天文學導論 2007 Fall

HW 071204

Due in one week

1. Does each comet always have tails? Explain.
2. What is the “Tunguska Event”? Why do scientists think the event was caused by a large meteoroid (how large was it?) instead of a comet?
3. During our visit to the *Taipei Astronomical Museum*, we observed the Sun. Even though the sky conditions were favorable, we did not see any sunspots because we are now in the sunspot minimum. When will the next sunspot minimum and sunspot maximum occur after the maximum in 2001 and the minimum in 2007? Explain your reasoning.
4. Why do thermonuclear reactions in the Sun take place only in its core?
5. What is a neutrino, and why are astronomers so interested in detecting neutrinos from the Sun?
6. How and why is the spectrum of a star related to its surface temperature?
7. What is the mass-luminosity relation? To what kind of stars does it apply?
8. Explain how and why the turnoff point on the H-R diagram of a star cluster is related to the cluster’s age.