AST 2134: OBSERVATIONAL LAB 2 **PROBLEM SET 2/6** **SPRING 2016**

NAME: _____ **DATE:** _____

Download the `h_chi_raw.tgz` *tarball from the course webpage onto your computer. Unpack it using* `tar xvzf h_chi_raw.tgz`. *Then answer the following questions.*

1. Determine the contents of every subdirectory by running the usual diagnostic tools. Check image sizes in pixels, exposure times, object types, coordinates, etc. Recap what you learned.

2. You probably noticed that object names for calibration shots were not set. We will fix that by running the task `hedit`. Explain what you did and how you did it.

3. Display an image file (tweak stdimage if necessary). What is the range of pixels (x and y) in the overscan region? What is the range of pixels (x and y) that contain useful data?

4. Using `implot`, determine the median, mean and rms of the overscan region.

5. Now that you are convinced that the bias is very non-linear in one direction and okay in the other direction, which one would you opt to correct and why?

6. We will not be fixing the bias using the overscan region; instead, we will use our bias exposures. Why is that a better option?

7. To set up `ccdproc`, we needed to tweak other header keywords. List all of them here, and how you tweaked them.

8. Running `zerocombine`, we have a choice of using the average or the median for combining images; which one is more suitable and why?

9. Take a closer look at the master bias image; does it make sense what you see? What did we achieve by combining several bias fields? (hint: use `imstat` to make a strong argument).

10. After running `ccdproc`, display the bias-corrected object image and comment on what you see. Do the same for the bias-corrected dark image.

11. Running `darkcombine` and `flatcombine`, we have a choice of using the average or the median for combining images; which one is more suitable and why?

12. After running `ccdproc`, display the fully corrected object image and comment on what you see.