

Astronomy 350, Autumn 2002  
Lab 1: Visual Observing with the 12-inch Meade Telescope  
Wed, 2002 October 2

Pre-Lab Exercise

The first question any observer planning an observing session needs to ask is “what’s up tonight”. For Lab 1, we want to look at “interesting” objects within reach of our 12-inch telescope, which is located in the middle of light-polluted Columbus, Ohio.

The most popular list of interesting telescopic objects is the Messier Catalog. French astronomer Charles Messier (1730-1817) was a comet hunter, and compiled a list of nearly 100 diffuse objects that might be confused with comets. Much of this work was done using a 6-inch refracting telescope.

The pre-lab exercise has two parts:

1. Determine which of the Messier objects are observable between 7:30 and 9:30pm EDT on 2002 October 2. A table of Messier objects is available on the class web page at <http://www.astronomy.ohio-state.edu/~pogge/Ast350/Data/messier.html>
2. Pick 5 targets out of the “observable” list that you would personally like to observe. Given that we have 15 students, we’ll reduce this to 1 target via a lottery process.

For this exercise, “observable” will mean that the object  $>30^\circ$  above the horizon at observation time.

Proceed by answering the following questions:

1. For what declinations do objects never get more than  $30^\circ$  above the horizon as seen from the latitude of Columbus? This sets the declination limit (i.e., we can only consider objects north of this declination to be minimally observable) for the site. Eliminate all Messier objects from your list that are south of this declination limit.
2. What is the approximate (to the nearest half-hour) Sidereal Time at 7:30 and 9:30 pm EDT on 2002 October 2?
3. Eliminate all targets with hour angle ( $HA = LST - \alpha$ )  $< 3$  hours. Strictly speaking this restriction only applies to objects on the celestial equator, so if your target has  $\delta < -10^\circ$ , make the HA limit  $< 2^h$ , and  $HA < 4^h$  for objects with  $\delta > +30^\circ$ . You can overrun the limits by  $15^m$ .
4. From this list of observable Messier objects, pick the 5 you most want to observe. Send this list by email to Prof. Pogge ([pogge@astronomy.ohio-state.edu](mailto:pogge@astronomy.ohio-state.edu)) by 5pm Wednesday, October 2. Your actual target for the night will be assigned to you by lottery.

Lab Exercise

Weather permitting, observing will be 7:30-9:30pm 2002 October 2 in the Smith Lab observatory.

Using the telescope, search for and find your Messier object. Answer the following questions in your writeup:

1. Did you actually find your target (i.e., was it actually discernable in the eyepiece, assuming we were at the correct celestial coordinates)?

2. Find an image of your target using the Digitized Sky Survey. Did it look anything like this in the eyepiece of the telescope? If different, how was it different?

### Rainy-Night Lab

If weather does not permit on October 2, we will defer the observing phases of this lab until October 9.

The lab time instead will be used to begin instruction in the use of the lab's Linux computers.