

January 22, 2010

Handouts from first class

Reading assignment, Cosmic Catastrophes, Chapter 6 plus Section 5.1, Section 1.2.4 and Section 2.3 for background

Electronic access to text book:

<http://catalog.lib.utexas.edu/search/X?SEARCH=Cosmic+Catastrophes>

access with uteid and password.

See the Moon?

Astronomy in the News? Web, TV

Item to watch for: President's plans for human space program.

Pic of the Day - Annular eclipse of the Sun by Moon January 15.



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?

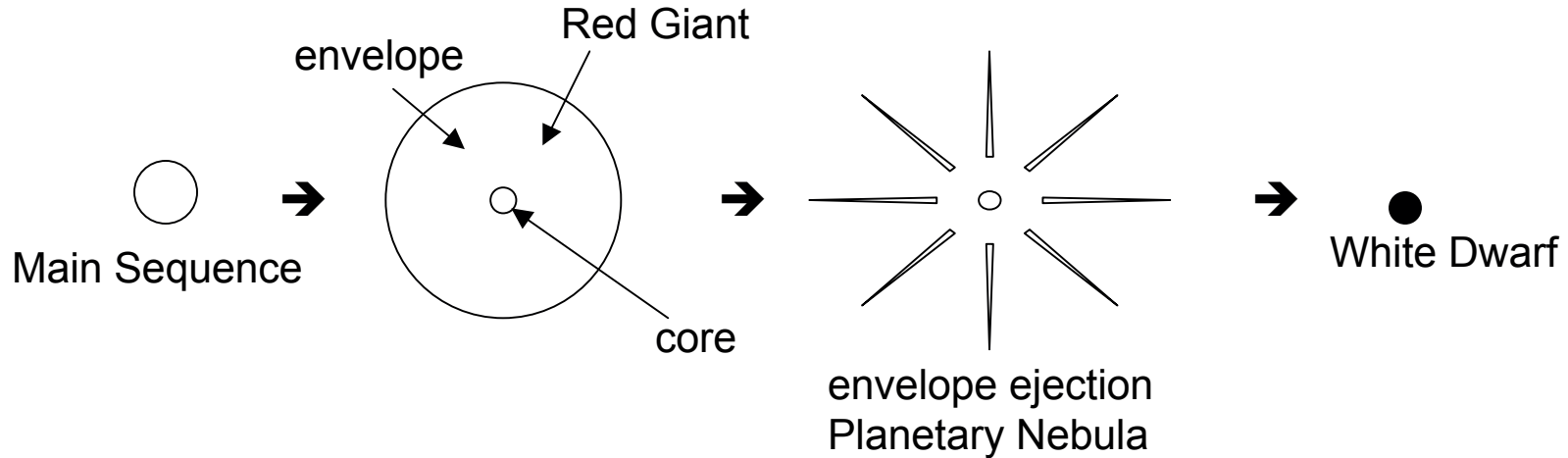
What is a white dwarf?

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

Find Constellation Draco, site of the Cat's Eye
Nebula

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

Other planetary nebulae

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



White Dwarfs (Section 5.1)

Essentially every white dwarf formed since beginning of Galaxy is still here 10-100 billion of them (~ 100 billion stars total)

Most are dim, undiscovered, see only those nearby, none naked eye

Sirius, brightest star in the sky, has a white dwarf companion. Can't see the white dwarf with the naked eye, too small, dim, but Sirius is easy if you look for it at the right time.

Find Sirius for the extra credit sky watch project.

Discussion Point:

White dwarfs have about the same mass as the Sun and about the same radius as the Earth.

How does the gravity of a white dwarf compare to the Sun and the Earth, and why?