

# TELESCOPE OBSERVING ACTIVITY

**SYNOPSIS:** You will view and sketch 3 different astronomical objects through the SBO telescopes.

**EQUIPMENT:** This assignment, face mask, pencil, colored pencils, composition notebook, and observatory telescopes. If you are observing remotely, you will need Zoom.

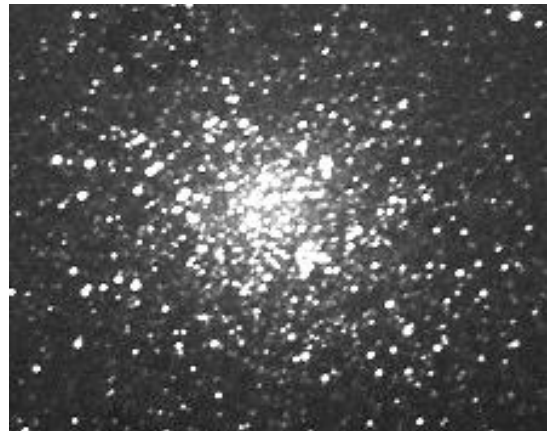
Each student will have the option of completing the assignment in-person or remotely. To begin, sign up for an observing time in Canvas: Click on the “People” tab on the left-hand toolbar, click “Groups”, select “Telescope Observing Activity” and then self-assign yourself to a desired observing night.

- If observing in-person, dress warmly - the observing deck is not heated. Arrive at SBO (on the CU Boulder campus) at the start time (please do not be late, or you will miss your chance to observe). A telescope operator will greet you at the front door of the SBO and lead you to the telescopes.
- If observing remotely, after logging into <https://cuboulder.zoom.us>, follow this link at the start time: <https://cuboulder.zoom.us/j/97136075734>. You may need to wait a few minutes before the telescope operator invites you to join the session, so please be patient.

The two main SBO observing telescopes (twin 20-inch telescopes) are both operated by computer. The user may tell the computer to point at, or the observer may specify the coordinates at which the telescope should point. Celestial objects – Solar System objects or not – are easily selected from the catalog.

Your telescope operator may point a telescope to at *least* one of each of the following different types of celestial objects (provided that weather cooperates, and the appropriate objects are visible in the sky at the time). Distinguishing characteristics to look for have been included in italics.

- ❑ **Planets.** *Color, surface or atmospheric variability, phase, moons (satellites) that are gravitationally bound to the planet, shadows, rings.*
- ❑ **The Moon.** *Surface feature variability, terminator.*
- ❑ **Double or multiple stars.** *Separation of the stars, relative brightness, orientation, and color of each component.*
- ❑ **Open clusters.** *Distribution, concentration, and relative brightness and color of the stars.*
- ❑ **Globular clusters.** *Shape, symmetry, and central condensation of stars.*
- ❑ **Diffuse nebulae.** *Shape, intensity, color, possible association with stars or clusters.*
- ❑ **Planetary nebulae.** *Shape (ring, circular, oblong, etc.), size, possible central star visible.*



□ **Galaxies.** *Type (spiral, elliptical, irregular), components (nucleus, arms), shape and size.*

1. For each of the three celestial objects that you observe:
  - a) Record the:
    - Object type (from list above)
    - Object name (given by astronomers)
    - Date/time you observed it
    - Weather conditions (2 – 3 sentences)
  - b) Observe the screen that projects the resulting image from the telescope. Take your time; the longer you look, the more detail you will be able to see. Using colored pencils, carefully sketch the object, using the circle on the observing form to represent the view of the screen. Represent all the italicized features of the object that you can see.
  - c) Express your own enthusiasm or disappointment in the view!
2. Ask the telescope operator one open-ended question about what you are viewing or the operation of the telescopes. By open-ended, we mean a question that does not lead to a single word response, e.g., “Yes/No.” Try, “Can you tell us about how/why...”
  - a) Record your question.
  - b) Record the telescope operator’s response.
3. Take a picture of your responses to 1 a) – c) and 2 a) and b). Submit your responses to Canvas under the assignment titled “Telescope Observing Activity.”