1.6 Solar vs. Sidereal Time

PRE-LECTURE READING 1.6

- *Astronomy Today,* 8th Edition (Chaisson & McMillan)
- *Astronomy Today,* 7th Edition (Chaisson & McMillan)
- *Astronomy Today,* 6th Edition (Chaisson & McMillan)

VIDEO LECTURE

- Solar vs. Sidereal Time[1] (16:43)

SUPPLEMENTARY NOTES

Earth's Daily and Yearly Motions

- Earth *rotates* (spins) 360° on its axis every *sidereal* day.
- 1 sidereal day = 24 sidereal hours = 23:56 *solar* hours
- 1 solar day = 24 solar hours
- Earth *revolves* (orbits) 360° around the sun every 365.24 solar days. This is called a *tropical* year.
- Earth revolves ≈1° around the sun every day.
- Earth rotates 1° on its axis every 4 sidereal minutes.
- 1 sidereal day + 4 sidereal minutes = 1 solar day
- Hence, the sidereal day is shorter than the solar day.
- Hence, stars rise and set 4 sidereal minutes earlier every solar day.
- Hence, nighttime constellations shift seasonally.

EXERCISES

- Experiment with UNL's Sidereal and Solar Time Simulator[2].
- Experiment with UNL's Ecliptic (Zodiac) Simulator[3].

[1] http://youtu.be/3ncrEEiwlvc
[2] http://astro.unl.edu/classaction/animations/coordsmotion/siderealSolarTime.html
[3] http://astro.unl.edu/classaction/animations/coordsmotion/zodiac.html

ASSIGNMENT 1

Do Question 3.