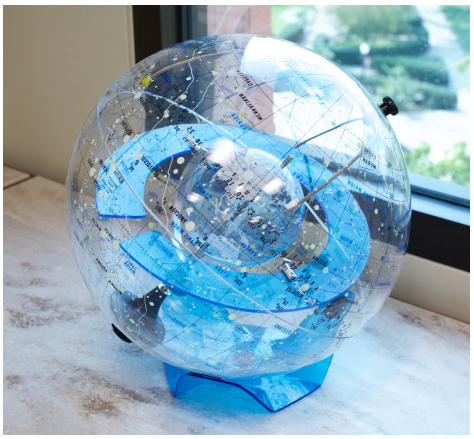
Introduction to the Celestial Globe: Horizon

EXHIBIT: *Galileo's World*
GALLERY: Music of the Spheres; Controversy over the Comets; The Sky at Night; Space Science after Galileo

1. On a celestial globe, find the horizon ring, which represents your location on the Earth's surface.



Each great circle is the basis for a coordinate system which can be used to mark a specific point on the celestial globe. The coordinate system based on one's horizon is the altitude-azimuth system:

***Altitude**:* The angle of a star or planet above the horizon. Each coordinate system includes measurements in angular degrees above or below the great circle. Measurements in angular degrees are made with a sextant or quadrant (or using a protractor with a pivot arm.)

***Azimuth**:* Each coordinate system includes a measurement made *along* the great circle. A measurement along the horizon is called the azimuth. The azimuth is the direction one is facing to measure the altitude. Azimuth is measured in degrees, starting from North. Straight east is 90°; south is °180; west is 270°.

2. Set the horizon ring of the celestial globe, if possible, to Norman, Oklahoma (latitude 35°N).

3. From OU, at an azimuth of 0°, what is the altitude of the North Star, Polaris?

4. Is it meaningful to speak of altitudes greater than 90 degrees?

The point directly overhead is called an observer's **zenith**. Opposite the zenith is the **nadir**, directly beneath one's feet.

5. *Are zenith and nadir points horizon-dependent? That is, do they differ for observers at different locations?*

6. Are zenith and nadir points time-dependent? That is, do they differ for the same observer at the same location but at different times?

7. Is it meaningful to speak of the azimuth of a star at the observer's zenith?

A line (arc) from the point due north on the horizon (0 degrees azimuth) passing through the zenith and intersecting the horizon due south (180 degrees azimuth) is called the **meridian**.

8. Does Polaris always lie on or near the meridian?

Provided by the **OU Academy of the Lynx:**
Collaborating in exhibit-based learning, oulynx.org
(Ask about the *Galileo's World* iPad Exhibit Guide)