

Fundamentals of Stargazing – Month 6 Worksheet

Project #1: The parallax of the star Alpha Centauri as measured from Earth is 0.769". What would be the parallax of the same star measure from Jupiter, which is 5.2 astronomical units from the Sun (or 5.2x the Earth-Sun distance)?

Project #2: Review and understand the meaning of “proper motion” and “radial velocity” on page 4-5 of the “Science of Astronomy” section. What does it mean if a star, from our point of view, has a radial velocity but no proper motion? What does it mean if a star has no radial velocity but does have a proper motion?

Project #3: If you have a telescope with 1000 mm focal length and f/5 focal ratio, and use it with an eyepiece of 20 mm focal length and a 68° apparent field of view, calculate the following quantities:

- The magnification of the eyepiece with the telescope
- The exit pupil (in mm) of the eyepiece when used with this telescope
- The true field of view of the eyepiece with the telescope (in degrees)

Project #4: If conditions are favorable, watch some of the Perseid meteor shower, which peaks on August 12 and is still respectably active for a few days on either side of the peak. Get a full-sky star map and try to sketch the path of each meteor you see relative to the background stars. Trace the path of all meteors back to see if you can find the radiant point of the Perseid meteor shower. A few will not be related to the Perseids, but most meteors should trace their path back to a point in northern Perseus near the border of Cassiopeia. Note: You can get a free all-sky map here: <http://www.skymaps.com/downloads.html>

Project #5: What’s the difference between a UHC filter and an OIII filter (see “Observing”, p. 10)

Project #6: See as many deep-sky sights on this month’s tour as possible; this is one of the best times of year for stargazing. Some of the most appealing objects on this month’s tour are:

- The Lagoon and Trifid Nebula (M8 and M20, respectively)
- The Little Sagittarius Star Cloud (M24)
- The Wild Duck star cluster (M11)
- The “Coathanger” asterism
- The Veil Nebula (a challenging object that requires dark sky and a wide field of view).

Also inspect the band of the Milky Way from a dark location on a moonless night and look for the ribs of dark nebulosity superimposed on the starry background. Much of this dark nebulosity is caused by clouds of cold dust that lie between us and the arms of the Milky Way.