

PHY517 / AST443: Observational Techniques

Tutorial 5: Source Extractor

Wiki pages: *SExtractor*, *ds9*, *topcat*

In the homework, you determined the flux from a star “by hand” with ds9 region files. In practice, astronomers usually use automated software for this, in particular **Source Extractor**. When you pass **Source Extractor** an image, it will find all the objects in it, and return a table of their properties (e.g. position and flux).

For the following, use “your” science image from Tutorial 4. Make sure it has been calibrated (with the darks and flats you created before) and the astrometric solution has been written into the header.

1. Read the *SExtractor* wiki page.
2. Copy over the default configuration files as described under “Set-Up”.
3. Open the Source Extractor configuration file. Adjust the **GAIN** keyword, if necessary.
4. Run Source Extractor on your science image to detect objects.
5. Overlay your object catalog on the image in ds9. You can do this either within ds9 directly (see the ds9 wiki page), or from topcat (see the topcat wiki page).
6. Do you detect all stars that you identify by eye? Is your catalog free of “spurious” detections? If the answer to either of these is “no”, change some of the Source Extractor parameters, in particular the analysis threshold (**ANALYSIS_THRESH**), and repeat this step.
7. Identify the star at (300.236734, +22.658612); this is the same star as in the last homework. You can do this in ds9 by selecting “cat” in the “edit” menu: double-clicking a catalog symbol on the image will highlight the corresponding entry in the catalog table. Read its flux and uncertainty, and compare these to your own estimates. What could cause any discrepancies?