Weekly assignment 4: Stars, their spectra and their processes
Due: October 24, 2005 at 6:00 p.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 Mars, the Pleiades and the Moon on or around Wednesday, October 19. Give the usual time/date/direction/horizon.