

ISYA 2012

Exercise 7 - SIMBAD Database

Summary

In this activity you will make use of an online database of stars and galaxies called **SIMBAD** database. **SIMBAD** is the acronym for: **S**et of **I**dentifications, **M**easurements and **B**ibliography for **A**stronomical **D**ata. This database provides basic data, cross- identifications, bibliography and measurements for astronomical objects outside the solar system and contains a wealth of material –including photometric measurements, spectra, images and maps – of several million objects.

The activity

1. Startup your web browser and connect to the Internet.
2. Go to the **SIMBAD** homepage at <http://simbad.u-strasbg.fr/simbad/>
3. The Statistics panel at the middle of the page gives information about the number of objects in the database.
4. **How many names are on the database? How many objects?**
5. To start with, we are going to explore **SIMBAD** database. The main part of the SIMBAD homepage is the table with seven panels (labeled **QUERIES**, **DOCUMENTATION**, **INFORMATION**, **CONTENT**, **STATISTICS**, **ACKNOWLEDGMENT** and **BASIC SEARCH**) with some more information at bottom. Links in the each panel take you to different kinds of information.
6. The first galaxy we will look at is a spiral galaxy called **Messier 83 (M83)**, a type Sc Spiral. In the panel labeled **BASIC SEARCH** type **M83** and press **ENTER**.
7. You will get a page with the information on **M83** classified in seven sections labeled **Basic data**, **Identifiers**, **Plot & images**, **Bibliography**, **Measurements**, **External archives**, and **Notes**. We are going to explore these sections one by one.

8. **Basic data** section provide basic information (**Coordinate, redshift, magnitudes** etc.) on object **M83** and **Identifier** show the other names for **M83** in various catalogs across the
9. **Plot & Images** section provides the link to images and field charts. Type **radius = 1** in box and click on **Plot around** button to get a map or finding chart of the field around **M83** in the sky. Different objects has shown by different symbols. Click on the get the **EPS** file for this image to save current plot in Postscript format. (Note that if you left click on any symbol on the plot – a new window will open which provide you the information from **SIMBAD** on the object that you have selected.). To get the more information on the plotted objects click on get the list of object on right side of page.
10. Go back to previous page and in the same section **Plot & Images**, click on **Aladin** previewer. You will now see a page of information about available images (on left) via **Aladin** with a gray scale image of **M83** from **DSS** shown on right. On top left side of page in the **Target**, select **Color** and click on **Go** and you will get a **RGB** false color image of **M83**.
11. Go back to previous page and in the same section **Plot & Images**, click on **Aladin** applet. Assuming your PC/laptop has Java installed (most do) you should get a rotating Java symbol come up followed by the **Aladin** Screen in few mintues. Note that this loads the latest version of **Aladin**. This will show you a **DSS** image of **M83** with full functionality of **Aladin**. A full discussion of all the parameters is beyond this exercise.
12. Go back to previous page. Section **References** provides information related to astronomical literature for **M83**. **SIMBAD** bibliographic survey began in **1950** for stars (at least bright stars) and in **1983** for all other objects (outside the solar system). There are 1320 articles between 1850 and 2010 for **M83**. Click on display to see summary of each article. The abstract from **CDS** or **ADS** with links on cited objects is shown here also.
13. Go back to previous page. Section **Measurements** provides information related to measurements (such as distance, redshift, radial velocity etc.) done previously by various observations for **M83** with reference to article. Click on **display all measurements** to see tables of the available measurements/data for various observed quantity with references to article.

14. Last section is External archives which provides the information and archived data for all the observations made by various space as well as ground based telescopes for **M83**. Click on **HEASARC - High-Energy Astrophysics Science Archive Research Center** to explore the archive data available for **M83**. This will lead to web interface of **HEASARC**. Click on Start search which will show the search results summary of all archive data for **M83** in **HEASARC**. **How many HEASARC mission are there? How many other mission and catalogs are there for M83?**

This exercise has introduced you to some features of the SIMBAD database. You can repeat this exercise on your own favorite objects. You could try M13 (globular cluster), M45 (Pleiades), M42 (Orion Nebula and M17, M22 or M27.