Chapter 3 Notes: Stars and Galaxies

**Measuring Distances:**

Distances within the solar system:

* Astronomical unit: used to measure distance within our solar system
* The average distance between Earth and the Sun
* About 150

Distances beyond the solar system

 **Light Year**

* Measures DISTANCE
* The distance light travels in one year
* About 10 trillion km

Light from the Past:

 Light can take millions or billions of years for their radiant energy to reach Earth. We see the past not the present.

**Measuring Brightness**

Apparent Magnitude: a measure of how bright an object appears from Earth

Absolute Magnitude: Luminosity

* The true brightness of an object
* Depends on temperature and size
* Measured in watts (light bulb)

**Classifying Stars**

Temperature Color Mass

Hottest blue-white most massive

 White

 Yellow

 Orange

Coolest Red least massive

*90% of all stars are smaller than the Sun*

Hertzsprung-Russell Diagram (H-R): Plots luminosity and temperature of stars

**Galaxies**

* Huge collections of stars
* Hundreds of billions of stars
* The universe has hundreds of billions of galaxies
* We live in the Milky Way Galaxy
* A spiral galaxy

**How Stars Shine**

Nuclear fusion:

* The nuclei of several atoms combine into one larger nucleus
* Releases a great amount of energy
* The energy radiates into space (star shine)

Star:

* A large ball of gas
* Held together by gravity
* With a core so hot nuclear fusion occurs