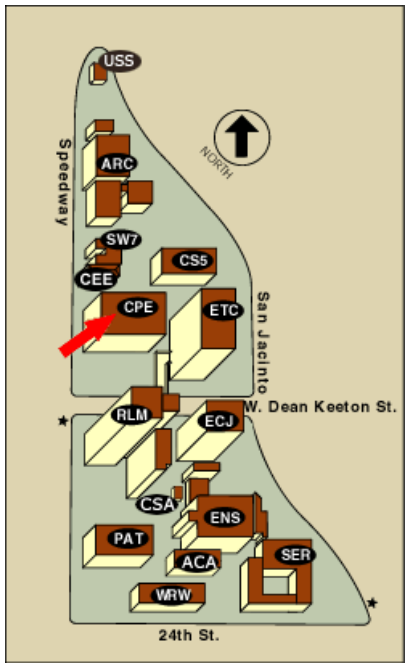
February 9, 2011

First exam this Friday, February 11. Review sheet posted on class web site. ***Sky watch due on Friday.***



Review Thursday, 5 -6 PM, Room CPE 2.214

Office hours or special appointment.

Reading - Cosmic Catastrophes, Chapter 6,

Sections 6.1 - 6.3. Also read Sections

1.2.4, 2.1, 2.2, 2.4, 2.5, 5.1 for background.

Astronomy in the news?

Pic of the day: winds from new stars blow away dust shroud.

Goal

To understand how a massive star gets from hydrogen to iron, and why iron?

Evolution - gravity vs. charge repulsion
§ 2.1

Discussion point: Why do you have to heat a fuel to burn it?

H → He → C → O
more protons, more charge repulsion, must get ever hotter to burn ever "heavier" fuel

Just what massive stars do!
Support by thermal pressure.
When fuel runs out, core tries to cool but gravity squeezes, core contracts and HEATS UP
overcomes higher charge repulsion, burns new, heavier fuel, ***until get to iron***

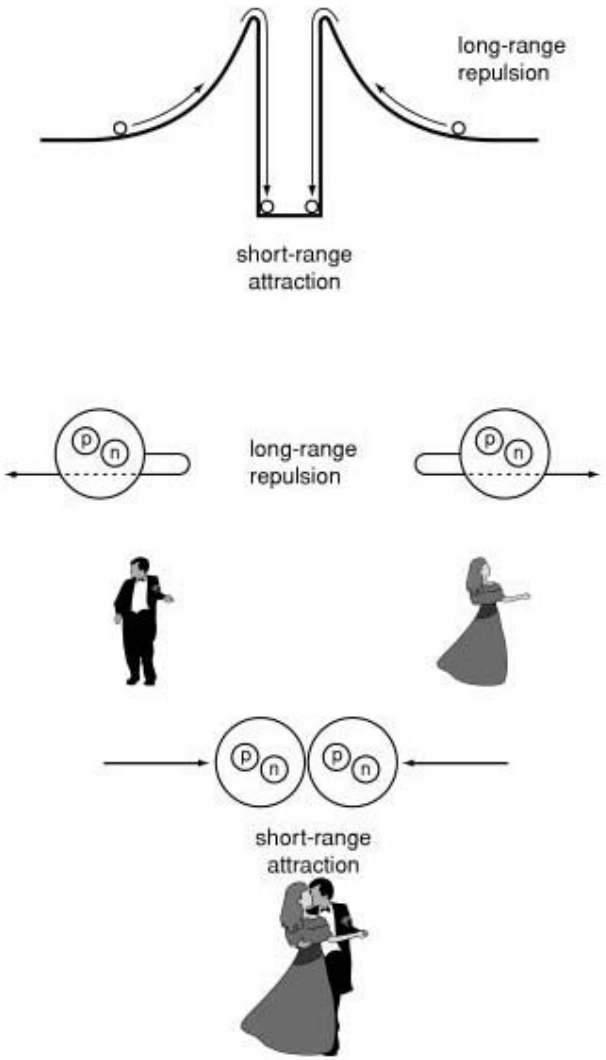


Figure 2.1

Make succession of heavier elements

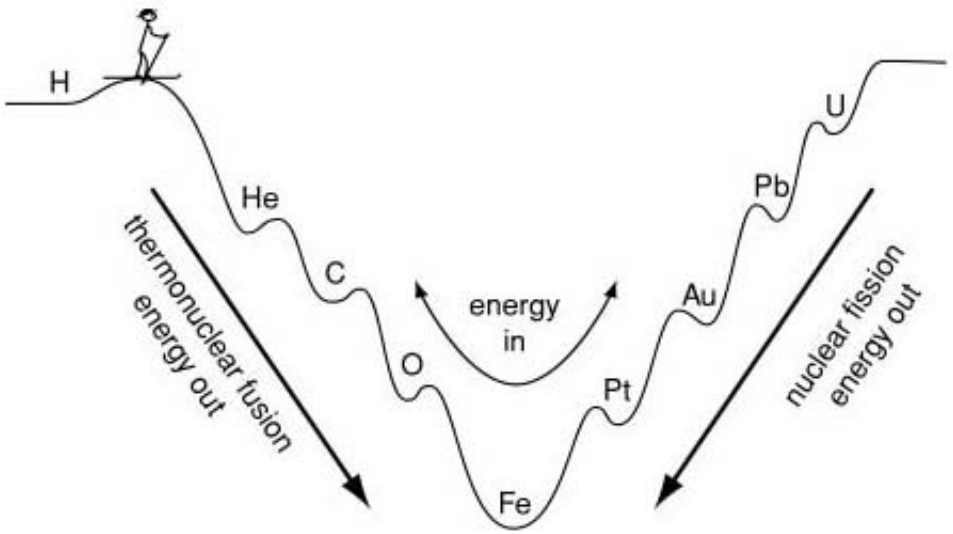


Figure 2.3

Special role of Iron - 26p, 30n

Endothermic - must put energy in to break iron apart into lighter elements or to forge heavier elements, absorb energy, lower pressure, core contracts, absorb more energy, more contraction…

=> The iron core quickly collapses! Catastrophic death of the star.