ASTR 100/1 Lab 1: Astronomical Angles and Stellarium

1. Background Survey on Moodle

Log in to Moodle (on smartphone, laptop, or one of the computers at the table). Go to the section for Astronomy Lab 1 and complete the Astronomy Background Survey. Don't worry if you don't know the answers, just answer every question as best you can and you will receive full credit.

2. Stellarium

Stellarium is a planetarium software that helps us visualise the sky over time. We'll use it to begin our exploration of astronomy.

1. Go to `http://stellarium.org/` and download and install the correct version for your operating system. If you can't find it, use Stellarium Web.

2. Open the Location Window from the left-hand menu panel or by pressing F6. In the search bar under the top right menu type "Amherst" and select "Amherst Center, United States".

   - Make sure it's "Amherst Center", not "Amherst" (that's in NY somewhere).
   - **Do not type** into the "Name/City" box. That renames the location.

3. Close the Location Window and open the Date/Time Window from the left-hand menu panel or by pressing F5. Set the time to 7:00pm tonight. Close the window.

4. Look at what the sky will look like tonight. Drag the view and scroll up or down to zoom in or out respectively.

3. Positions of Astronomical Objects

In astronomy, we use angles to measure positions and separations of objects in the sky. From your point of view, an object's position is given by **azimuth** and **altitude**. Answer the following questions.

1. How many degrees are in a circle?

2. How many degrees are in a right angle?

3. What are longitude and latitude?

4. What is the azimuth/altitude system?

Astronomers use the **sexagesimal** system for recording angles. Each degree is divided into 60 **arc minutes** ($'$), and each arc minute is divided into 60 **arc seconds** ($''$). An azimuth of $240°38'12''$ is read as 240 degrees, 38 arc minutes, and 12 arc seconds.

Set the time to 2022/1/31 at 6:00pm. Locate the object and click on it, then answer the following. At this time, what is the azimuth and altitude of:

Object	Azimuth	Altitude
Betelguese		
Jupiter		
Sirius		

Now advance the time by a few minutes. Do the azimuths and altitudes increase or decrease?

4. Lab Quiz on Moodle

Go to the Lab 1 section on the Moodle page and complete the End-of-Lab Quiz.

If you logged into your Moodle account from a classroom computer, be sure to log back out!