compensate for the rotation of the Earth. In that case, the stars in the sky appear to be stationary. If, however, we were to turn off the tracking system, then the stars would travel across the field of view. The time it takes a star to cross the field of view from left to right depends on the width of the field of view, and the rate at which the Earth rotates.

1. Select *Calibration* from the list of exercises.
2. Turn on the reference grid by selecting *Grid* from the overhead menu and then *Show*. The grid divides the field of view into 10 equal divisions both vertically and horizontally.
3. Note that the overhead menu bar contains a clock which measures elapsed time in milliseconds (1 ms = 0.001 s).
4. Initially, the telescope is set to track the stars and they therefore appear to be stationary. However, you can stop the telescope from tracking by selecting *Telescope* from the overhead menu and then *Stop Tracking*. The stars will then move across the screen from left to right and the clock will start to count the elapsed time.
5. Select a star, and measure the elapsed time for it to enter and then leave the field of view. To make the measurement easier, you might want to briefly use the *Start Tracking* option to pause the clock as the star enters the field of view, and then again as it leaves.
6. You should make this measurement for five or more different stars, and then average the measurements.
7. Fill in your data in the calibration table.

CALIBRATION			
	Time as star enters (ms)	Time as star leaves (ms)	Transit time (ms)
Star 1			
Star 2			
Star 3			
Star 4			
Star 5			

PARALLAX ANGLE AND THE DISTANCE TO THE STARS			
	Parallax Angle (arc-seconds)	Distance (pc)	Distance (lyr)
Star 1			
Star 2			
Star 3			
Star 4			
Star 5			

Upon completing the exercise, select *Check Your Results* from the overhead menu and input your results. Correct results will be indicated with a check mark.

Now complete the following calculations:

Average Transit Time = _____ milliseconds

Now that you have the transit time, you can calculate the angular width of the telescope's field of view. To make a complete revolution (360°) it would take 24 hours, or 86,400 seconds. Remembering also that there are 3600 arc-seconds in a degree:

$$angle = \frac{Transit\ time\ in\ seconds}{86400}\ 360^{o}$$

$$= \frac{Transit\ time\ in\ seconds}{86400}\ (360)\ (3600)\ arc\text{-}seconds$$

Angular width of field of view = _____ arc-seconds

Angular width of one division on grid = _____ arc-seconds

4. Stellar Parallax - Measuring Stellar Parallax

In this last exercise, you are given a view of a small portion of the sky containing both background stars (which do not show a measurable parallax) and five stars which are near enough to the Earth to have an appreciable parallax angle. You need to measure the parallax angle for each one of the five stars. As a guide, you may superimpose onto your field of view a grid which has the same angular size as the one you calibrated.

1. Select *Measuring Stellar Parallax* from the list of exercises.
2. Turn on the reference grid by selecting *Grid* from the overhead menu and then *Show*. The grid divides the field of view into 10 equal divisions both vertically and horizontally.
3. Initially, the animation is turned off and all the stars appear to be stationary. By selecting *Animation* from the overhead menu and then *Start*, five of the stars will appear to move back and forth across the screen.
4. Select a star and measure the angle through which it moves from its extreme right position to its extreme left position. To do this, measure its change in position in terms of grid divisions. When you have this measurement, you can then use the result of the calibration procedure to turn your measurement into an angle:

   Angle = (change in position measured in grid divisions) x (arc-seconds per grid division)

   Note that the angle you measure between extreme positions is twice the parallax angle.

5. Make this measurement for all five nearby stars. Fill in your data in the table below.
6. From the parallax angle, calculate the distance from the Earth to each of the stars. Express your answer in parsecs and in light years. Enter these values in the table below. (Note: the stars are numbered from top to bottom within the field of view.)