August 27, 2010

Handouts from first class

Astronomy in the News?

New Kepler satellite staring at sky in vicinity of Cygnus and Lyra, watching for eclipses of stars by planets. Kepler reports planet nearly the size of the Earth, but close to host star, orbit 28 hours, not in habitable zone.

December 1 – 8 International Dark Matter Awareness Week.

Pic of the Day – Mars, NOT bigger than the Moon, Venus, Spica

See the Moon?

- Handouts
- Syllabus/Schedule
- Webpage: http://www.as.utexas.edu/astronomy/education/fall10/wheeler/309n.html (not blackboard)
- Book: Cosmic Catastrophes (second edition)
- Five exams
- Grading: plus/minus grading will be used for the final grade; for example: 79.5 – 83.3 B-, 83.4 – 86.6 B, 86.7 – 89.4 B+. (do not drop lowest exam -- but extra credit!)
- Grades are not curved: 90 - 100 A, 80 - 90 B, etc.
- Review Sessions - Thursday, 5 - 6 PM

Extra Credit

On exams (2 points):

Astronomy in the News,
NASA's Astronomy picture of the day
http://antwrp.gsfc.nasa.gov/apod/astropix.html

Sky Watch Project - details on web site, in handout. Log of observations: up to 5 points on each exam. Due at each hourly exam.

Keep an eye on Betelgeuse in Orion, also locate Sirius A, the Crab Nebula, Cassiopeiae A, Cygnus X-1, Sagittarius A, others. **1) Record enough information so that I can tell you actually went out at night and tried to see something. 2) Give a brief summary of why they are important.** Some of these can be seen with the naked eye, some not. Some can be seen now, some later in the term. Some in the morning, some in the evening. **Beware clouds!**

- Book - electronic copy available through University library system.

- http://catalog.lib.utexas.edu/search/X?SEARCH=Cosmic+Catastrophes: access with uteid and password.

- Schedule - start with Chapter 6
- Leave room for Chapters 13 and 14 and extra stuff

Reading: Chapters 1 thru 5 for background plus Chapter 6 - Supernovae

Chapters 1 & 2 - AST 301

- Particles, forces, neutrinos
- Charge repulsion
- Pressure -
  - Thermal
  - Quantum
- Nuclear Reactions

Chapters 3, 4, & 5

- Binary Star Evolution
- Accretion Disks
- White Dwarfs

Will refer to as needed

One minute exams

Peer interaction

Discussion

The Universe is a strange place!

It began in a Big Bang, the creation of space and time as we know them,

It has been expanding for 14 billion years,

It is full of dark matter, unlike protons, neutrons, electrons, our stuff, that nevertheless gravitates.

It currently seems to be accelerating in the grip of some anti-gravitating “dark energy.”

On the microscopic scale, which can determine the cosmological scale, nature follows the laws of quantum theory, probability not certainty, quantum jumps, wave-like properties of particles.

Study the stars - see where that leads…

Background Check

What is a main sequence star?

What is a red giant star?

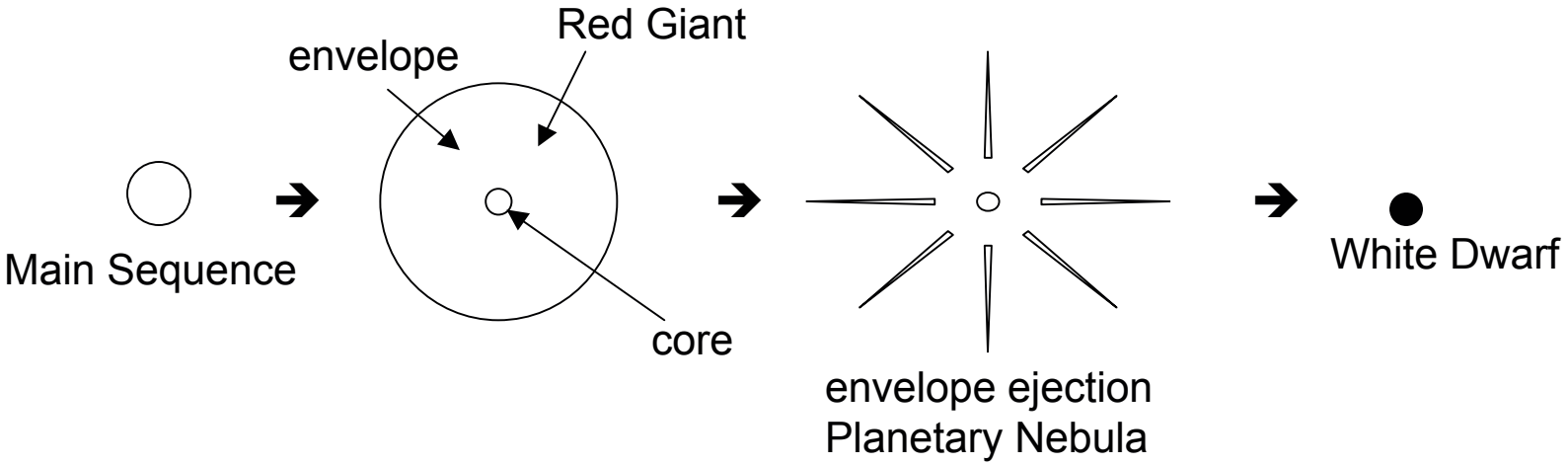
What is a white dwarf?

Write a few sentences, talk with your neighbors.

Concept Check

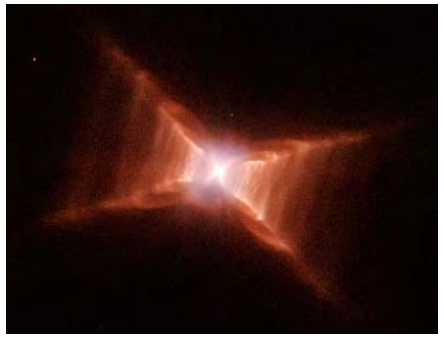
What's on the cover of the book?

White Dwarfs (Section 5.1)



White dwarfs are the most common stellar "corpse." Come from low mass stars → plentiful.

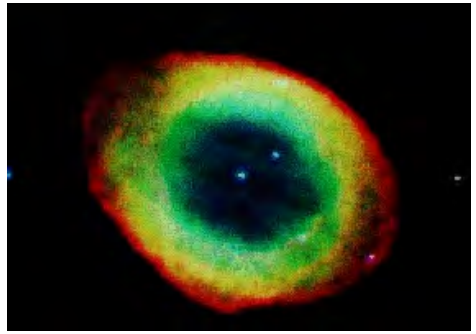
Examples of planetary nebulae surrounding new-born white dwarfs



Sky Watch Extra Credit:.

Find red giant Betelgeuse in Orion Constellation

Other red giants



Try to find the constellation Lyra, location of the Ring Nebula, Messier 57.

Other planetary nebulae.

Can't see nebula with naked eye, but can find Lyra

Other planetary nebulae

Also Moon, Mars, Venus, Jupiter, Big Dipper for orientation, NSEW, learning to use a star chart,