

## Observational laboratory, Assignment 4

Due date: April 12, 2017

**Important word of caution:** this is a long lab, you will need quite some time to do it. So do not procrastinate. You have 7 days to complete the assignment, and you will need quite a few hours, especially if (when) things go wrong. You have been cautioned.

In this assignment we will produce a color-magnitude diagram of the globular cluster you observed during Scott's reign of ObLab.

1. Reduce the data. Since you already provided me with a detailed reduction report last week, I do not need to see all the details. Limit the discussion on data reduction to 2 pages. Be sure to address any snags you may have hit. Most importantly, provide *reduced* image statistics to convince me (and yourself) that you did a good job reducing the data.
2. Run aperture photometry on your images and plot instrumental magnitude vs. magnitude error.
3. Fit a point spread function (psf) to the images and plot it. Is a single psf suitable for both (all) filters? Is a constant psf across the frame suitable? I do not know the answer to this, so whatever your conclusions, be sure to argue them.
4. Be *extra* careful to match up the correct sources in B and V magnitude tables and plot one against the other. What do you see?
5. Plot a color-magnitude diagram. Comment on its significance.
6. *Extra credit:* The color-magnitude diagram can be used to estimate the age of the globular cluster. Explain how that is done and do it.