Astronomy 1143 Quiz 3 Review

Prof. Pradhan

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Hertzsprung-Russell Diagram and Luminosity Relations

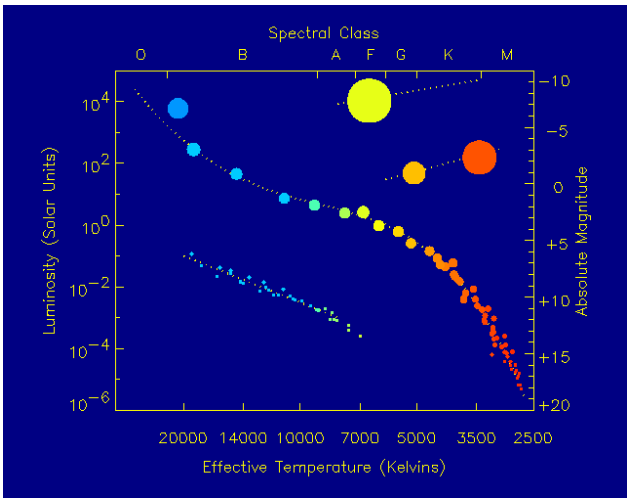

Figure 1: The Hertzsprung-Russell diagram. Note that temperature increases to the left. The line through the middle is the main sequence, the lower line is the white dwarf sequence, and the lines in the upper right are the red giant and supergiant sequences (supergiant is on top).

1. What does a star's location on the HR diagram tell us?
2. What is the main sequence?
3. Where is the red giant sequence on the HR diagram? What does this location mean?
4. What is the most important stellar property that determines all other properties of a star?
5. How does a star's radius and temperature relate to its luminosity?
6. How does a star's aparent brightness relate to its luminosity?

Spectral Types of Stars

1. What is the spectral sequence of stars, from hottest to coolest?
2. What color are hot stars? Cool stars?

3. What causes stars to have a specific color?
4. Do O and B type stars show hydrogen lines in their atmospheres?
5. What spectral type is the Sun? What is the Sun's effective temperature?

Life of Low Mass Stars

1. What is the mass cutoff for a "low mass" star?
2. How does a low mass star spend most of its life?
3. What happens when a low mass star stops fusing hydrogen?
4. What is the maximum mass that a white dwarf can have? What is this mass called? What happens if this mass is exceeded?
5. What is a white dwarf?
6. What is the largest element a low mass star can fuse in its core?

Life of High Mass Stars

1. What happens to a high mass star after the main sequence?
2. What is a neutron star?

Cosmology and Dark Matter

1. What does a flat rotation curve of galaxies tell us?
2. What is the Big Bang Model?
3. What is the Hubble law?
4. What do we mean when we say the universe is "expanding?"
5. What is Olbers' Paradox? What is the resolution?
6. What is the 21-cm line and why is it useful for cosmology?

Telescopes

1. Why do we use telescopes?
2. What is the difference between a refracting and a reflecting telescope?
3. What happens when light passes through a lens?
4. Where is the best place to put a telescope?
5. How does the power of a telescope scale with its diameter?
6. What is the purpose of a telescope's eyepiece?
7. List a few of the important telescopes in use today.