

Physics 2060/4060
Observing Exercise 5

UVBRI Filters

Each individual should perform the following activities.

1. **Setup.** Obtain a set of BVRI filters from the TA. Carefully remove the LRGB filters from the Meade DSI filter holder. Carefully install the BVRI filters into the holder. Take note of the filters so that you know which filter is in use.
2. **Measure Color Index of individual stars.** Measure the intensity of individual stars through B and V and clear filters. Mintaka and Wasat should be among five stars that you choose. Be sure to note each star's coordinates in RA and DEC as well as elevation and azimuth. Compare each star's luminosity as measured through the clear and V filters to the star's apparent magnitude as noted in a star catalog. Note that differences in exposure times should be taken into account. Also note that atmospheric extinction of light becomes important for stars at low elevations. Compare the value of B-V that you measured to the star's color index from the catalogs as well.
3. **(PHYS4060 only) Hertzsprung-Russel Diagram: Measure Color Index of stars in globular cluster.** Obtain exposures through the clear, B and V filters of a globular cluster. Use AIP for windows software to determine individual star's luminosities to construct a table for each distinguishable star for each filter. Construct an H-R diagram by plotting the V luminosity against the color index B-V. A good cluster to choose is the Pleiades cluster (if it is up).
4. **Write-up of activities.** Write a document describing the procedures used in the activities above. Include data tables and information obtained from the star catalogs. (PHYS4060 only) Include the plot of your Hertzsprung-Russel diagram. Identify the main sequence in your H-R diagram. Estimate the age of the globular cluster.