

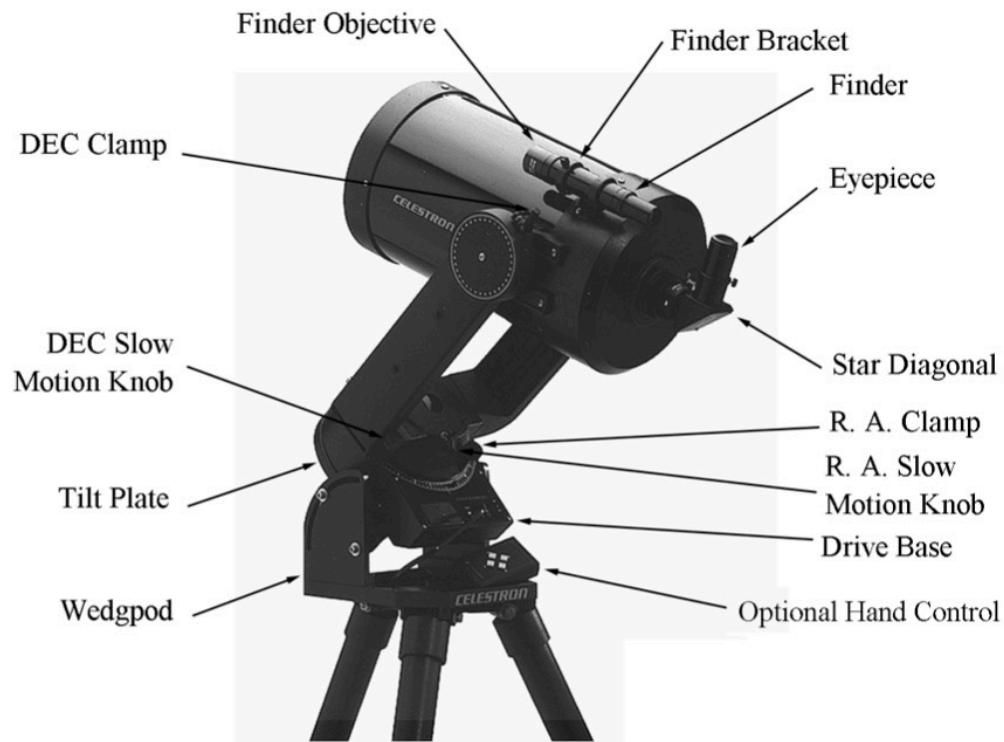
## Outdoor Laboratory: Telescope Familiarization

### Introduction

In this lab, you will become familiar with the operation and various parts of the 8" Schmidt-Cassegrain telescope and your instructor will help guide you through the setup, pointing and calibration processes.

### Procedure

1. Setup the telescope as demonstrated by your instructor and become familiar with the different parts of the telescope. Note that the "Finder" is commonly referred to as the "Finder Scope".



### \*\*\* Important \*\*\*

- Never turn the RA Slow Motion Knob when the RA Clamp is engaged.
- Never attempt to move the telescope in right ascension when the RA Clamp is engaged.
- Never attempt to move the telescope in declination when the DEC Clamp is engaged.
- Never use the DEC Slow Motion Knob when looking through the Finder Scope.

## Aligning the Telescope to a Bright Star

2. Your instructor will demonstrate how to point the telescope. Practice pointing and centering objects in the eyepiece. Due to regular use, the finder scope may not be properly aligned (centered). If not, let your instructor know so that it can be adjusted before proceeding.
3. Center a bright star, known as a *guide star*, in the eyepiece. It is important that the star be as centered as possible. Your instructor may have you point to a specific guide star. Lock both the *RA Clamp* and the *DEC Clamp*.
4. Make sure the declination setting circle on your telescope has the correct reading for the guide star you have chosen. Have your instructor verify that you pointed at the correct guide star and that the setting circle reads the correct declination before proceeding.
5. Always use the RA marks along the inner track of the setting circle. Rotate the RA setting circle until the proper coordinates of the guide star line up with the "bulls eye" indicator mark located at the base of the fork arms. There is a mark near the RA slow motion knob and one on the opposite side. Use whichever is most convenient for you. The RA setting circle has a short tick mark every five minutes of RA. The longer tick marks are 15 minute intervals. The hour tick marks are labeled.
6. Have your instructor verify that you have adjusted the RA setting circle correctly before proceeding. Once you have aligned the telescope, do not move the RA setting circle! If you do move it, you will have to re-align to your guide star.

## Using the Setting Circles

Your instructor will supply you with the coordinates of a target you are to find using the setting circles on the telescope. Once you have the coordinates, follow the steps below.

7. Loosen the DEC clamp and move the telescope in declination until the indicator points at the correct declination of the target. Tighten the DEC clamp.
8. Loosen the RA clamp and move the telescope in RA until the "bulls eye" indicator mark lines up with the correct RA of the target. Be careful not to move the RA setting circle!
9. The target should appear somewhere in the finder scope. While looking through the finder scope, center the target in the crosshairs by carefully loosening the RA and DEC clamps and moving the telescope until it is centered. Most students find it easier to move each axis one at a time until the target is centered.
10. If the finder scope was properly aligned and you performed an accurate alignment with the guide star, the target should be visible in the eyepiece. Use the focus knob to adjust the focus for your eye.
11. Your instructor will let you know of other targets to observe. For each object, spend some time observing it. Use the form(s) below and make a note of the constellation; any nearby bright stars; and a brief sketch after you've made your observation.

## Bright Stars Commonly Used as Guide Stars

Epoch 2000.0				
Star Name	H M S	R.A. H M S	DEC ° ' "	Magnitude
Sirius	CMa	06 45 09	-16 42 58	-1.47
Canopus	Car	06 23 57	-52 41 44	-0.72
Arcturus	Boo	14 1540	+19 1057	-0.72
Rigel Kent.	Cen	14 39 37	-60 50 02	+0.01
Vega	Lyr	18 3656	+38 4701	+0.04
Capella	Aur	05 16 41	+45 59 53	+0.05
Rigel	Ori	05 14 32	-08 12 06	+0.14
Procyon	CMi	07 38 18	+05 1330	+037
Betelgeuse	Ori	05 55 10	+07 24 26	+0A1
Achernar	Eri	01 3743	-57 14 12	+0.60
Hadar	Cen	14 03 49	-60 22 22	+0.63
Altair	Aqi	19 5047	+08 52 06	+0.77
Aldebaran	Tau	04 35 55	+16 30 33	+0.86
Spica	Vir	13 25 12	-11 0941	+091
Antares	Sco	16 29 24	-26 25 55	+0.92
Fomalhaut	PsA	22 57 39	-29 37 20	+1.15
Pollux	Gem	07 45 19	+28 01 34	+1.16
Deneb	Cyg	20 41 26	+45 16 49	+1.28
Beta Crucis	Cru	12 47 43	-59 41 19	+1.28
Regulus	Leo	10 08 22	+11 58 02	+1.36

Name: \_\_\_\_\_

Date: \_\_\_\_\_

### Outdoor Laboratory: Telescope Familiarization

Object Type:

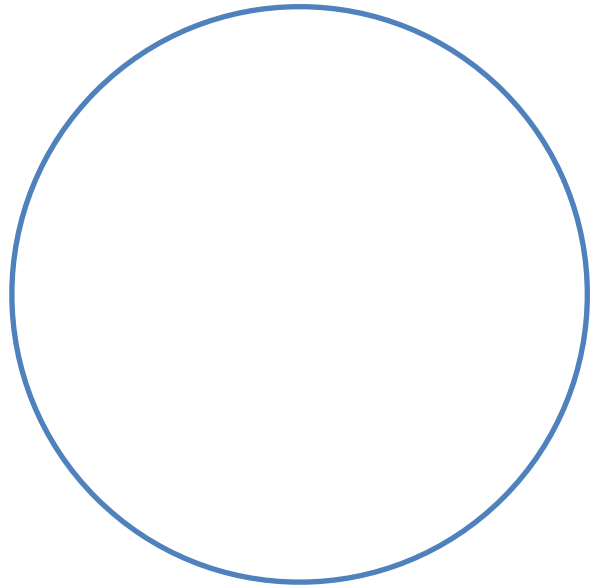
\_\_\_\_\_

Constellation:

\_\_\_\_\_

Nearby Bright Star(s):

\_\_\_\_\_



Object Type:

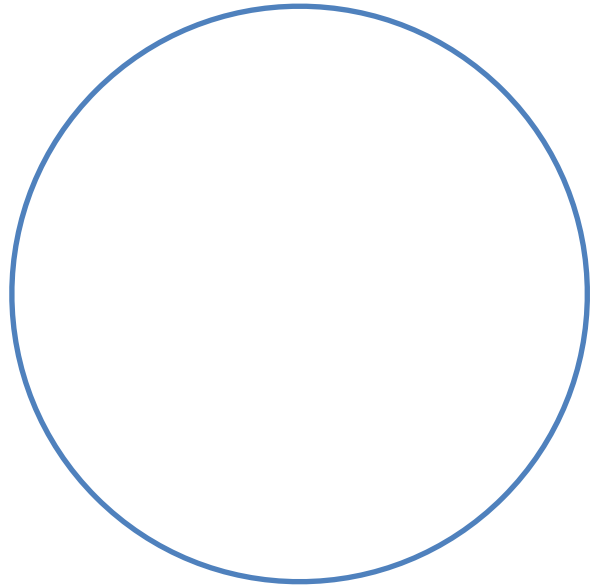
\_\_\_\_\_

Constellation:

\_\_\_\_\_

Nearby Bright Star(s):

\_\_\_\_\_



Object Type:

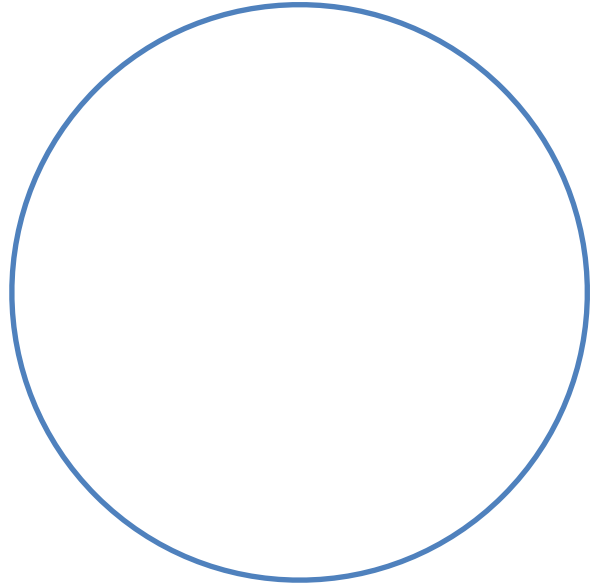
---

Constellation:

---

Nearby Bright Star(s):

---



Object Type:

---

Constellation:

---

Nearby Bright Star(s):

---

