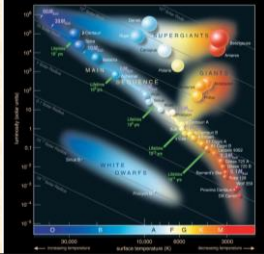


ASTR 1020: Stars & Galaxies

October 2, 2013

- Reading: Chapter 15, section 15.2-15.3.
- *Mastering Astronomy* Homework on **Properties of Stars** is due on October 4 .



Astronomy Video of the Day



Rover remotely controlled from International Space Station

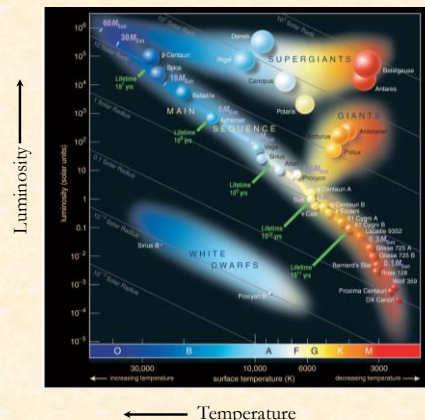
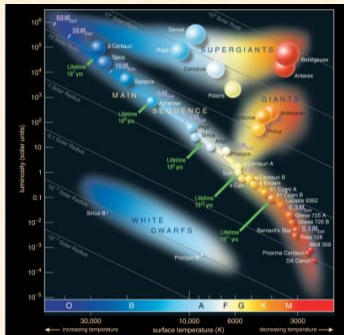
Reading Clicker Question: What is the most fundamental property of a star in determining its evolution?

- A.composition
- B.size
- C.temperature
- D.luminosity
- E.mass

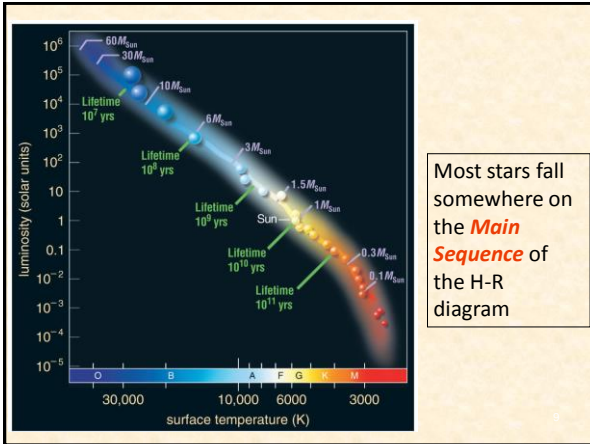
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Today's Lecture: What is a Hertzsprung-Russell (H-R) diagram?



An H-R diagram plots the **luminosity** and **temperature** of stars

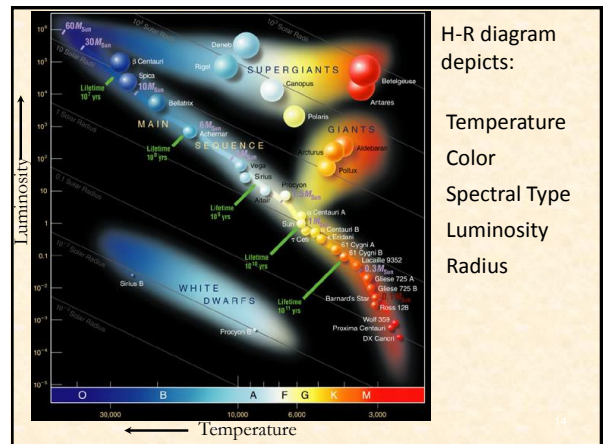
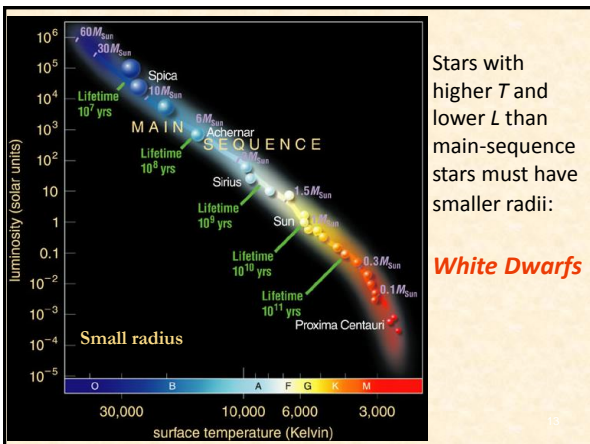
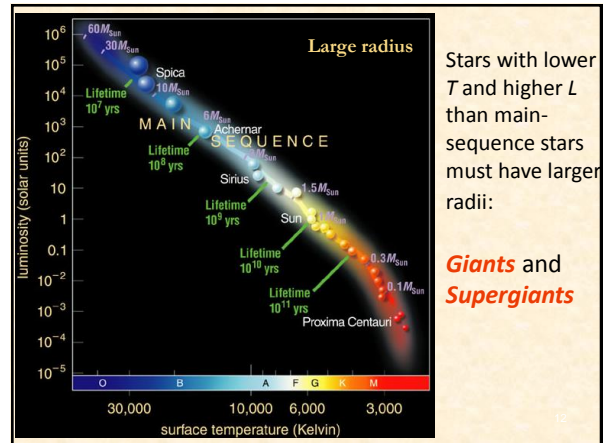


Clicker Question: A star near the top of the **Main Sequence** has a luminosity about:

- a) Twice the Sun's luminosity
- b) Five times the Sun's luminosity
- c) 20 to 30 times the Sun's luminosity
- d) >10,000 times the Sun's luminosity

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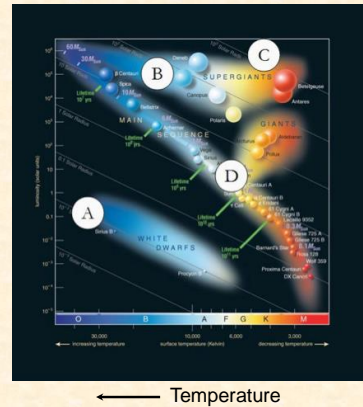


A star's full classification includes spectral type and **luminosity class**:

- I - supergiant
- II - bright giant
- III - giant
- IV - subgiant
- V - main sequence

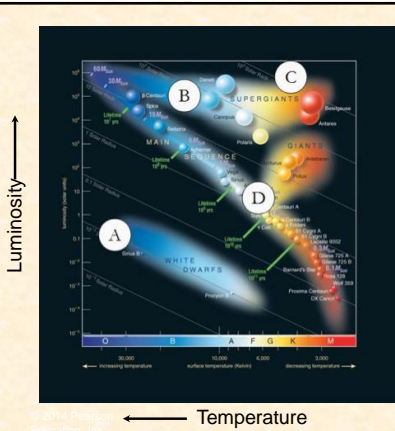
Examples: Sun - G2 V
 Sirius - A1 V
 Proxima Centauri - M5.5 V
 Betelgeuse - M2 I

15



Clicker Question:

Which star has the largest radius & luminosity?

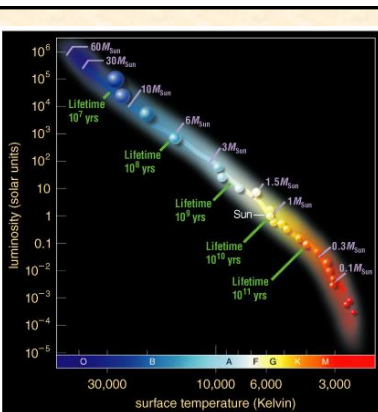
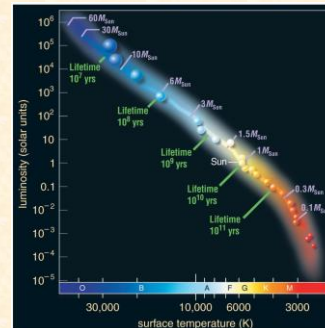


Clicker Question:

Which star has the largest radius & luminosity?

C

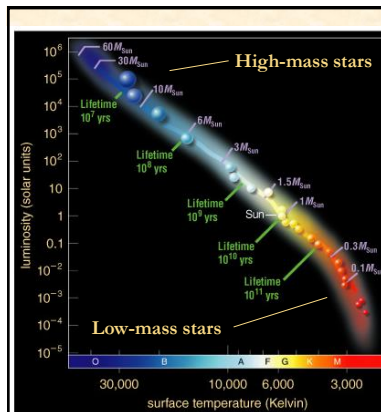
What is the significance of the main sequence?



Main-sequence stars are fusing hydrogen into helium in their cores like the Sun.

Luminous main-sequence stars are hot (blue).

Less luminous ones are cooler (yellow or red).



Mass measurements of main-sequence stars show that the hot, blue stars are much more massive than the cool, red ones.

