**PHOTOELECTRIC PHOTOMETRY OF PLEIADES (CLEA LAB Written 7/30/15)**

1. Log on to computer, choose COSAM class and go to COSAM Software>Physics>Astrnomy . Click on VIREO. Login to VIREO and select Photoelectric Photometry of Pleiades Exercise.

2. On Telescopes menu select 0.4m telescope. Open dome and turn on telescope control panel.

3. Due to the Earth’s rotation the stars will start moving. Which way do they move (left, right,up,down)? To stop movement turn on Tracking and adjust Slew speed to 16.

4. Under View on control select Telescope. Under Instrument select Photometer and click on Access.

5. In Photometer control box Object should be Sky. If red circle is on a star use NEWS buttons to move to empty section of sky. Put Filter slide on B (blue) and click start. When counting stops place Filter slide on V (visual) and click start. Close box.

6. In Slew menu select first star on Observation Hot List. Click to move telescope to this star. Red circle should be around star. Click on Access. In photometer control box change Reading to object. Change Filter slide to B. Click to start counting. When counting is complete record B filter magnitude on table provided. Record all magnitudes to 0.01 magnitudes. Change Filter slide to V. Choose No in any box that pops up asking if you want to record data. Count and record V magnitude in table. Close photometer control box. .

7. Repeat step 6 as needed to do all 24 items on the Observation Hot List.

8. Calculate B-V in table.

9. Plot graph of your data with V vertical and B-V horizontal. This is your HR Diagram for the Pleiades cluster. Are most of the stars on the Main Sequence or in the Giant area of HR diagram?

10. For the first 5 objects in the table go to <http://www.uni.edu/morgans/stars/b_v.html> and use B-V to get temperature. Record on report form. See note below. How does this compare with Sun (6,000K) (larger, about same, lower)?

11. Estimate distance to 5 Pleiades stars using data in report form. Calculate D in parsecs using logD = (m-M+5)/5 and D = logD. Record on report form. Calculate and record average distance. There is a dispute about the distance to the Pleiades. Which distance is your result closest to? A) Voyager 4.5 distance B) Hipparchus satellite distance C) all lower than Hipparchus distance D) all larger than Voyager distance?

Note: If website in step 10 is missing or not working calculate temperature from Wikipedia formula relating B-V and T.( <https://en.wikipedia.org/wiki/Color_index>)