Search for an image of A1656

- Start Aladin and type **A1656**¹ into the textfield behind “Location”. When you press **Enter**, an image from the DSS is loaded into Aladin. Zoom out a bit using the zoom-slider from the right side panel until your image covers about 40’ (Hint: Draw a 40’ long arrow using the “dist” capability from the right side panel to check for the radius of the region being displayed.).

2. Search for catalogue data of A1656

- In Aladin’s menu click on **File** → **Load catalog** → **Surveys in Vizier...** → **SDSS-DR7**.
- In the “Server selector” window, tick “All columns” and adjust the search radius to 40’. Press **SUBMIT**.

3. Use SAMP to send data to TOPCAT

- Launch TOPCAT.
- In Aladin’s “Stack” (that’s the window on top right showing all downloaded data as a “stack of planes”) right-click with your mouse on **SDSS-DR7** and then choose **Broadcast selected tables to...** → **topcat**. If everything goes fine, your table should show up in TOPCAT after some seconds.

4. Apply filters to your sample

- In TOPCAT, display your table by clicking on **Views** → **Table Data**.
- Create a subset of your data that only contains galaxies with redshift. The first step to realise this task is to click on **Views** → **Row Subsets**, and then in the “Row Subsets” window on **Subsets** → **New subset**. Name your subset, e.g. “Galaxies with redshift”. Have a look at the table columns by using **Views** → **Column Info** from the menu.
- For the redshift, filtering is easy: **zsp>0** should do the job. For the galaxies, you have know that the column called “c1” labels the different kinds of objects in your sample. The number **3** is for galaxies.
- Now, we are ready to type **c1==3 && zsp>0** into the “Expression” textfield.

5. Send your data back to TOPCAT

- In the “Current Table Properties” box of TOPCAT’s main window, select the name of your subset in the “Row Subset” selector.
- Click on **Interop** → **Send table to...** → **Aladin** to bring your filtered catalogue back to Aladin.

¹A1656, also referred to as the “Coma Cluster”, is a large cluster of galaxies that contains over 1,000 identified galaxies.