

NAME: _____

DATE: _____

We will continue with the analysis of the h-chi data. This lab assumes that you have the data reduced and ready for photometric analysis. If that is not the case, go back and finish problem set 2/6 first.

1. How do we define the apparent magnitude in astronomy? Does this quantity provide information about flux in absolute or relative units?
2. What is the difference between instrumental, apparent and absolute magnitude? What are we trying to measure when doing photometry on CCD images?
3. What do we mean when we say that conditions are “photometric” or “all-sky”?
4. What do we mean when we say that we need to “remove the sky”?
5. Explain the logic behind aperture photometry.
6. For quick-look photometry, we will use `imexamine`. There is a “hidden” IRAF parameter list `rimexamine` that collects parameters related to radial profile plots and aperture sums. Dig into the help file of `imexamine` and summarize of 'r' and 'a' keys.

7. Use `imexamine`'s 'a' key on the stars near pixels (3143, 957) and (3575, 1001). Write down the output and explain it. How much brighter is one star compared to the other?

8. Using `imexamine`'s 'r' key, determine FWHM of several stars and write them here. A rule of thumb is to choose the aperture radius for photometry to be ~ 3 times larger.

9. Load aperture photometry tasks (`digiphot`, `apphot`) and set `qphot` parameters accordingly. Ignore the `qphot` warning about the overlay. Hit '?' and read through the options. Note the most useful keystrokes and what they do.

10. Find the two stars we examined with `imexamine` before, center the cursor on the fainter one and press 'i' for interactive photometry mode. Set the extraction box size to 25. Enter the interactive photometry mode by pressing 'v' in the graphical screen. Perform custom aperture photometry for three reasonable apertures and list them here. Do the same for the other star.

11. Select 5 stars of your choice **in addition** to the two stars from before. Run `qphot` interactively on them and save the output. Use `txdump` to report the magnitudes you obtained.

12. Plot magnitude against magnitude error. What trend can you see?