

Final Laboratory Project

The final exam period is scheduled for the week of May 12 – during our “regular class meeting time”. I guess nominally, that would be Friday from 15:00-17:00, but sometimes we meet on Mondays, so I am up for either date, as a group you can pick. The lab write up will be due at the time of the final exam (to give you the maximum number of nights to get observations). While we will get some time on the CCD camera, the lab will involve use of the photometer only, so that you can focus on getting science out rather than struggling too much with data reductions.

The lab will involve getting data on one of the variable stars listed below. We will discuss all the pros and cons of each target in class. You will need to plan the observations, collect the observations, and write up the observations, as detailed below.

| Name | α | δ | Epoch | VMag | Type | Per |
|-------------|------------|-------------|--------|-----------------|--------------|-----------|
| R CMa | 07:19:28.2 | -16:23:42.9 | 2000.0 | 5.7-6.3 | E | 1.1359 dy |
| ι Boo | 14:16:09.9 | +51:22:02.0 | 2000.0 | 4.75 \pm 0.01 | δ Sct | 40 min |
| 44,i Boo | 15:03:47.3 | +47:39:14.6 | 2000.0 | 5.8-6.4 | WUMa | 0.27 dy |
| V703 Sco | 17:42:16.8 | -32:31:23.6 | 2000.0 | 7.8-8.5 | RR Lyr | 0.115 dy |

- **Observing planning** – Plan the observations (*e.g.* which part of the night is the best for the observing, and what calendar dates work with respect to moon. Write up this justification in a paragraph to be included in the lab report. The plans should include a good finder chart, and the times during which the object will be visible during the night.
- **Data collection** – Collect the data on the object and a comparison star, and enter this into your excel spreadsheet for analysis. Include the excel spreadsheet as part of the lab write up.
- **Data Analysis** – As was done in homework 4, compute the magnitudes and errors for the data with the full error analysis we used in class. Compute a differential light curve using one or more comparison stars. Try to analyse the light curve to find a rotation period or eclipsing period.
- **Lab write up** – You are expected to write this up as a 4-5 page paper or lab write up. The sections which would be appropriate to include are the following:
 1. Abstract – this is a short paragraph summarizing what you did and what you found.
 2. Introduction – Some background information about your object. You can search SIMBAD under your object, and show the reference lists and read some of those papers to get background information (*e.g.* such things as what type of star the object is, what the brightness is, period, and any other interesting history about the object.
 3. Observations – Describe the observing. Date, time start and end, where you did this, who was with you and what the conditions were like and any other relevant information. Refer to your spreadsheet as a table of the observations.
 4. Data Reduction and Analysis – what you did to turn the raw data into final numbers. Show a plot of brightness versus time for your final differential magnitudes. Discuss how you found the period of the object.
 5. Conclusions – about 1 paragraph on what you found.
 6. References