AST 2134: OBSERVATIONAL LAB 2 PROBLEM SET 3/5 SPRING 2017

NAME: _____ **DATE:** _____

We will continue with the analysis of the M53 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 the problem set 2/5 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 observing conditions are “photometric”?

4. What do we mean when we say that we need to “remove the sky”?

5. When is PSF photometry a better choice to aperture photometry?

6. Outline the logical steps of PSF photometry. No IRAF details, only logic.

7. Check (and add if necessary) header keyword/value pairs for gain, readout noise, min and max good data value, exposure time, filter id, airmass, observation date. Recap here what keyword names you used.

8. Run `daoedit` and set up all important parameters in `datapars`, `centerpars`, `fitskypars`, `photpars` and `daopars`. Explain your choices and list the values you used.

9. Run `daofind` and `phot` to get initial photometry results for the B band. List and explain the relevant parameters you used. Do not forget to use `tvmark` to visually inspect the results!

10. Run `pstselect` to create a PSF target list. Then run `psf` and go through the list and decide what stars you will retain for the PSF lookup table. Explain the procedure and the rationale.

11. Run `allstar` to do PSF photometry. How does it compare to aperture photometry?

12. Plot magnitude against magnitude error. What trend can you see? Hint: `txdump`, `psort` and `pselect` are your friends.