

Astronomy 100, Fall 2006

Name:

Weekly assignment 4: Stars, their spectra and their processes

Due: October 26, 2006 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 attribute 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 attributes 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 Polaris, the Pleiades and the bright star Capella in the northeastern sky on or around Saturday, October 21. Give the usual time/date/direction/horizon.