Astronomy 100, Fall 2007 Name:

Weekly assignment 5: Stars, their spectra and their processes

Due: October 30, 2007 at 11:00 a.m.

Distinguish:

Degrees, arc-minutes, arc-seconds

The **magnification** of a telescope versus the **resolution** of a telescope

Film camera versus charge coupled device (**CCD**) camera

Nuclear fusion versus **nuclear fission**

Emission spectrum of a celestial object versus **absorption spectrum**

Ion versus **atom**

Neutron versus **neutrino**

In 1918, Annie Jump Cannon of Harvard began to classify 400,000 stellar spectra that had been collected up to that point. By what **stellar characteristic** did she and her colleagues classify the spectra? What other property of the star closely correlates to her classification criterion?

Name **three** pieces of information we can get from **stellar spectra**. In other words, what are three properties we know about stars due to their spectra?

There's fusion and, then again, there's fusion. What is the difference between **hydrogen fusion** in the proton-proton cycle and fusion in the **triple alpha process**? Which type of fusion is more efficient (generates more energy per mass used)?

What is the **solar neutrino problem**, and did we solve it? If we solved it, what was the solution to the problem?

In 1983, William Fowler of Caltech won the Nobel Prize in Physics. Describe the **stellar process** that got him the award.

Sketch the Moon, the Pleiades and the bright star Aldebaran (in the constellation Taurus) in the eastern sky on or around Friday, October 26. Give the usual time/date/direction/horizon.