

How do I...

Get a spectrum of my favorite object?

The SDSS [Catalog Archive Server \(CAS\)](#) has images, spectra, and catalog data for every one of the objects in DR7. This tutorial gives instructions for how to use the CAS to find an SDSS spectrum of a specified object if you know the RA and Dec.

If you don't know the RA and Dec, use an external name resolver; here are [instructions for using SIMBAD to find coordinates](#).

Find your object ([open Navigate in new window](#))

1. Go to the CAS's [Navigate](#) tool (opens in a new window). To access the tool from the CAS main page, look under **Advanced Tools**. (To access the Navigate tool from the public main page, look under **Visual Tools**).
2. Look at the **ra** and **dec** input boxes near the top left of the tool. Enter the coordinates of your object. You may enter them either as decimal degrees or as HMS/DMS. If you enter them as HMS/DMS, use the format "hh:mm:ss ±dd:mm:ss", and be sure to include seconds even if they are 00. (You may have to re-format the results you copied from SIMBAD).
3. Click the blue **Get Image** button. You will see an interactive image of your object in the center panel.
4. Find your object. Click the directional buttons (**NWSE**) to pan the image, and click on the **+ or – magnifying glasses** to zoom in or out within the image.
5. Under **Drawing Options**, click on the *Objects with Spectra* checkbox to mark which objects have SDSS spectra. When that option is selected, a red square will appear on all objects for which the SDSS has measured a spectrum.
6. Optionally, click on one or more of the other Drawing Options checkboxes in the left-hand panel to redraw the image with various features selected.

Here is a list of what each of the drawing options does:

Option	Meaning
Grid	Draw a N-S, E-W grid through the center
Label	Draw the name, scale, ra, and dec on image
PhotoObj	Draw a small blue circle around each recognized object
SpecObj	Draw a small red square around each object with a spectrum

Target	Draw a small yellow cross-hair around each object targeted for spectroscopy
Outline	Draw the outline (in green) of each object
BoundingBox	Draw the bounding box (in pink) of each object
Fields	Draw the outline of each imaging field (in gray)
Masks	Draw the outline (in orange) of each mask considered to be important
Plates	Draw the outline of each spectral plate (in pink)
Invert	Invert the image (display as black-on-white)

- Click on any object that is marked with a red square. You will see the object's data in the right-hand panel. The data displayed are the object's ra and dec, and the object's magnitudes in the SDSS's five filters (*u, g, r, i, z*). You will also see a close-up image of the object.
- Click **Add to Notes** to add the selected object to your online notebook. Click **Show Notes** to show the notebook. From your notebook, you can click **Navigate** to return to the Navigate tool. Click **Explore** to go to the Explore tool, which is described below. You can also **Export** the notebook to your computer.

Explore the Object ([open Explore in new window](#))

- Click the **Explore** link in the right panel of the Navigate tool to go to the [Explore](#) tool (opens in a new window). To access the tool from the astronomers' main page, look under **Advanced Tools**. To access the tool from the public main page, look under **Visual Tools**.
- At the top of the Explore tool window, you will see the object's identifier, ra and dec, and SDSS long object ID.
- Below the name and position data, you will see a close-up image of the object, with a scale. The object's photometric data is to the right of the image. The magnitudes (*u, g, r, i, z*) are in the first row.
- The Explore tool will show the spectrum below the photometric data. Click on the picture of the spectrum to see a larger view. Spectral lines are marked on the spectrum by green and pink dotted lines, as well as labels. The redshift and error are shown at the bottom of the spectrum.
- To see the spectrum as a FITS file, click on the **FITS** link below the *SpecObj* heading in the left-hand menu. Right-click on the **Download** link to download the spectrum. It will be a FITS file with 4 rows and about 4,000 columns. See the guide to [Reading individual spectrum files](#) (link opens in a new window) for more information.
- You can view and analyze the spectrum using the [SpecView](#) applet (link opens in a new window) developed by the Space Telescope Science Institute.