Monday, Feb 25, 2019

Pick up: HR Diagram ISN pgs 130-131

Today you will:

- Use the HR Diagram to classify stars

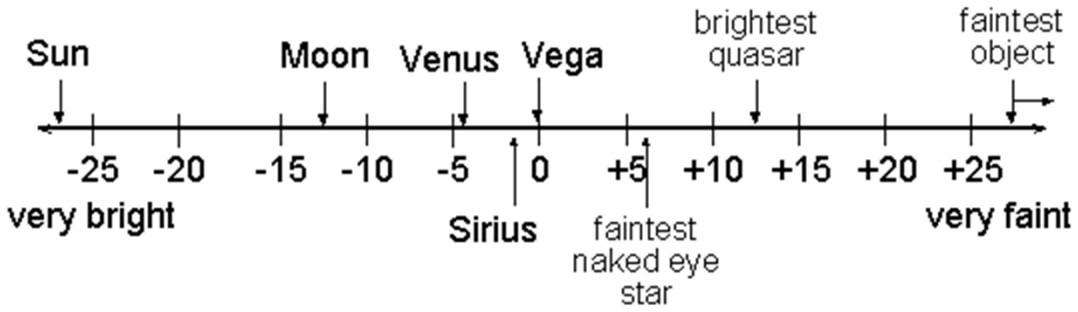
HOMEWORK:

Study what we've done so far

Test-Stars Monday, March 4

Properties of star: Stellar Brightness

- Apparent magnitude – How bright a star <u>appears</u> from Earth.
  - This depends on how much light the star emits and how far the star is from Earth.
  - The lower the number on the scale, the brighter the star appears to Earthlings.



Apparent brightnesses of some objects in the magnitude system.

Properties of stars: Stellar Brightness

- Absolute magnitude – The true brightness of a star. (luminosity)
  - Absolute brightness is how bright a star actually is, the lower the number=more bright

Apparent and Absolute Magnitude

An Analogy:

Cars A and B are identical. A's headlights appear brighter because it is closer.

Cars A and B are at the same distance. A's headlights appear brighter because they are intrinsically brighter.

An Example:

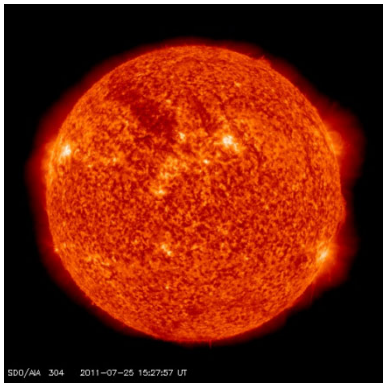
An observer sees two stars. Star A appears brighter than Star B because it is closer to her.

Absolute magnitude is the brightness a star would have at a distance of 10 parsecs. If stars A and B were both 10 parsecs away from the observer, Star B would appear brighter than star A.

Properties of Stars: Temperatures of Stars

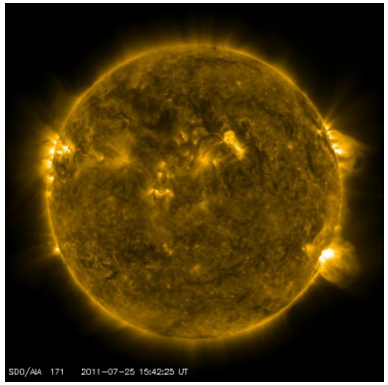
- Red – Coolest
- White – Medium
- Blue – Hottest

Red star



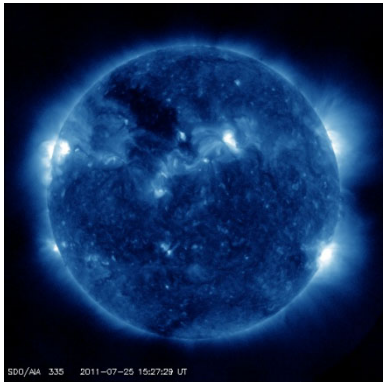
3,000 K

Yellow/white star



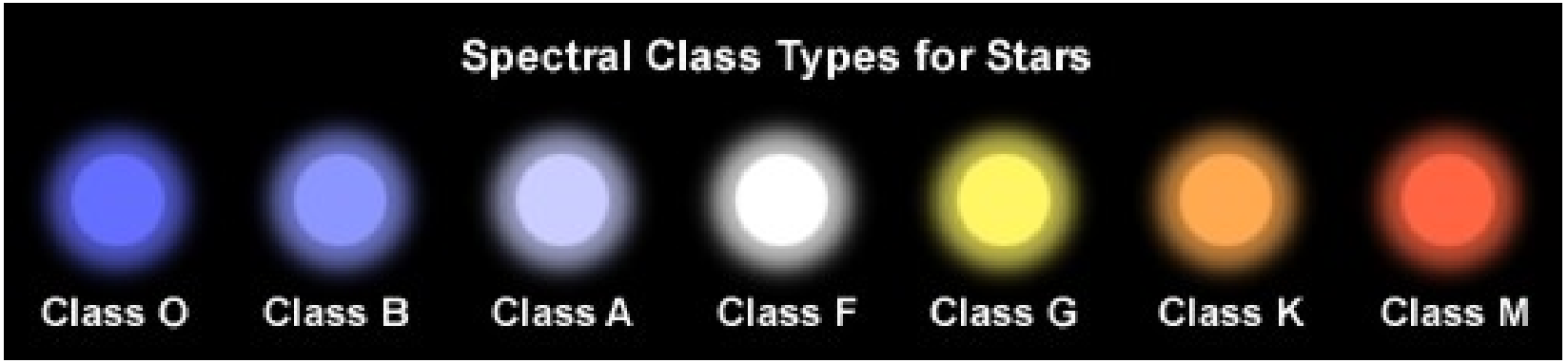
5,000 K

Blue star



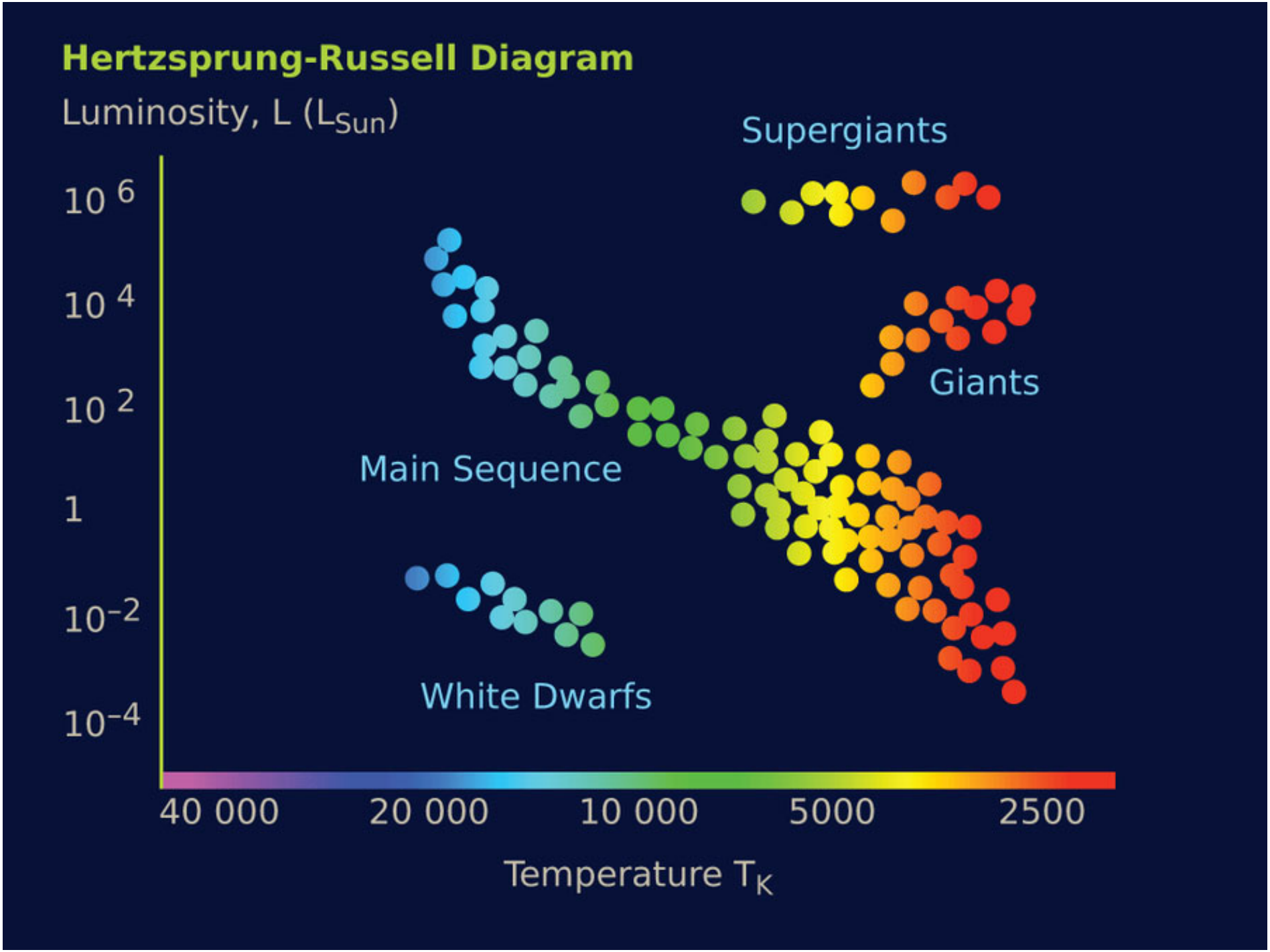
10,000 K

- A stars surface temperature can be estimated based on its **color**.



Section 2: Classifying Stars

- Astronomers graph temperature and luminosity of stars on the Hurtzsprung-Russell diagram (H-R).
  - Highest temperatures are on the left and highest luminosities are at the top. Most stars fall diagonally through the middle. These stars are called main-sequence stars.


Hertzsprung-Russell Diagram
Luminosity, L (L_{Sun})
10^{6}
10^{4}
10^{2}
1
10^{-2}
10^{-4}
Supergiants
Giants
Main Sequence
White Dwarfs
40 000
20 000
10 000
5000
2500
Temperature T_K