

Name(s): _____

Date: _____ Course/Section: _____

Grade: _____

Introduction to Telescopes

Objectives:

Students will study telescope optics and assemble a simple telescope. Students will also learn how to set up and properly align a tripod-mounted telescope for nighttime viewing.

Checklist:

- Complete the pre-lab quiz with your team (if required).**
- Compile a list of resources you expect to use in the lab.**
- Work with your team to complete the lab exercises and activities.**
- Record your results and mark which resources you used.**
- Share and discuss your results with the rest of the class.**
- Determine if your team's answers are reasonable.**
- Submit an observation request for next week (if required).**

Pre-Lab Quiz

Record your group's answers to each question, along with your reasoning. These concepts will be relevant later in this lab exercise.

1.

2.

3.

4.

Part 1: The Galileoscope

1. What are some of the differences between refracting and reflecting telescopes? (Drawing a diagram may be helpful.)

8. The telescope with the Galilean eyepiece has a magnification of 17. Based on your observations, what is the magnification of the telescope with the Modern eyepiece? What about the Barlow eyepiece?

9. Using the observed magnifications, calculate the focal length of the Galilean, Modern, and Barlow eyepieces.

Eyepiece	Focal length in m
Galilean	
Modern	
Barlow	

10. Compare your observed magnifications with the real magnifications as given by the TA. How accurate were you?

Part 2: Exploring the Sky at Different Wavelengths

1. Look at the plane of our galaxy at each wavelength. Describe how it changes and make educated guesses as to why it is changing or what is causing the changes.

2. In what constellation is the center of our galaxy located?

3. Locate the center of our galaxy and explore how it looks in different wavelengths. Draw a diagram of the central region of the Milky Way and label any interesting features you find as you change wavelengths.

4. Research and briefly describe what Fermi Bubbles are. Using the Star Walk app, at what wavelengths do you observe the Fermi Bubbles?

5. Research what telescope(s), either ground based or in space, you would use to make observations at each wavelength. Be sure to list telescopes that are currently or soon to be in operation. You may also find multiple telescopes that observe similar regimes. List as many as you can find.