PHYS320, Fall 2015

HOMEWORK SET 11

Due November 19, Thursday

1. Use Wien's Law to determine the wavelength corresponding to the peak of the Planck curve (a) in the core of the Sun, where the temperature is 10^7 K, (b) in the solar convection zone, where the temperature is 10^5 K, and (c) just below the solar photosphere, where the temperature is 10^4 K. What form (visible, infrared, x-ray, and so on) does the radiation take in each case?

2. Use Stefan's Law to calculate how much less energy (as a fraction) is emitted per unit area of a 4500-K sunspot than from the surrounding 6000-K photosphere.

3. What is the explanation for the scarcity of detected neutrinos according to the latest discoveries?