

## General Advice on using SkyServer and SDSS Catalog Data

1. For astronomical research, use the astronomers' interface to SkyServer rather than the public interface. You will have access to dedicated web servers that allow you to run queries that take longer and return more objects. To get to the astronomers' interface from the main page, click on the *For Astronomers* link.
2. An excellent to learn SQL is to modify pre-existing SQL queries. Look at the [Sample SQL Queries](#) on SkyServer. There is a link to them under the Help menu.
3. Use the [Image List](#) tool (opens in a new window) as a sanity check on your queries. Click on **Use query to fill form** in the left panel, then enter your query and click **Submit**. A table of results will appear; click **Send to List**. You will see thumbnail images of all the objects that matched your query. You can click on the thumbnails to go to the Navigate tool, or on the object names to go to the Explore tool.

Remember that Image List queries are limited to 1,000 objects, and that the SELECT block must have the form **SELECT *name*, ra, dec**, where *name* can be anything you want. For example, this query uses the SDSS redshift as a name:

```
SELECT z as name, ra, dec
FROM specPhoto
WHERE z BETWEEN 0.01 and 0.05
```

4. If you're not sure how many objects a query is going to return, it's always a good idea to first do a "count" query first. A count query will return only the number of objects that match the query, and will not return the actual data. This will give you an idea of how long the query will take, so you don't find yourself waiting a lot longer than you expected to. Here is an example of such a query:

```
SELECT count(*)
FROM galaxy
WHERE g < 18
```

5. If a query takes much longer to run than you think it should, you should try it again later to see if the problem is load on the server. If it still runs slowly, look at the **Optimizing Queries** section of SkyServer's guide [Using SQL with SkyServer](#).

6. Be sure to exclude invalid values (unset or uncalculated quantities) as described in the **Excluding Invalid Data Values** section of SkyServer's [Using SQL with SkyServer](#). For example, the following query will exclude invalid magnitude data for the u magnitude:

```
SELECT ra,dec,u,err_u FROM PhotoObj
WHERE
  ra BETWEEN 180 AND 181
  AND dec BETWEEN -0.5 AND 0.5
  AND u > -9999 AND u < 20.0      -- instead of just "u < 20.0"
  AND err_u > -1000 AND err_u < 0.1 -- or err_u > -1000 AND err_u < 0.1
```

7. If you are running a query for photometric data, and you are searching for common parameters, consider using the *PhotoTag* table instead of the *PhotoObj* view. PhotoTag contains all the objects that PhotoObj contains, but has many fewer parameters for each object. Your query will run much faster. But remember that in PhotoTag, magnitudes are not referred to as [u, g, r, i, z], but as modelMag\_[u, g, r, i, z].
8. If your query returns a lot of output (more than a few thousand objects), it is generally not a good idea to let the browser render the output by selecting the *HTML* output format (default). You can try using the *CSV* output format instead. However, you're much better off using one of the other interfaces (Emacs, sqlcl or [CasJobs](#) - opens in new window) to get large numbers of objects.
9. If you know you want to search for both photometric and spectroscopic objects, search on the *SpecPhoto* view. In SpecPhoto, the redshift is referred to as *z* and the magnitudes are referred to as *modelmag\_x* (where x is the waveband). Here is a query to get magnitudes and redshifts from specPhoto:

```
SELECT top 100 modelmag_u, modelmag_g, modelmag_r, modelmag_i, modelmag_z, z
FROM specPhoto
WHERE zConf > 0.35
```

10. You can not make a graph with Excel in a CSV file. You must first save the file as an Excel XLS file.